



# **Fatima Mata National College (Autonomous) Kollam**

Scheme & Syllabus of  
**First Degree Programme in Zoology**  
2019 Admission Onwards



## First Degree Programme in Zoology

### Table I : Course structure, Scheme of Instruction and Evaluation

Semester	Study component	Course Code	Course Title	Instructional Hrs/Week		Credit	Duration of Sem Exam	Evaluation marks		Total Credit
				T	P			CE	ESE	
I	English I	19UEN111.1	Language Skills	5		4	3hrs	20	80	16
	Additional Language I	19UFR/HN/ML111.1	Additional Language I	4		3	3hrs	20	80	
	Foundation Course I	19UEN121	Writings on Contemporary Issues	4		2	3hrs	20	80	
	Core Course I	19UZO141	Animal Diversity I	2	2	3	3hrs	20	80	
	Complementary Course I	19UCH131.4	Theoretical Chemistry	2	2	2	3hrs	20	80	
	Complementary Course II	19UBO131	Cryptogamic Botany & Plant pathology	2	2	2	3hrs	20	80	
II	English II	19UENS211	Environmental Studies	5		4	3hrs	20	80	17
	English III	19UEN212.1	English Grammar and Composition	4		3	3hrs	20	80	
	Additional Language II	19UFR/HN/ML211.1	Additional Language II	4		3	3hrs	20	80	
	Core Course II	19UZO241	Animal Diversity II	2	2	3	3hrs	20	80	
	Complementary Course III	19UCH231.4	Inorganic and Bioinorganic Chemistry	2	2	2	3hrs	20	80	
	Complementary Course IV	19UBO231	Anatomy, Embryology & Micro technique	2	2	2	3hrs	20	80	
III	English IV	19UEN311.1	Readings in Literature I	5		4	3hrs	20	80	17
	Additional Language III	19UFR/HN/ML311.1	Additional Language III	5		4	3hrs	20	80	
	Foundation Course II	19UZO321	Experimental Zoology, Instrumentation, Biostatistics and Bioinformatics	3	2	3	3hrs	20	80	
	Complementary Course V	19UCH331.4	Organic Chemistry	3	2	3	3hrs	20	80	
	Complementary Course VI	19UBO331	Plant Systematics & Crop Improvement	3	2	3	3hrs	20	80	
IV	English V	19UEN411.1	Readings in Literature II	5		4	3hrs	20	80	29
	Additional Language IV	19UFR/HN/ML411.1	Additional Language IV	5		4	3hrs	20	80	
	Core Course III	19UZO441	Environmental Biology, Habitat destruction and Disaster Management	3		3	3hrs	20	80	
	Core Course IV	19UZO442	Practical - I		2	4	3hrs	20	80	
	Complementary Course VII	19UCH431.4	Physical Chemistry	3		3	3hrs	20	80	
	Complementary Course X	19UCH432.4	Complementary Course Lab of 19UCH131.4, 19UCH231.4, 19UCH331.4 & 19UCH431.4		2	4	2hrs	20	80	
	Complementary Course VIII	19UBO431	Plant Physiology & Applied Botany	3		3	3hrs	20	80	
	Complementary Course X	19UBO432	Complementary Course Lab of 19UBO131, 19UBO231, 19UBO331 & 19UBO431		2	4	3hrs	20	80	



Semester	Study component	Course Code	Course Title	Instructional Hrs/Week		Credit	Duration of Sem Exam	Evaluation marks		Total Credit
				T	P			CE	ESE	
V	Core Course V	19UZO541	Cell Biology and Molecular Biology	5	3	4	3hrs	20	80	18
	Core Course VI	19UZO542	Genetics and Biotechnology	4	3	4	3hrs	20	80	
	Core Course VII	19UZO543	Microbiology and Immunology	4		4	3hrs	20	80	
	Core Course VIII	19UZO544	Practical II		3	4	3hrs	20	80	
	Open Course	19UZO551	Open Course	3		2	3hrs	20	80	
VI	Core Course IX	19UZO641	Physiology and Biological chemistry	5		4	3hrs	20	80	23
	Core Course X	19UZO642	Developmental Biology and Experimental Embryology	4		4	3hrs	20	80	
	Core Course XI	19UZO643	Ethology, Evolution and Zoogeography	4		3	3hrs	20	80	
	Core Course XII	19UZO644	Practical III		3	3	3hrs	20	80	
	Core Course XIII	19UZO645	Practical IV		3	3	3hrs	20	80	
	Elective Course	19UZO661	Elective Course	3		2	3hrs	20	80	
	Project	19UZO646	Project and Field study		3	4	Viva	-	100	

A) Language Courses = 9, B) Foundation Courses = 2, C) Complementary Courses = 10,  
D) Core Courses = 13, E) Open Course = 1, F) Elective Course = 1,  
G) Project = 1 Total Courses = 9+2+10+13+1+1+1 = 37. Total Credits = 16+17+17+29+18+23 =120.

### Open Courses

Course Code	Course Title	Instructional Hrs/Week	Credit
19UZO551.1	Human Health and Sex Education	3	2
19UZO551.2	Public Health and Hygiene	3	2
19UZO551.3	Human Diseases and their Management	3	2
19UZO551.4	Sustainable Health and Nutrition	3	2
19UZO551.5	Sustainable Ecotourism	3	2

### Elective Courses

Course Code	Course Title	Instructional Hrs/Week	Credit
19UZO661.1	Ornamental Fish culture	3	2
19UZO661.2	Vermiculture and Apiculture	3	2
19UZO661.3	Dairy farming and Broiler farming	3	2
19UZO661.4	Entomology	3	2
19UZO661.5	Environmental Pollution	3	2



## GENERAL ASPECTS OF EVALUATION

### MODE OF EVALUATION

Evaluation of each course shall consist of two parts:

1. Continuous Evaluation (CE), and
2. End Semester Evaluation (ESE)

The CE to ESE ratio shall be 1:4 for both Courses with or without practical. There shall be at maximum of 80 marks for ESE and maximum of 20 marks for CE. A system of performance based, indirect grading will be used. For all courses (Theory and Practical), grades are given on a 7-point scale based on the total percentage of mark (CE+ESE) as given below:

#### Criteria for Grading

Percentage of marks	CCPA	Letter Grade
90 and above	9 and above	A+ Outstanding
80 to <90	8 to <9	A Excellent
70 to <80	7 to <8	B Very Good
60 to <70	6 to <7	C Good
50 to <60	5 to <6	D Satisfactory
40 to <50	4 to <5	E Adequate
Below 40	<4	F Failure

#### 1.1. CONTINUOUS EVALUATION FOR LECTURE COURSES

The Continuous evaluation will have 20 marks and will be done continuously during the semester. CE components are

- i. Attendance for lecture and laboratory sessions (to be noted separately where both lecture and laboratory hours have been specified within a course);
- ii. Assignment /seminar and
- iii. Test

The weightage is shown in Table I.1. There will be two Internal exams with 3 marks for Class Test Evaluation (Test I) and 7 marks for Centralized Internal Exams (Test II) and the total of the two marks obtained for Test I & Test II will be awarded. Seminar for each course to be organized by the course teacher and assessed along with a group of teachers in the Department. The topic selection by the student for assignments/seminar will be with the approval of the course teacher.

No	Component	Marks
1	Attendance	5
2	Assignment / Seminar	5
3	Tests	10
	Total	20

##### 1.1.1. ATTENDANCE:

The allotment of marks for attendance shall be as follows:

Attendance less than 75%	0 mark
75% & less than 80 %	1 mark
80% & less than 85 %	2 marks
85% & less than 90 %	3 marks
90% & less than 95%	4 marks
95% & above	5 marks

##### 1.1.2. EVALUATION OF THE ASSIGNMENTS/SEMINAR

Each student shall be required to do one assignment or one seminar for each Course. Seminar for each course shall be organized by the course teacher and assessed by a group of teachers in the Department. The topic selection by the student for assignments/seminar shall be with the approval of the course teacher. The

assignment typed/written on A4 size paper shall be 4-6 pages. The minimum duration of the seminar shall be fifteen minutes and the mode of delivery may use audio-visual aids if available. Both the assignment and the seminar shall be evaluated by giving marks based on each of the four components shown in table 1.1.2.1. The seminar is to be conducted within the contact hours allotted for the course.

#### 1.1.2.1. Mode of Assignments/Seminar Evaluation (maximum 5 marks)

No	Components	Marks
1	Adherence to overall structure & submission deadline	2
2	Content & grasp of the topic	1
3	Lucidity /clarity of presentation	1
4	References, interaction/overall effort	1

The explanatory guidelines in Table 1.1.2.2. are suggested (tentatively) for the assessment of each of the above main components:

1.1.2.2. Guidelines for Assignments/Seminar Evaluation		
No	Main Component	Sub –Components
1	Adherence to overall structure & submission deadline	i. Punctual submission ii. Adequate length/duration iii. Inclusion of introduction, discussion & summary sections iv. Absence of errors/mistakes
2	Content & grasp of the topic	1. Coverage of topic 2. Understanding of topic 3. Logical organization 4. Originality (No copying from a source or plagiarism)
3.	Lucidity/Clarity	i. Clarity ii. Effective presentation/delivery iii. Neatness of presentation iv. Inclusion of appropriate diagrams/equations/structures etc.
4	References/Interaction/Overall effort	1. Listing of references 2. Use of more than one reference source/Use of Web resource 3. Correct response to quiz/questions 4. Overall effort in preparing assignment/seminar

#### 1.1.3. DETAILS OF THE CLASS TEST

The weightage is shown in Table I.1. There will be two Internal exams with 3 marks for Class Test Evaluation (Test I) and 7 marks for Centralized Internal Exams (Test II) and the total of the two marks obtained for Test I & Test II will be awarded. Seminar for each course to be organized by the course teacher and assessed along with a group of teachers in the Department. The topic selection by the student for assignments/seminar will be with the approval of the course teacher.

#### 1.2. CONTINUOUS EVALUATION FOR LABORATORY COURSES

The CE components are: (i) Attendance for laboratory sessions, (ii) Experiment (Lab) report on completion of each set of experiments, (iii) Laboratory skill and (iv) Quiz/test.



The marks for the components of practical for continuous evaluation shall be as shown below:

1	Attendance	5 marks
2	Record (lab report)	5 marks
3	Test	5 marks
4	Performance, punctuality and skill	5 marks

## 1.2. Components of CE for Lab Courses

### 1.2.1. Attendance:

The allotment of marks for attendance shall be as follows:

Attendance less than 75%	0 mark
75% & less than 80 %	1 mark
80% & less than 85 %	2marks
85% & less than 90 %	3 marks
90% & less than 95%	4 marks
95% & above	5 marks

The guidelines for evaluating the three main components 2-4 using sub-components are presented below.

### 1.2.2. EVALUATION OF THE EXPERIMENT (LAB) REPORT

On completion of each experiment, a report shall be presented to the course teacher. It should be recorded in a bound note-book (not on sheets of paper). The experimental description shall include aim, principle, materials/ apparatus required/used, method/procedures, and tables of data collected, equations, calculations, graphs, and other diagrams etc. as necessary and final results. Careless experimentation and tendency to cause accidents due to ignoring safety precautions shall be considered as demerits.

#### 1.2.2.1. Mode of Experiment (Lab) Report Evaluation

No	Sub components	Marks
1	Punctual submission and neat presentation	1
2	Inclusion of aim, materials, procedure, etc.	1
3	Calculations and absence of errors/mistakes	1
4	Accuracy of the result	2

### 1.2.3. EVALUATION OF THE LAB SKILL

#### 1.2.3.1. Mode of Lab Skill Evaluation

No	Sub components	Marks
1	Punctuality and completion of experiment on time	2
2	Lab skill and neat arrangements of table and apparatus in the lab	1
3	Prompt and neat recording of observations in the lab note book	1
4	Experimental skill and attention to safety	1

### 1.2.3. EVALUATION OF THE LAB QUIZ/TEST

For each lab course there shall be one lab test during a semester. The test for a lab course may be the form of a quiz practical examination. Two teachers (one of the teachers should be the course teacher) shall conduct the quiz/test within the assigned lab contact hours. The marks obtained should be converted to 5 marks for consolidating the CE.

## II.1.1. END SEMESTER EVALUATION FOR LECTURE COURSES

The end semester evaluation conducted at the end of the semester shall have 80 marks. The end semester theory examination shall be of 3 hours duration. Grades A+ to F shall be awarded as per the regulations and the general aspects of evaluation.

### II.1.1. END SEMESTER QUESTION PAPER PATTERN

QuestionNo	Typeof Question	Marks
Part A: 1-10	10 one word/one sentence	10
Part B: 11-22	8 out of 12; Short Answer	16
Part C: 23-31	6 out of 9; Short Essay	24
Part D: 32-35	2 out of 4; Essay	30
		Total = 80-80 marks

### II.2. END SEMESTER EVALUATION FOR LABORATORY COURSES

The scheme of valuation of ESE of Lab courses and their marks are discussed along with the syllabi for each of such laboratory courses in the subsequent sections. Total marks for the ESE of each practical course are 80.

### II.3. CONSOLIDATION OF MARKS

The marks of a course are consolidated by combining the marks of ESE and CE (80+20). A minimum of 40% marks is required for passing a course with a separate minimum of 35% for CE and ESE.

### III. Project/Dissertation, Factory/R&D Institute Visit and Project based Viva-voce Evaluation of the Project & Factory/Research institution visit report (Semester VI)

The Project work may be conducted individually or by a group comprising of a maximum of 5 students during the semesters V and VI. The work of each student/ group shall be guided by one faculty member. After the completion of the work, the student shall prepare 2 copies of the project report. The copies certified by the concerned guide & the Head of the Department shall be submitted prior to the completion of the sixth semester. The typed copy of the report may have a minimum of 25 pages comprising the title page, introduction, literature review, result and discussion and references. These reports shall be evaluated by a board of two examiners. The examiners shall affix their dated signatures in the facing sheet of the project report. The evaluation/viva voce of the project report shall be conducted on a separate day. The number of students may be a maximum of 16 per day or as per regulations and the general aspects of project evaluation. The students have to present their work individually before the examiners on the day of the viva-voce. The examiners shall consult each other and award grades based on the various components given in the table below. There shall be no continuous assessment for the dissertation/project work.

The Factory/research institution visit report shall be submitted during the lab course examination/viva voce. The examiners who evaluate the report (of 16 students per day) shall affix their dated signatures in the facing sheet.

## **FIRST DEGREE PROGRAMME IN ZOOLOGY**

### **Program Outcome**

- Nationalistic Outlook and contribution to National development
- Fostering global competencies, and Technical and Intellectual proficiency
- Inculcating values and Social Commitment
- Affective skills and integrity of character
- Critical Thinking, Problem solving and Research-related skills
- Environment and sustainability
- Quest for excellence

### **Programme Specific Outcome of FDP in Zoology (PSO)**

PSO1 – Understand the biological diversity through the systematic classification, basic concepts in biology, methods of collection, classification analysis and their relative role in the sustainability of the environment.

PSO2 – Understand the levels of life related concepts of cell and molecular biology, genetics and biotechnology, immunology and microbiology, physiology and biochemistry, developmental biology and experimental biology and environmental awareness

PSO3 – Understand and perform procedures as per laboratory standards in the areas of taxonomy, physiology, ecology, cell biology, developmental biology , genetics Ecology, biochemistry, immunology, clinical science and fish biology



**Semester I**  
**Language Course I**  
**19UEN111.1: LANGUAGE SKILLS**

**No of Credits: 4**

**No of hours: 90 hours (5/week)**

**COURSE OUTCOMES**

1. Demonstrate all the four basic skills – listening, speaking reading and writing.
2. Listen to lectures, public announcements and news on TV and radio.
3. The students will perform reading comprehension skills and enhance vocabulary.
4. The students are expected to identify with the mechanism of writing, and presentation.

**COURSE OUTLINE**

**Module 1 Phonetics (1 hr)**

Introduction to Phonetics – The need for phonetics – Learning Phonetics – Phonemic symbols – vowels-consonants- syllables – word stress – strong and weak forms – Practice sessions in the Language Lab

**Module 2 Listening and Speaking (1hr)**

Listening – Importance of communication – difference between Listening and Hearing – barriers to listening – listening for details – listening to public announcements – news bulletins and weather forecast – listening to instructions and directions – listening to lectures and talks

Greetings and Introductions, Participating in Small Talk/ Social Conversations, Request and seeking permission, Making enquiries and suggestions, Expressing gratitude and apologizing, Complaining – Practice sessions with the enclosed CD

**Module 3 Reading Skills (2 hrs)**

Reading – Definition – skimming/ scanning – intensive/ extensive – Barriers – Methods to improve reading – exercises –

1. Alfred Noyes : *The Highwayman*
2. Ruskin Bond : *Sounds I like to Hear*
3. Eryn Paul : *Why Germans work few hours but produce more: A Study in Culture*
4. Edited Articles : Technology:
  - a. *Mangalyaan: India's Mars Odyssey*
  - b. *The Evolution of Smart Phones*
5. Edgar Allen Poe : *The Tell-Tale Heart*

**Module 4 Writing Skills**

Greetings and Introduction, Description of person, places, things – Note taking and Note Making - outline story – dialogues – proverb expansion – paragraph writing.

**Core Text:** Hart, Steven, Aravind R. Nair and Veena Bhambhani. *Embark English for Undergraduates*. CUP, 2016.

**Further Reading**

1. Kenneth, Anderson, Tony Lynch, Joan MacLean. *Study Speaking*. New Delhi: CUP, 2008.
2. Das, NK Mohan, Gopakumar R. *English Language Skills for Communication I*. New Delhi; OUP, 2015.
3. Sreedharan, Josh. *The Four Skills for Communication*. New Delhi, CUP, 2016.
4. Smalzer, William R. *Write to be Read*. New Delhi, CUP, 2014.
5. Gardner, Peter S. *New Directions*. New Delhi, CUP, 2013.
6. Jones, Daniel. *English Pronouncing Dictionary 17th Edition*. New Delhi: CUP, 2009.

**MODEL QUESTION PAPER**  
**19UEN111.1: Language Skills**

**Time: Three hours**

**Maximum Marks: 80**

**Section-A**

Answer **all** the questions, each in a word or a sentence. Each question carries 1 mark.

1. How many sounds are there in RP?
2. Which sound is common to the following words – union, yes, Europe?
3. How is the word ‘beige’ pronounced?
4. Give an expression of a phrase used to introduce oneself.
5. State the most common expression used for making a request.
6. In weather parlance, solid precipitation in the form of ice is known as \_\_\_\_\_.
7. Why was Bess plaiting a love-knot?
8. When does the croaking of frogs sound beautiful?
9. What are most Americans reminded of when they think of Germany?
10. Why did the narrator decide to murder the old man?

**(10 x 1 = 10 marks)**

**Section-B**

Answer any **eight** of the following. Each question carries 2 marks.

11. Differentiate between listening and hearing.
12. State two tips to maintain small talk.
13. Give two responses that can be used when somebody thanks you.
14. What does the phrase ‘a cold front is moving in’ indicate in weather parlance?
15. Describe the attire of the highwayman.
16. What are the sounds that ‘walketh upon the wings of the wind’??
17. How do Germans spend their time off from work?
18. What is extensive reading?
19. How did the narrator dispose of the old man’s corpse?
20. How did Apple’s iPhone influence the smartphone design?
21. Differentiate between skimming and scanning.
22. Give two phrases used to express regret.

**(8 x 2 = 16 marks)**

**Section-C**

Answer any **six** of the following. Each question carries 4 marks.

23. Imagine you are the cook in a popular cookery show. Give instructions on how to prepare a dish of your choice.
24. What are the barriers to listening?
25. Divide the following words into syllables – bitterly, quite, elastic, satisfaction, session, illogical, lyrical, zoology
26. You have moved to a new neighbourhood. Frame a dialogue to find out the location of the grocery and bakery from a neighbour.
27. Describe the colours and sounds that lend life to the poem ‘The Highwayman’.
28. How does Bond describe the many sounds made by water?
29. List a few things that can be borrowed from German work ethics to increase efficiency in the workplace,
30. Describe the atmosphere of dread in ‘The Tell-Tale Heart’.
31. What is the primary purpose of MOM and how would its success help Indian scientists in the future?

**(6 x 4 = 24 marks)**

**Section- D**

Answer any **two** of the following, each in about three hundred words. Each question carries 15 marks.

32. Read the short lecture below and prepare notes:

The work of the heart can never be interrupted The heart’s job is to keep oxygen rich blood flowing through the body. All the body’s cells need a constant supply of Oxygen, especially those in the brain. The brain cells like only four to five minutes after their oxygen is cut off, and death comes to the entire body. The heart is a specialized muscle that serves as a pump. This pump is divided into four chambers

connected by tiny doors called valves. The chambers work to keep the blood flowing round the body in a circle. At the end of each circuit, veins carry the blood to the right atrium, the first of the four chambers. 2/5 oxygen by then is used up and it is on its way back to the lung to pick up a fresh supply and to give up the carbon dioxide it has accumulated. From the right atrium the blood flows through the tricuspid valve into the second chamber, the right ventricle. The right ventricle contracts when it is filled, pushing the blood through the pulmonary artery, which leads to the lungs – in the lungs the blood gives up its carbon dioxide and picks up fresh oxygen. Then it travels to the third chamber the left atrium. When this chamber is filled it forces the blood through the valve to the left ventricle. From here it is pushed into a big blood vessel called aorta and sent round the body by way of arteries. Heart disease can result from any damage to the heart muscle, the valves or the pacemaker. If the muscle is damaged, the heart is unable to pump properly. If the valves are damaged blood cannot flow normally and easily from one chamber to another, and if the pacemaker is defective, the contractions of the chambers will become un-coordinated. Until the twentieth century, few doctors dared to touch the heart. In 1953 all this changed after twenty years of work, Dr. John Gibbon in the USA had developed a machine that could take over temporarily from the heart and lungs. Blood could be routed through the machine bypassing the heart so that surgeons could work inside it and see what they were doing. The era of open heart surgery had begun. In the operating theatre, it gives surgeons the chance to repair or replace a defective heart. Many patients have had plastic valves inserted in their hearts when their own was faulty. Many people are being kept alive with tiny battery operated pacemakers; none of these repairs could have been made without the heart – lung machine. But valuable as it is to the surgeons, the heart lung machine has certain limitations. It can be used only for a few hours at a time because its pumping gradually damages the blood cells.

33. Frame dialogues for the following situations
  - a. Setting up an appointment by telephone at a doctor's clinic.
  - b. Debating with a friend which movie to watch and the reason for your choice
  - c. Two old friends who meet accidentally in a park.
34. Attempt a critical summary of the poem 'The Highwayman'.
35. Comment on Bond's choice of sounds and what they convey about life in India.

**(15 x 2 = 30 marks)**

## Language course II (Additional Language I)

### 19UFR111.1: COMMUNICATION SKILLS IN FRENCH

No of Credits: 3

No of hours: 4 Hrs/week

#### **COURSE OBJECTIVES:**

1. To make the students conversant with a modern foreign language.
2. To introduce the students to the sounds of French.
3. To encourage students to use French for basic communication in everyday situations.
4. To acquaint students with the basics of writing simple sentences and short compositions.

#### **COURSE OUTCOME:**

The students would be able to perceive conversational French and to use French for basic communication in daily life.

#### **SYLLABUS:**

NAME OF TEXT: **ECHO-A1 méthode de français**

Authors: J. Girardet & J. Pecheur

Publisher: CLE INTERNATIONALE

- Leçon- 0 : Parcours d'initiation (Pages : IX – XVI)
- Leçon – 1 : Vous Comprenez ? (Pages : 6 – 13)
- Leçon 2 : Au Travail ! (Pages : 14 – 21)

Reference books :

1. Connexions – Niveau 1 By Régine Mérieux and Yves Loiseau
2. Le Nouveau Sans Frontières Vol I by Philippe Dominique
3. Panorama Vol I by Jacky Girardet



**MODEL QUESTION PAPER**  
**19UFR111.1: COMMUNICATION SKILLS IN FRENCH**

**TIME: 3HRS**

**MAX MARKS: 80**

**PART-A**

**Répondez à toutes questions suivantes:**

1. Nommez une avenue française ?
2. Est-ce que vous parlez français ?
3. Comment vous appelez-vous ?
4. Quelle est votre nationalité ?
5. Tu habites où ?
6. Quelle profession aimez-vous ?
7. Où est la tour de Londres ?
8. Nommez un pays francophone ?
9. Qu'est-ce que c'est « Le Monde » ?
10. Quel est le nom du chant national français ?

(10x1=10)

**PART-B**

**Répondez à 8 questions suivantes :**

11. Complétez avec « un, une, des ou le, la, l', les »:
  - Bono, qui est-ce ?
  - C'est .....chanteur. C'est .....chanteur du groupe U2.
  - Qui est Nicolas Sarkozy ?
  - C'est .....président de la France.
  - Comment s'appelle .....guide de groupe ?
  - Elle s'appelle Marie.
12. Complétez avec « à, au, en » :
  - Où habite Adriano ?.....Brésil ? .....Argentine ?
  - Il habite .....Sao Paulo, .....Brésil.
13. Complétez avec « un, une, des » :
  - a. ....rue
  - b. ....quartier
  - c. ....restaurants
  - d. ....théâtre.
14. Répondez :
  - a. Tu aimes les chansons françaises ?  
Non, .....
  - b. Tu apprends une langue étrangère ?  
Oui, .....
15. Complétez avec « de, du, de la, de l', des » :
  - a. La pyramide .....Louvre.
  - b. Le nom.....étudiant.
  - c. Un tableau .....Monet.
  - d. Un professeur .....université de Mexico.
16. Ecrivez quatre petits mots de politesse.
17. Reliez :

a. Renault	-	des avions
b. Jean-Paul Gaultier	-	des montres
c. Airbus	-	des voitures
d. Rollex	-	des parfums
18. Complétez « le, la, l' les » :
  - a. ....rue de Rivoli à Paris.
  - b. ....hôtel Daneli à Venise
  - c. ....Parlement européen de Strasbourg.
  - d. ....musée du Louvre à Paris.

19. Mettez les phrases aux négatifs :
- Marie parle français.
  - Je parle italien.
  - Vous comprenez l'italien ?
  - Melissa connaît Florent.
20. Ecrivez les numéros en lettres :
- 18
  - 25
  - 30
  - 12
21. Quelle est leur nationalité ?
- Céline Dion
  - Michael Jackson
22. Associez :
- |                   |   |          |
|-------------------|---|----------|
| a. Un journal     | - | la BBC   |
| b. Un film        | - | le Prado |
| c. Un musée       | - | le Times |
| d. Une télévision | - | Titanic  |

(8x2=16)

### PART-C

Répondez à 6 questions suivantes :

23. Répondez :
- Vous êtes français ?
  - Vous parlez bien français ?
  - Vous comprenez le mot « Bonjour » ?
  - Vous habitez à Paris ?
24. Conjuguez les verbes :
- Ils (parler) français.
  - Nous (connaître) Marseille.
  - Je (être) secrétaire du festival.
  - Elles (comprendre) bien italien.
25. Complétez avec le masculin et le féminin :
- Un étudiant - .....
  - Un Brésilien - .....
  - Une artiste - .....
  - Un acteur – une .....
26. Accordez le group du nom :
- Les [bon] [restaurant]
  - Les [grand] [voiture]
  - Les [femme] [beau et célèbre]
  - Les [hôtel] [international]
27. Remplissez la fiche de renseignements ci-dessous :
- Nom : .....
- Nom de jeune fille : .....
- Prénoms : .....
- Nationalité : .....
- Adresse : .....
- N° de téléphone : .....
- Adresse électronique : .....
28. Associez les personnes et les professions :
- |                    |   |                 |
|--------------------|---|-----------------|
| a. Pablo Picasso   | - | scientifique    |
| b. Beethoven       | - | homme politique |
| c. Albert Einstein | - | artiste         |
| d. Barack Obama    | - | musician        |

29. Complétez avec « un, une, des, le, la, l', les » :
- J'ai .....amis à Aix-en-Provence. Je connais .....professeurs de français de .....université et .....directeur de l'hôtel Ibis.
30. Vous êtes dans la rue avec votre ami(e). Il/elle dit bonjour à un garçon ou à une fille que vous ne connaissez pas. Vous lui demandez « Qui est-il/elle ? ». Rédigez un court dialogue.
31. Vous cherchez des amis français. Vous écrivez un message pour le site « Contact France ». Rédigez ce message.

(6x4=24)

#### **PART-D**

**Répondez à 2 questions suivantes :**

- 32. Présentez-vous.
- 33. Présentez votre ville.
- 34. Ecrivez une brève carte postale à un(e) ami(e) française.
- 35. Vous interrogez votre voisin(e) de vos goûts. Rédigez ce dialogue.

(2x15=30)

**Language course II (Additional Language I)**  
**19UHN111.1: PROSE AND ONE ACT PLAYS**

**No of Credits: 3**

**No of hours: 4 Hrs/week**

**Aims of the Course / Objectives**

To sensitize the student to the aesthetic and cultural aspects of Literary appreciation and analysis. To introduce modern Hindi prose to the students and to understand the cultural, social and moral values of modern Hindi prose. To understand the One Act Plays.

**Course Outcome**

Students could get knowledge about the various forms of prose like Kahani, Atmakatha, Sansmaran, Rekhachitra, Vyangya, Jeevani etc. understanding various trends in Hindi and get an awareness of theatre in the context of One Act Plays.

**Module 1 & 2**

Prose & One Act Play

Prescribed textbook : ‘Gadya Prathibha Evam Ekanki’

Edited by Dr. Girijakumari R.

Published by Lokbharathi Prakashan, Allhabad

Lessons to be studied

Gadya Prathibha

- |                               |                     |
|-------------------------------|---------------------|
| 1. Manthra                    | - Premchand         |
| 2. Shishtachar                | - Bheeshma Sahni    |
| 3. Chori aur Prayachith       | - Mahatma Gandhi    |
| 4. Gurudev                    | - Haribhau Upadyay  |
| 5. Mein Narak se bol raha hum | - Harisankar Parsai |

Ekanki (One Act Play)

1. Ande ke chilke – Mohan Rakesh
2. Mahabharath ki ek Sanch – Bharathbhooshan Agarval
3. Bahoo ki Vida – Vinod Rasthogi

Books for General Reading

- |                           |   |
|---------------------------|---|
| 1. Hindi ka Gadya Sahitya | - Ramachandra Tivari<br>Rajkamal Prakashan  |
| 2. Hindi Ekanki           | - Siddhnath Kumar<br>Radhakrishna Prakashan |
| 3. Ekanki aur Ekankikar   | - Ramcharan Mahendra<br>Vani Prakashan      |

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**First Semester B.A/B.Sc Degree Examination**

**Language Course (Additional Language I) - HINDI**

**19UHN 111.1 Prose and One Act Plays**

**(2019 Admission onwards)**

**Time : 3 Hrs.**

**Max.Marks : 80**

**I. एक शब्द या वाक्य में उत्तर लिखिए?**

1. 'चोरी और प्रायश्चित' गद्य की किस विधा की रचना है?
2. 'गुरुदेव' नामक निबन्ध के रचनाकार कौन है?
3. 'आषाढ का एक दिन' किसका नाटक है?
4. महाभारत युद्ध में परास्त दुर्योधन कहाँ छिप गये?
5. प्रेमचन्द का जन्म कहाँ हुआ?
6. भीष्म साहनी की आत्मकथा का नाम लिखिए?
7. 'बहु की विदा' की बहुएँ कौन-कौन हैं?
8. 'संगीत नाटक अकादमी' पुरस्कार से सम्मानित विनोद रस्तोगी का नाटक कौन सा है?
9. 'सत्य के मेरे प्रयोग' किसकी आत्मकथा है?
10. डाक्टर चड्ढा किस कहानी का पात्र है? (1×10=10 marks)

**II. किन्हीं आठ प्रश्नों के उत्तर पचास शब्दों में लिखिए?**

11. भीष्म साहनी का परिचय दीजिए?
12. 'नहीं-नहीं कैलाश, ईश्वर के लिए इसे छोड़ दो। तुम्हारे पैरों पडती हूँ।" यह किसने किससे किस अवसर पर कहा?
13. गोपाल ने अंडा खाने के लिए कमरे में क्या प्रबन्ध किया है?
14. आत्मकथा और जीवनी में कौन-सा अन्तर है?
15. युधिष्ठिर दुर्योधन को कैसे ललकारा?
16. गाँधीजी के प्रायश्चित का पिताजी पर कौन-सा प्रभाव पडा?
17. कविवर टैगोर ने अंग्रेजी शासन की किस नीति की निन्दा की है?
18. अपने कुत्ते को स्वर्ग में देखकर आदमी की प्रतिक्रिया क्या थी?
19. बहु और बेटी के प्रति जीवनलाल का दृष्टिकोण क्या था?
20. 'मंत्र' कहानी का सन्देश क्या है?
21. "मेरी चोट का इलाज बेटी की ससुरालवालों ने दूसरी चोट से कर दिया है।" जीवनलाल ऐसा क्यों कहता है?
22. परिवार के सब लोग एक-दूसरे से छिपाकर क्यों अंडे खाते हैं? (2×8=16 marks)

### III. किन्हीं छह प्रश्नों के उत्तर 120 शब्दों में लिखिए?

23. "मैं तो न जाऊँ, चाहे वह दस लाख भी दें। मुझे दस हजार या दस लाख लेकर क्या करना है? कल मर जाऊँगा फिर कौन भोगनेवाला बैठा हुआ है।" सप्रसंग व्याख्या कीजिए?
24. हेतु की चरित्रगत विशेषताओं पर प्रकाश डालिए?
25. 'अंडे के छिलके' एकांकी का उद्देश्य क्या है?
26. "युधिष्ठिर जाओ, जाओ मुझे मरने दो, तुम अपनी महत्वाकांक्षा को फलते-फूलते देखो। जाओ गुरुजनों और बन्धु-बान्धवों के रक्त से अभिषेक कर राजसिंहासन पर विराजो।" सप्रसंग व्याख्या कीजिए।
27. भगत ने कैलाश को कैसे बचाया?
28. प्रेमचन्द के कहानी साहित्य का परिचय दीजिए?
29. कविवर टैगोर के गार्हस्थ जीवन पर प्रकाश डालिए?
30. भूखे आदमी और कुत्ते की मौत की तुलना कीजिए?
31. दहेज की प्रथा एक अभिशाप है - 'बहू की विदा' एकांकी के आधार पर इस उक्ति की चर्चा कीजिए।

(4×6=24 marks)

### IV. किन्हीं दो प्रश्नों के उत्तर 250 शब्दों में लिखिए?

32. एकांकी के तत्त्वों के आधार पर 'महाभारत की एक साँझ' एकांकी की समीक्षा कीजिए?
33. 'शिष्टाचार' कहानी का सारांश लिखकर उसकी विशेषताओं पर प्रकाश डालिए?
34. 'बहू की विदा' एकांकी में चित्रित समस्याओं पर प्रकाश डालिए?
35. 'मैं नरक से बोल रहा हूँ' में मनुष्य की अकर्मण्यता और खोखले आदर्शों पर व्यंग्य किया है। इस कथन की पुष्टि कीजिए।

(15×2=30 marks)

സെമസ്റ്റർ : I  
 കോഴ്സ് കോഡ് : 19UML111.1  
 ലാംഗ്വേജ് കോഴ്സ് : II (അഡീഷണൽ ലാംഗ്വേജ് : I)  
 സമയക്രമം : ആഴ്ചയിൽ 4 മണിക്കൂർ (18x4=72മണിക്കൂർ)  
 ക്രെഡിറ്റ് : 3

**മലയാള കവിത**  
**പുസ്തകം : കാവ്യമാലിക**  
**(കേരള സർവ്വകലാശാലാ പ്രസിദ്ധീകരണം)**

**പഠനലക്ഷ്യങ്ങൾ, ഫലങ്ങൾ:** (1) മലയാള കവിതയെ സംബന്ധിച്ച് സാമാന്യജ്ഞാനം നൽകുക. (2) പഠിതാക്കളിൽ കാവ്യഭിരുചി വളർത്തുക. (3) ആസ്വാദനത്തിനും വിശകലത്തിനും സജ്ജരാക്കുക. (4) മേൽപ്പറഞ്ഞ ലക്ഷ്യങ്ങൾ മുൻനിറുത്തി സെമിനാർ/അസൈൻമെന്റ് നൽകുക

**പാഠ്യപദ്ധതി:**

**മൊഡ്യൂൾ ഒന്ന് (18 മണിക്കൂർ) കവിത -ആധുനിക കവിത്രയം വരെ**

1. എഴുത്തച്ഛൻ - ജരിതാവിലാപം: ഖാണ്ഡവദഹനം  
(അരണ്യം തന്നിൽ.....കല്പിച്ചു പോയാളവൾ) 36 വരി
2. വടക്കൻ പാട്ട് - ഉണ്ണിയാർച്ചകുത്ത് കാണാൻ പോയ കഥ(ആറ്റുംമണമേലൈ ..... വേഗത്തിൽ പോകുന്നു ഉണ്ണിയാർച്ച)
3. കുമാരനാശാൻ - ചണ്ഡാലഭിക്ഷുകി - (തുമതേടും....തെല്ലിട സുന്ദരി 96 വരി)

**മൊഡ്യൂൾ ര് (18 മണിക്കൂർ) കവിത്രയാനന്തര കവിത**

4. ചങ്ങമ്പുഴ - മനസിനി
5. വൈലോപ്പിള്ളി - ജലസേചനം
6. ഇടശ്ശേരി - പുത്തൻകലവും അരിവാളും
7. എൻ.വി. കൃഷ്ണവാര്യർ - എലികൾ

**മൊഡ്യൂൾ മൂന്ന് (18 മണിക്കൂർ) ആധുനിക പൂർവ്വ- ആധുനിക ഘട്ടം**

8. ഒ.എൻ.വി - ഒരു തൈ നടുമ്പോൾ
9. സുഗതകുമാരി - കാളിയമർദ്ദനം
10. അയ്യപ്പപ്പണിക്കർ - ഗോപികാദണ്ഡകം
11. എൻ.എൻ.കക്കാട് - സഫലമീ യാത്ര

**മൊഡ്യൂൾ നാല്(18 മണിക്കൂർ) ആധുനിക - ആധുനികാനന്തരഘട്ടം**

12. കടമ്മനിട്ട രാമകൃഷ്ണൻ - കുഞ്ഞേ മൂലപ്പാൽ കുടിക്കരുത്
13. ശ്രീകുമാരൻതമ്പി - അമ്മയ്ക്കൊരു താരാട്ട്

- 14. എ. അയ്യപ്പൻ - നിനക്ക്
- 15. റോസ്മേരി - ചാഞ്ഞുപെയ്യുന്ന മഴ
- 16. റഫീക്ക് അഹമ്മദ് - മൊബൈൽഫോൺ
- 17. വി.എം. ഗിരിജ - ജീവജലം

**സഹായകഗ്രന്ഥങ്ങൾ**

- 1. ആധുനിക സാഹിത്യ ചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - ഡോ.കെ.എം.ജോർജ്ജ് (എഡിറ്റർ)
- 2. കൈരളിയുടെ കഥ - എൻ. കൃഷ്ണപിള്ള
- 3. മലയാള കവിതാസാഹിത്യ ചരിത്രം - ഡോ.എം. ലീലാവതി
- 4. കവിയും കവിതയും രാം വാല്യം - പി.നാരായണക്കുറുപ്പ്
- 5. കവിയരങ്ങ് - കെ.എസ്. നാരായണപിള്ള
- 6. കുമാരനാശാന്റെ കാവ്യപ്രപഞ്ചം - മലയാളവിഭാഗം, കേരള സർവ്വകലാശാല
- 7. ഖണ്ഡകാവ്യ പ്രസ്ഥാനം - എം.വി. പണിക്കർ
- 8. ചങ്ങമ്പുഴ കൃഷ്ണപിള്ള - എൻ.മുകുന്ദൻ
- 9. ചങ്ങമ്പുഴ കൃഷ്ണപിള്ള നക്ഷത്രങ്ങളുടെ സ്നേഹ ഭാജനം - എം.കെ.സാനു
- 10. കുമാരനാശാന്റെ രചനാശിൽപ്പം - എം.എം. ബഷീർ
- 11. കാല്പനികത - ഹൃദയകുമാരി
- 12. ആധുനിക മലയാളസാഹിത്യം - പി.കെ. പരമേശ്വരൻ നായർ
- 13. ഇടശ്ശേരിക്കവിത - മേലത്തു ചന്ദ്രശേഖരൻ
- 14. സിംബലിസം മലയാളകവിതയിൽ - ഡോ.കെ.എം. വേണുഗോപാൽ
- 15. ആധുനികത മലയാളകവിതയിൽ - ഡോ.എൻ.അജയകുമാർ
- 16. കേരളകവിതയിലെ കലിയും ചിരിയും - പ്രസന്നരാജൻ
- 17. ഉത്തരാധുനികത - ബി.ഉണ്ണികൃഷ്ണൻ
- 18. മലയാളകവിതാപഠനങ്ങൾ - സച്ചിദാനന്ദൻ
- 19. മലയാളകവിതയിലെ ഉയർന്നശിരുകൾ - ഡോ.എം.എൻ. രാജൻ
- 20. കടമ്മനിട്ടയിലെ കവി - ഡോ.കെ.എസ്.രവികുമാർ
- 21. ദലിത് പഠനം സ്വത്വം,സംസ്കാരം സാഹിത്യം - ഡോ. പ്രദീപൻ പാമ്പിരിക്കുന്ന്
- 22. ആധുനിക മലയാള കവിതയിലെ സ്ത്രീപക്ഷസമീപനങ്ങൾ - ഡോ.പി.ഗീത
- 23. പാഠങ്ങൾ പഠനങ്ങൾ - സച്ചിദാനന്ദൻ
- 24. കവിതവായനയും പ്രതികരണവും - എൻ.രാജൻ
- 25. കവിതയിലെ പുതുവഴികൾ - നെല്ലിക്കൽ മുരളീധരൻ



**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**First Semester BA Degree Examination May 2019**

**CBCSS**

**19UML 111.1**

**മലയാള കവിത (കാവ്യമാലിക)**

**Time : 3 Hrs.**

**Max.Marks : 80**

**Section A**

**I. ഒറ്റവാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരമെഴുതുക. 1 മാർക്ക് വീതം**

1. ആശാനെ വിപ്ലവത്തിന്റെ ശുക്രനക്ഷത്രം എന്ന് വിശേഷിപ്പിച്ച നിരൂപകൻ ആര്?
2. ആധുനിക കവിത്രയം ആരെല്ലാം?
3. കാല്പനിക പ്രസ്ഥാനത്തിലെ പ്രധാനപ്പെട്ട രണ്ട് കവികളുടെ പേരെഴുതുക.
4. 'ശക്തിയുടെ കവി' എന്ന് വിശേഷിപ്പിക്കുന്നതാരെ?
5. ആധുനിക മലയാള ഭാഷയുടെ പിതാവ് ആര്?
6. 'ആർദ്രമീ ധനുമാസ രാവുകളിലൊന്നിൽ' - ഏത് കവിതയിലെ വരികളാണ്?
7. മലയാളത്തിലെ രണ്ട് പരിസ്ഥിതി കവിതകളുടെ പേരെഴുതുക.
8. ഉണ്ണിയാർച്ച കൂത്ത് കാണാൻ പോയ കഥ ഏത് സാഹിത്യശാഖയിൽ പെടുന്നു?
9. അധികാരം കൊയ്യണമാദ്യം നാം-  
അതിനു മേലാകട്ടെ പൊന്നാര്യൻ" - ഏതു കവിതയിലേതാണ് ഈ വരികൾ?
10. "സ്വന്തമെന്ന പദത്തിനെന്തർത്ഥം  
ബന്ധമെന്ന പദത്തിനെന്തർത്ഥം" - ഈ വരികൾ മലയാളികൾക്കു സമ്മാനിച്ച കവിപ്രതിഭ ആര്?

(1×10=10)

**Section B**

**II. ഏതെങ്കിലും 8 ചോദ്യത്തിന് അരപ്പുറത്തിൽ കവിയാതെ ഉത്തരമെഴുതുക 2 മാർക്ക് വീതം.**

11. "നിർഘൃണനായ പിതാവിവറെയുപേക്ഷിച്ചാൻ"-വിവക്ഷിതമെന്ത്?
12. "പെണ്ണായ ഞാനും വിറയ്ക്കുന്നില്ല-  
ആണായ നിങ്ങൾ വിറപ്പതെന്തേ?" - ആരുടേതാണീ വാക്കുകൾ?
13. "അല്ലെല്ലെന്തു കഥയിതു കഷ്ടമേ?" - വിവക്ഷിതം വ്യക്തമാക്കുക.
14. ഒറ്റപ്പത്തിയൊടായിരമുടലുകൾ  
കെട്ടുപിണഞ്ഞൊരു മണിനാഗം" - പരാമർശമെന്ത്?

**PTO**

15. “സങ്കടം കാൺകിലും കാണാതെ പോകയോ  
മംഗലേ നീയൊരു മങ്കയല്ലേ?” - സന്ദർഭമേത്?
16. “നിങ്ങൾക്കിതൊന്നും മനസ്സിലാകുന്നില്ല” - ഈ ഉപഹാസത്തിന്റെ അർത്ഥമെന്ത്?
17. ‘ഒരു തൈ നടുമ്പോൾ’ എന്ന കവിതയുടെ പ്രമേയമെന്ത്?
18. ‘വരളുന്ന ചുണ്ടിലെ നനവാർന്ന ഓർമ്മ’യെന്നു കവി വിശേഷിപ്പിച്ചതെന്തിനെ?
19. “അന്യോന്യമുന്നു വടികളായ് നിൽക്കാം” - വിവക്ഷിതമെന്ത്?
20. ‘പുതനാമന്ത്രം പുരണ്ടതായി’ കവി കാണുന്നതെന്തെല്ലാം?
21. ‘നിനക്ക്’ എന്ന കവിതയുടെ കേന്ദ്രതലമെന്ത്?
22. ‘അമ്മയ്ക്കൊരു താരാട്ട്’ എന്ന കവിതയുടെ രചനാ പശ്ചാത്തലം വ്യക്തമാക്കുക.

(8×2=16)

**Section C**

**III. ഏതെങ്കിലും 6 ചോദ്യത്തിന് ഒന്നരപുറത്തിൽ കവിയാതെ ഉത്തരമെഴുതുക 4 മാർക്ക് വീതം.**

23. എഴുത്തച്ഛനെ ആധുനിക മലയാളഭാഷയുടെ പിതാവ് എന്ന് വിശേഷിപ്പിക്കുന്നതിനുള്ള കാരണമെന്ത്?
24. നാടൻപാട്ടുകളെ കുറിച്ച് ഒരു ലഘുവിവരണം തയ്യാറാക്കുക.
25. കാല്പനികതയുടെ സവിശേഷതകൾ മനസ്സിലാക്കിയെ ആസ്പദമാക്കി വിശദീകരിക്കുക.
26. ജനങ്ങളിൽ പുതിയ കർമ്മവീര്യം ഉണർത്തുന്നതാണ് ഇടശ്ശേരി കവിതകൾ. പുത്തൻ കലവും അതി വാളും ആസ്പദമാക്കി വിചിന്തനം ചെയ്യുക.
27. സുഗതകുമാരി കവിതകളിലെ ബിംബകല്പന കാളിയമർദ്ദനത്തെ ആസ്പദമാക്കി വിശകലനം ചെയ്യുക.
28. കുഞ്ഞേ മൂലപ്പാൽ കുടിക്കരുത് ഉണർത്തുന്ന സാമൂഹ്യമായ വെല്ലുവിളികൾ പരിശോധിക്കുക.
29. അമ്മയ്ക്കൊരു താരാട്ട് എന്ന കവിതയ്ക്ക് ഒരു ലഘു ആസ്വാദനം തയ്യാറാക്കുക.
30. റഫീക്ക് അഹമ്മദിന്റെ കവിതകളിലെ സമകാലീന ബിംബങ്ങൾ പരിശോധിക്കുക.
31. ചുഷണം ചെയ്യപ്പെടുന്ന പരിസ്ഥിതിയും സ്ത്രീയും ജീവജലത്തിൽ എപ്രകാരം ആവിഷ്കൃതമാകുന്നു എന്ന് ചർച്ച ചെയ്യുക.

(6×4=24)

**Section D**

**IV. മൂന്നുപുറത്തിൽ കവിയാതെ രണ്ടുചോദ്യത്തിന് ഉത്തരമെഴുതുക. 15 മാർക്ക് വീതം.**

32. ആശാന്റെ സ്നേഹസങ്കല്പം ചണ്ഡാലഭിക്ഷുകിയെ ആസ്പദമാക്കി വിശകലനം ചെയ്യുക.
33. ആക്ഷേപഹാസ്യ പ്രവണത ‘എലികൾ’ എന്ന കവിതയെ ആസ്പദമാക്കി ചർച്ച ചെയ്യുക.
34. അയ്യപ്പ പണിക്കരുടെ ഗോപികാദണ്ഡകം എന്ന കവിതയ്ക്ക് ഒരു ആസ്വാദനം തയ്യാറാക്കുക.
35. റോസ്മേരിയുടെ ചാഞ്ഞുപെയ്യുന്ന മഴയിലെ സ്ത്രീ സ്വത്വാവിഷ്കാരം ചർച്ചചെയ്യുക.

(15×2=30)

## Foundation Course I

### 19UEN121: WRITINGS ON CONTEMPORARY ISSUES

No of Credits: 2

No of hours: 72(4 per week)

#### Course Outcome:

1. To sensitize students to the major issues in the society and the world.
2. To encourage them to read literary pieces critically.
3. To have an overall understanding of some of the major issues in the contemporary world.
4. To respond empathetically to the issues of the society.
5. To understand the grave issues of the society, respond to it and to bring about positive changes in individual outlook
6. To read literary texts critically.

#### Module I: Human Rights

Grim Realities, Hopeful Hues	: V.R Krishna Iyer
Poverty is the Greatest Threat	: N.R Madhava Menon
The Little Black Boy	: William Blake

#### Module II: Globalization

Going Local; the Economics of Happiness	: Helene Norberg-Hodge
Towards Sustainable and Beneficial Co-existence	: Christabel P.J
Freedom	: Balachandran Chullikkad

#### Module III: Gender

Violence Against Women	: Gail Omvedt
The Goddess of Revenge	: Lalithambika Antharjanam

#### Module IV: Intoxicants/ Drug Abuse

The Ban of Alcoholism	: Dr Adithi.N
The Substance Use Disorders in Children	: Dr Ajeesh PR and Adolescents
The Alcoholic at the Dawn	: Jeet Thayil

**Core Text:** 'Perspectives on Contemporary Issues' Publisher: : 'Emerald' Chennai.

**MODEL QUESTION PAPER**  
**19UEN121: Writings on Contemporary Issues**

**Time: Three hours**

**Maximum Marks: 80**

**Section-A**

Answer **all** the questions, each in a word or a sentence. Each question carries 1 mark.

1. Expand NHRC.
2. What according to Dr Menon is the foundation of all rights?
3. What is the cloud referred to in the poem, "The Little Black Boy"?
4. What has been the focus of the women's liberation movement in India since its inception?
5. What information did Tatri hide from the men who were attracted towards her?
6. What is TRIPS?
7. What is meant by the term, "food miles"?
8. Why is sleep a kind of freedom?
9. What is pre-alcoholic phase?
10. Why does the cup rattle?

**(10 x 1 = 10 marks)**

**Section-B**

Answer any **eight** of the following. Each question carries 2 marks.

11. What is the significance of PILS in our society?
12. How can Third World economies counter the ill effects of globalisation?
13. What does the poet convey by the phrase "bereav'd of light"?
14. What do you know of the "virangana" in Indian culture?
15. According to the woman who appears in the story, what kind of a woman was Tatri?
16. Explain the process by which globalisation occurs in a country.
17. What is the Breakaway Strategy advocated by Hodge?
18. In the poem, 'Freedom', what does the train running north stand for?
19. How does alcohol affect the nervous system?
20. What are the after effects of the misuse of depressants?
21. How can substance abuse be diagnosed in adolescence?
22. What does the phrase "beached whale convey"?

**(8 x 2 = 16 marks)**

**Section-C**

Answer any **six** of the following. Each question carries 4 marks.

23. According to V.R. Krishna Iyer, what are the grim ground realities in India at the close of the millennium?
24. Explain the mother's worldview in "The Little Black Boy".
25. How does the social structure influence violence perpetuated against women in India?
26. How did the woman try to avenge her mother, her sisters, and countless other women who had been weak and helpless?
27. What does Joseph E. Stiglitz say about pro-globalisation policies worldwide?
28. Comment on the biblical overtones in 'Freedom'.
29. How is alcoholism categorised?
30. Write a note on the treatment of adolescent substance abuse?
31. Explore the impact of the unusual imagery in 'The Alcoholic at Dawn'.

**(6 x 4 = 24 marks)**

**Section- D**

Answer any **two** of the following, each in about three hundred words. Each question carries 15 marks.

32. Write an essay on the imagery and symbolism in the poem, 'The Little Black Boy'.
33. How does Gail Omvedt examine violence against women in India?
34. Explain Hodge's views on globalisation as outlined in the article, 'Going Local'.
35. "Jeet Thayil's poems are honest in their autobiographical touch, unique in their imagery and attention to form." Explain this statement in the light of 'The Alcoholic at Dawn'.

**(15 x 2 = 30 marks)**

## Core Course I

### 19UZO141: Animal Diversity I

No. of credits: 3

Total hours 54

No. of instructional hours per week: 2+2

#### Course Outcome (CO)

CO1: Describe general taxonomic rules on animal classification

CO2: Classify Phylum Porifera to Echinodermata with taxonomic keys

CO3: Describe Phylum Nematoda and give examples of pathogenic Nematodes

CO4: Classify Protista up to phylum Platyhelminthes using examples from parasitic adaptation

CO5: To learn the diagnostic characters of each phyla through brief studies of typical examples

CO6: To obtain an overview of economically important invertebrate fauna

#### Module I: Introduction to Zoology and Taxonomy

4 hrs

Define Zoology, Taxonomy- definition, history, Modern trends and importance (**Numerical**, Evolutionary, Cladistic and Molecular taxonomy). Two kingdom classification and Whittaker's five kingdom classification, Advantages and disadvantages of five kingdom classification. (Self-study), Components of classification: Taxonomic hierarchy- taxon, category and rank. Linnaean hierarchy, Nomenclature, International Code of Zoological Nomenclature (ICZN), Principles of Nomenclature, Rules of nomenclature, Requisites –uni, bi and trinomialism. Taxonomic aids.

#### Module II: Kingdom Protista

6 hrs

General characters (Self-study), Structure and Zoological importance of Actinophrys, *Noctiluca*, *Paramecium* and *Opalina*. Parasitic protozoans –*Entamoeba*, and *Plasmodium*: morphology, life history, pathogenicity and prophylaxis.

#### Module III: Kingdom Animalia

6 hrs

Outlines of classification – Sub kingdom Mesozoa, Sub kingdom Parazoa, Sub kingdom Eumetazoa. Levels of organization– cellular, tissue, organ (Self-study). Divisions of Eumetazoa- Radiata, Bilateria, Acoelomata, Pseudocoelomata, Eucoelomata, Protostomia, Deuterostomia. Sub kingdom Mesozoa- general characters, eg. *Rhopalura*. Subkingdom Parazoa-eg. *Trichoplax adhaerens*, Phylum Porifera- General Characters (self-study) Class Calcispongia- eg. *Sycon*, Class Hydrospongia, eg. *Euplectella*, Class - Desmospongia - eg. *Spongilla*. General topic – Canal system in Sponges.

#### Module IV: Phylum Cnidaria

4hrs

General characters (Self-study). Classes-Hydrozoa eg. *Obelia*, *Physalia*; (Polymorphism) Class – Scyphozoa eg. *Aurelia*, *Rhizostoma*; Class – Anthozoa eg. *Sea anemone*, *Madrepora*. General topic: Corals and coral reefs.

#### Module V - Phylum Platyhelminthes

8 hrs

General characters (Self-study). Classes- Turbellaria eg. *Planaria*, Mention Regeneration, Trematoda eg. *Fasciola* (brief account of life cycle); Cestoda, eg. *Taenia solium* (**life cycle**).

**Phylum Nematoda:** general characters (self-study), parasitic nematodes- Morphology, Life history, Pathogenicity and Prophylaxis of *Ascaris*, *Ancylostoma*, *Enterobius*, *Wuchereria*.

**Phylum Annelida:** General characters (self-study). Classification: Polychaeta: eg. *Nereis* (Mention *Heteronereis*), *Arenicola*; Class Oligochaeta eg. *Earthworm*, Class Hirudinea eg. *Leech*. General topic – Vermiculture.

#### Module VI- Phylum Arthropoda

16hrs

General characters (Self-study), Type- *Panurgus*. Mention the classes. eg. *Limulus*, *Eupagurus*, *Sacculina*, termite, Honey bee and scorpion. Pests of Paddy- *Leptocorisa* and *Spodoptera*, Pests of stored food grains- *Sitophilus oryzae*, *Trilobium castaneum*. Coconut pests- *Oryctes rhinoceros* and *Eriophyes guerreronis*

**Phylum Onychophora:** General characters (Self-study) eg. *Peripatus* (Evolutionary significance). General topic: Apiculture, Sericulture.

## Module VII - Phylum Mollusca

10hrs

General characters (self-study), Class-Monoplacophora, eg. *Neopilina*; Class - Amphineura, eg. *Chiton*; Class-Aplacophora, eg. *Neomenia*, Class -Gastropodaeg. *Pila*; Class -Scaphopoda, eg. *Dentalium*; Class- Pelicypoda eg. *Perna*; Class- Cephalopoda, eg. *Sepia*

General topic- Economic importance of mollusca - emphasis on pearl culture.

**Phylum Echinodermata:** General characters (self-study) Classes- Asterozoa, eg. *Asterias*; Ophiurozoa, eg. *Ophiothrix*; Echinozoa, eg. *Echinus*; Holothurozoa, eg. *Sea cucumber*; Crinozoa, eg. *Sea lily*.

**General Topic:** Larval forms and Water Vascular System in Echinoderms.

NB: Assignments/ Seminar – Topics related to syllabus can be given to students as assignment/ seminar. Power point presentation on study of any two animals from two different classes by students (may be included).

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**MODEL QUESTION PAPER**  
**19UZO141: ANIMAL DIVERSITY I**

**TIME 3 HOURS**

**MAX.MARKS 80**

**SECTION A**

**Answer all Questions. Each question carries 1 mark. (10 × 1= 10)**

1. Cnidocytes
2. Solenocytes
3. Acoelomata
4. Aristotle's lantern
5. Taxon
6. Metamerism
7. Category
8. Radial Symmetry
9. Pneumatophore
10. Binomial Nomenclature

**SECTION B**

**Answer any eight questions. Each question carries 2 marks. (8 × 2=16)**

11. Briefly explain the Linnaean Hierarchy.
12. Explain Metagenesis citing an example.
13. Mention the parasitic adaptations of leech.
14. Give the Zoological importance of Noctiluca.
15. Comment on Heteronereis
16. Distinguish between Protostomes and Deuterostomes.
17. Write a brief account of Vermiculture.
18. Draw a neat labeled diagram of Scolex of Tape worm.
19. Comment on Euplectella.
20. Explain the Zoological importance of Opalina.
21. Comment on the excretory system of Penaeus.
22. Explain the structural peculiarities of Sepia.

**SECTION C**

**Answer any Six questions. Each question carries 4 marks. (6 × 4=24)**

23. a. Explain ICZN  
b. Give an account of the principles of Nomenclature.
24. Explain the various levels of organization with examples.
25. With a neat labelled diagram describe the structure of Arenicola.
26. Distinguish between Numerical Taxonomy and Cladistic Taxonomy.
27. Describe the sexual dimorphism in Ascaris.
28. Explain the evolutionary significance of Peripatus
29. Explain the Structure of Liver fluke.
30. Describe the Zoological significance of Sacculina.
31. Explain the structure of Trochophore larva.

**SECTION D**

**Answer anytwo questions. Each question carries 15 marks. (2 × 15=30)**

32. Explain the economic importance of Molluscs with special emphasis on Pearl culture.
33. Explain the morphology, life history and pathogenicity and prophylaxis of the following:  
A. Ancylostoma                      B. Wuchereria.
34. Give a detailed account on Apiculture.
35. Write an essay on larval forms of Echinoderms.

**Complementary Course**  
**19UCH131.4: Theoretical Chemistry**

**No. of credits: 2**

**No. of instructional hours per week: 4**

**Total hours: 36**

**Course outcome**

CO1: To impart a concrete idea of the structure of atoms

CO2: To get an understanding of the basics of bonding in molecules

CO3: To inculcate an overview of analytical methods in chemistry

CO4: To impart knowledge on the environmental threats

CO5: To study the methods of waste water treatment

**Module I – Atomic Structure**

**(9 hrs)**

Atomic spectrum of hydrogen - different series, Rydberg equation, Bohr theory – postulates – statement of Bohr energy equation – derivation of spectral frequency from Bohr equation. Schrodinger wave equation (mention only, no derivation), concept of orbitals, the four quantum numbers and their significances. Orbitalwise electron configuration, energy sequence rule – Pauli's principle, Hund's rule, Stability of filled and half filled orbitals.

**Module II – Chemical Bonding**

**(9 hrs)**

Energetics of bond formation – Born-Haber cycle. Hybridisation and structure of molecules  $sp$ ,  $sp^2$ ,  $sp^3$ ,  $dsp^2$ ,  $dsp^3$ ,  $sp^3d^2$  and  $sp^3d^3$  hybridisation with examples. Explanation of bond angle in water and ammonia. VSEPR theory with regular and irregular geometry –. Hydrogen bond – inter and intra molecular – its consequences on boiling point – volatility and solubility. Partial covalent character of the ionic bond – Fajan's Rules. A brief review of molecular orbital approach – LCAO method – bond order, bond distance and stability of  $O_2$ ,  $O_2^{2+}$ ,  $O_2^{2-}$ ,  $NO$ ,  $NO^+$

**Module III – Analytical Principles**

**(9 hrs)**

Principles of volumetric analysis – primary standard – standard solutions normality and molarity, theory of acid-base titrations, permanganometric and dichrometric titrations, iodometry and complexometric titrations. Theory of acid-base indicator – redox indicators. Beer- Lambert law- Principles of colorimetry – Estimation of Iron and phosphate.

**Module IV – Environmental Chemistry**

**(9 hrs)**

Nature of environmental threats and role of chemistry. Green house effect, ozone layer and its depletion.. Water pollution: Various factors affecting purity of water, sewage water, industrial waste, agricultural pollution such as pesticides, fertilizers, detergents, treatment of industrial waste water using activated charcoal, synthetic resins, reverse osmosis, electro dialysis.-Dissolved oxygen-BOD, COD

**References**

1. Atomic structure and chemical bonding with introduction to molecular spectroscopy – Manas Chanda, TMH, 1991
2. Concise Inorganic Chemistry – J.D. Lee, John Wiley, 2008.
3. Environmental Chemistry A. K. De, New Age International, 2007.
4. Modern Inorganic Chemistry- A.D. Madan, S. Chand, 1987.
5. A. I. Vogel, "Text book of Qualitative Analysis", Longman, 1979.
6. A. I. Vogel, "Text book of Quantitative Inorganic Analysis" Longman, 1989.
7. S. K. Banerji, "Environmental Chemistry" PHI, 1999.
8. B. K. Sharma "Air Pollution" Krishna Prakashan, 2019.
9. V. K. Ahluwalia "Environmental Chemistry", Ane Books, 2014.
10. G.W. vanLoon and S. J. Duffy "Environmental Chemistry: A global perspective", Oxford University Press, 2017.



**MODEL QUESTION PAPER**  
**19UCH131.4: THEORETICAL CHEMISTRY**

**Time: Three Hours**

**Maximum Marks:80**

**Section A**

*Answer all questions. Answer in one word to maximum two sentences. Each question carries one mark.*

1. Give the electronic configuration of Copper (atomic number 29)
2. The quantum numbers  $n = 2$  and  $l = 1$  corresponds to which orbital?
3. What are the shapes of molecules with  $sp$  and  $sp^3$  hybridization?
4. Calculate the bond order of  $H_2$  molecule.
5. Give the structure of  $XeO_3$ .
6. What is Lattice Energy?
7. What is meant by primary standards?
8. Define Molality.
9. What is the optimum value of DO for good water quality?
10. What is meant by BOD?

**Section-B**

*Short answer type. Answer any 8 questions. Each question carries two marks*

11. What is Bohr Bury's rule?
12. Write down the Schrodinger Equation and explain the terms involved.
13. Explain the failures of Bohr's theory?
14. What are the limitations of VSEPR Theory?
15. What are polar and non polar covalent bonds?
16. Mention the rules for adding electrons to molecular orbitals?
17. What are dichrometric titrations?
18. How would you prepare 100 ml of 0.05 M Mohr's salt solution?
19. Methyl orange is not a suitable indicator for the titration of weak acid with strong base. Why?
20. Which are green house gases? Mention their sources.
21. What is reverse osmosis? How it is useful in the purification of waste water?
22. What are chief factors responsible for water pollution?

**Section-C**

*Short essay. Answer any 6 questions from the following. Each question carries four marks.*

23. If the energy difference between two electronic states of hydrogen atom is  $214.68 \text{ kJmol}^{-1}$ . What will be the frequency of light emitted when the electrons jump from the higher to the lower level?
24. Explain the stability of half filled and completely filled orbitals.
25. Give an account of permanganometric titrations.
26. Discuss the theory of Acid – Base indicators.
27. Explain the energetic of ionic bond formation.
28. Define hybridization. Mention the types of hybridization involved in  $SF_6$ ,  $PCl_5$ ,  $BF_3$ .
29. Explain Born-Haber Cycle considering the formation of NaCl as an example.
30. Write a note on agricultural pollution.
31. Explain briefly the different methods for the treatment of industrial waste water.

**Section-D**

*Essay. Answer any 2 questions from the following. Each question carries fifteen marks.*

32. (a) Discuss Bohr Theory, highlighting its merits and demerits.  
(b) What are quantum numbers? Give its significance.  
(c) Explain various rules regarding electronic configuration.
33. (a) Discuss the titration curves for the titration of strong acid with strong base and weak acid with strong base.  
(b) Explain the theory of redox indicators.  
(c) Explain Beer's Law, Lambert's Law and Beer – Lambert Law.
34. (a) Write a note on Hydrogen bonding and its consequences.  
(b) How electronic configuration of molecules related to molecular behavior? Explain.  
(c) Explain Fajan's Rule.
35. (a) Discuss the formation and importance of ozone layer.  
(b) What is meant by pollution and pollutants? Explain the classification of air pollutants. (c) What are the sources of important air pollutants.

## Complementary Course

### 19UBO131 CRYPTOGAMIC BOTANY, GYMNOSPERMS & PLANT PATHOLOGY

Distribution of hours	Theory	Practical
Phycology	09 hrs	09 hrs
Mycology	09 hrs	08hrs
Bryology	06 hrs	06 hrs
Pteridology	06 hrs	06 hrs
Gymnosperms	03 hrs	04 hrs
Plant pathology	03 hrs	03 hrs
	<b>36 hrs</b>	<b>36 hrs</b>

#### Aim and Objectives of the Course

- To make the learners aware of the various aspects of lower plant forms
- To develop the expertise and skill in identifying the plants belonging to lower plant groups
- To get an understanding on different plant diseases

#### MODULE-I: Phycology

1. Salient features of the following major groups with reference to the structure, reproduction and life cycle of the types given below(Excluding the developmental details)-

- a) Cyanophyceae-*Nostoc*
- b) Chlorophyceae-*Chlorella*, *Volvox*, *Oedogonium* and *Chara*
- c) Phaeophyceae -*Sargassum*
- d) Rhodophyceae -*Polysiphonia*

#### Practical

1. Make micro preparations of vegetative and reproductive structures of the types mentioned in the syllabus.
2. Identify the algal specimens up to the generic level and make labeled sketches of the specimens observed.

#### MODULE -II: Mycology

1. Salient features of the following major groups with reference to the structure, reproduction and life cycle of the types given below(Excluding the developmental details)-

- a) Zygomycotina-*Rhizopus*
  - b) Ascomycotina
    - i. Discomycetes -*Peziza*
  - c) Basidiomycotina
    - i. Teliomycetes-*Puccinia*
  - d) Deuteromycetes- *Cercospora*
2. Economic importance of Fungi

### **Lichenology**

General account, structure, reproduction, life cycle and economic importance of *Usnea*

#### **Practical**

A detailed study of structure and reproductive structures of types given in the syllabus and submission of record.

*Rhizopus, Cercospora, Peziza, Puccinia and Usnea.*

### **MODULE - III : Bryology**

1. Introduction, general characters and classification (Brief account only)
2. Study of the habit, thallus organization, vegetative and sexual reproduction and

Life cycle of the following types (Developmental details are not required).

*Riccia, Funaria*

3. Economic Importance of Bryophytes.

#### **Practical**

*Riccia*-Habit, Internal structure of thallus-V.S. of thallus through archegonia, antheridia and sporophyte.

*Funaria*-Habit, V.S. of archegonial cluster, V.S. of antheridial cluster, Sporophyte V.S.

### **MODULE -IV: Pteridology**

1. Introduction: General characters and classification. (Brief account only)
2. Study of the habitat, habit, internal structure, reproduction and life cycle of the following types (Developmental details not required). *Selaginella* and *Pteris*.

#### **Practical**

*Selaginella*: Habit, stem and rhizophore, T.S and V.S. of strobilus, Megasporophyll and Microsporophyll. *Pteris*-Habit, T.S of Rhizome, Petiole and Sporophyll.

### **MODULE -V: Gymnosperms**

1. Introduction, general characters and classification (Brief account only)
2. Study of the Habit, anatomy, reproduction and life cycle of *Cycas* (Developmental details are not required)

## Practical

*Cycas*-T.S of rachis, leaflet and coralloid root, Microsporophyll and Megasporophyll.

## MODULE –VI: Plant Pathology

1. A brief account on the following plant diseases with reference to the symptoms, causative organism, spread of the disease and effective control measures.

- a) Brown spot disease of Paddy      b) Powdery mildew of Rubber  
c) Leaf Mosaic of Tapioca              d) Quick Wilt of Pepper

2. Method of preparation and mode of action of the following fungicides- Bordeaux mixture, Tobacco decoction.

## Practical

Students are expected to observe the symptoms and causal organisms of all plant diseases mentioned above.

## REFERENCES

1. Fritsch F.B. 1945. Structure and Reproduction of Algae Vol.I & II. Cambridge University Press.
2. Gupta V.K. and Varshneya U.D. 1967. An Introduction to Gymnosperms- Kedarnath, Ramnath-Meerut.
3. Kanika Sharma 2009. Manual of Microbiology, Ane Books Pvt.Ltd.
4. Mamatha Rao 2009. Microbes and Non flowering plants, Impact and applications; Ane Books Pvt.Ltd.
5. Singh V., Pandey P.C and Jain D.K. 1998. A Text book of Botany for Undergraduate Students, Rastogi Publications.
6. Vasishta B.R. 1990. Botany for Degree students, Algae. S.Chand & Co.
7. Vashishta B.R. 1990. Botany for degree students, Fungi. S.Chand & Co.
8. Vashishta B.R. 1993. Pteridophyta. S.Chand and Co., New Delhi.
9. Vashishta B.R. 1993. Gymnosperms. S.Chand and Co. New Delhi.
10. Vasishta B.R., Singh A.K. and Kumar A. 2008. Botany for Degree Students- Bryophyta. S.Chand and Co., New Delhi.
11. Webster J. 1970. Introduction to Fungi. Cambridge University Press.

## Course Outcome

- The students will develop a concise knowledge on the structure and diversity of lower plant forms
- The students will acquire expertise and skill in identifying lower plant forms
- The students will have an understanding on the various plant diseases

**Model Question Paper**

**19UBO131: Cryptogamic Botany & Plant Pathology**

Time: 3 Hrs.

Max. Marks: 80

**PART A (Answer all, 1 mark each)**

1. Which reserve food material present in Chlorophyceae?
2. Define Fragmentation.
3. What is Tubercles?
4. Define Dorsal groove or furrow.
5. Explain Simple rhizoids?
6. What is Oogamy?
7. Write two points about Basidium?
8. What is Aecidia?
9. What are the importance of Teleutospore?
10. Define Anthredium ?

(10x1=10 Marks)

**PART B (Answer any eight questions, 2 marks each)**

11. Explain the photosynthetic region of Riccia.
12. Write any four characteristics of Hepaticopsida .
13. What are the salient features of Basidiomycotina?
14. What is apogamy?
15. Write a note on the biological importance of Cyanophyceae
16. Write down any four characteristics of bryophytes.
17. What is apospory?
18. Define coenobium.
19. Why Puccinia is called heteroecius rust?
20. What are rhizophores?
21. Explain corraloid roots.
22. What is apophysis?

(8x2=16 Marks)

**PART C (Answer any six questions, 4 marks each)**

23. Explain the reproduction of Nostoc.
24. Explain the basidial Stage of Puccinia.
25. Write a short note on the structure and function of heterocyst.
26. Explain the internal structure of Riccia.
27. Explain the vegetative reproduction of Riccia.
28. Mention about the classification of algae.
29. Explain alternation of generation of bryophytes.
30. Describe the structure of megasporophyll in Cycas
31. Explain the mode of preparation of Bordaeux Mixture.

(6x4= 24 Marks)

**PART D (Answer any two questions, 15 marks each)**

32. Explain the classification of bryophytes including salient features.
33. Describe the reproductive mechanism in Cycas.
34. Explain the life cycle of Puccinia.
35. Write an essay on the thallus structure and reproduction of Nostoc.

(2x15= 30 Marks)

## Semester II

### Language Course III

#### 19UENS211: ENVIRONMENTAL STUDIES

Credits: 4

Total Lecture Hours: 90 (5/week)

#### Course Outcome

The course seeks to introduce students to the major concepts of environmentalism, conservation, intellectual property rights and human rights.

The Course aims to develop a world population that is aware of and concerned about the environment and its associated problems and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively towards solutions of current problems and prevention of new ones.

#### COURSE OUTLINE

##### MODULE 1

##### **Unit 1: The Multidisciplinary Nature of Environmental Studies**

Significance of Environmental Studies, Definition, scope and importance, WED - Need for public awareness.

Literary Section: Matthew Olzmann's *Letter to Someone Living Fifty Years from Now*

##### **Unit 2: Natural Resources**

History of our Global Environment, Changes in Land and Resource use, Earth's Resources and Humans – Atmosphere, Hydrosphere, Lithosphere, Biosphere

Natural cycles between the spheres, Renewable and Non-renewable resources, Natural Resources and Associated problems – Sustainable lifestyles

- Forest resources: Importance, Functions, Use and over-exploitation, deforestation.
- Water resources: Sources of Water, Use and over-utilization of surface and ground water, Global climate change – floods, drought, conflicts over water, Sustainable water management, Dams.
- Mineral resources: Strategic Mining, Mining, Conservation of Mineral Resources, Use and exploitation
- Food resources: World food problems, Food security, Fisheries, Loss of Genetic Diversity, Alternate food sources

**Assignment Topic:** Energy resources: Growing energy needs, Types of energy – Conventional or Non-renewable Energy sources, Oil and its environmental impacts, Coal and its environmental impacts., Renewable energy – hydroelectric power – drawbacks, Solar energy, Photovoltaic energy, Solar thermal electric power, Biomass energy, Biogas, Wind power, Tidal and Wave power, Geothermal energy, Nuclear power, Energy conservation

- Land resources: Land as a resource, land degradation. Soil Erosion

Role of an individual in the conservation of Natural Resources – Equitable use of Resources for Sustainability.

**Literary Section:** Sugatha Kumari's *Hymn to the Tree*

##### MODULE 2

##### **Unit 3: Ecosystems**

Concept of an Ecosystem, Understanding Ecosystems, Ecosystem degradation, Resource Utilisation, Structure and functions of an ecosystem, Biotic components – Producers, consumers and decomposers. Abiotic components – Physical factors – Chemical Factors – Biotic community and Tropic level – Food chains, food webs and ecological pyramids. Energy Flow in the Ecosystem – The Water Cycle, The Carbon Cycle, The Nitrogen cycle – Integration of Cycles in Nature, Ecological Succession - Types of Ecological succession.

##### **Assignment Topic**

Types of Ecosystem: Terrestrial and Aquatic - Forest ecosystem, Grassland ecosystem, Desert ecosystem, Cropland Ecosystem, Mangrove Ecosystem, Aquatic ecosystems – Pond, lake, wet land, River, Delta and Marine – Threats to Aquatic Ecosystems, Conservation of Aquatic Ecosystems – Mullaperiyar Issue - Assignment

**Literature:** Wangari Maathai's *Unbowed*

##### **Unit 4: Biodiversity and Its Conservation**

Introduction to Biodiversity, definition, Classification: Genetic, Species and Ecosystem diversity. Evolution and the Genesis of Biodiversity, Biogeographic classification of India, India's Biogeographic zones, Value of Biodiversity – Consumptive Use Value and Productive Use Value, Social Values, Ethical and Moral values, Aesthetic value, Option Value. Biodiversity at Global, National and Local levels, India as a Mega Diversity Nation. Hot-spots of

biodiversity.

**Assignment Topic:** Threats to biodiversity: habitat loss, poaching of wildlife, human/wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: in-situ and ex-situ conservation of biodiversity. Humans and the Web of life, Rights of Species  
Literature: Olivia Judson's *Big Bird*

### **MODULE 3**

#### **Unit 5: Environmental Pollution**

Definition of Environmental pollution, Classification of Pollutants.

Major forms of Pollution: Air pollution – Causes, Effects, Ozone Depletion, Control Measures, Water pollution – Causes, Consequences, State of India's Rivers, Ganga Action Plan- Assignment Topic. Control Measures, Soil pollution – Causes, Effects, Control measures. Marine pollution – Causes, Effects, Control Measures. Pollution due to organic wastes, Control measures, Noise pollution – Causes, Effects, Control Measures. Acid rain, Greenhouse Effect, Thermal pollution – Causes, Effects, Controlling Thermal Pollution. Nuclear hazards – Sources, Effects, Radiation Control Measures.

Waste: Solid Waste Management Classification, Role of Individuals, Disaster management – **Case Study:** Endosulfan Tragedy, "Marble Cancer" of Taj Mahal, Chernobyl disaster in Ukraine, The Exxon Valdez Oil Spill, Chandigarh as "City Beautiful", The Swachh Bharat Abhiyan, Plachimada struggle in Palakkad  
Literature: *God's Own Country*, an extract from Arundhati Roy's *God of Small Things*

#### **Unit 6: Social Issues and the Environment**

Introduction to Social Issues and the Environment – From unsustainable to sustainable development. Think Globally, Act Locally. Urban problems related to energy, Water conservation and Strategies, Rain water harvesting, Watershed management. Resettlement and Rehabilitation of people: Problems and concerns, Environmental ethics: Issues and possible solutions, Equity-Disparity in the Northern and Western Countries, Urban and Rural Equity, Gender Equity, Preservation of resources for future generations. The Ethical Basis of Environmental Education and Awareness. Conservation Ethic and Traditional value systems of India,

**Assignment Topic:** Environmental Issues of Grave Consequences: Climate change, Global warming, Acid rain, Ozone Layer depletion, Nuclear Accidents and Nuclear Holocaust, Wasteland reclamation, Consumerism and Waste Products, The Environment Protection Act, Issues involved in Enforcement of Environmental Legislation – Environment Impact Assessment, Citizen actions and Action Groups, Environmental Clearance. Public Awareness  
Literature: Salim Ali's *Man and Nature in India: The Ecological Balance*

### **MODULE 4**

#### **Unit 7: Human Population and the Environment**

Introduction to Human Population and the Environment, Urbanisation, Environment day and Human health, Human Rights, Value Education, Women and Child Welfare. Role of Information technology in Environment and Human health

Literature: Sujatha Devi's *Government Protocol*

#### **Books for Reference: Core Text: 'Our Fragile Earth - Home' [To be published by the Dept]**

- Adams, W.M. Future Nature: A Vision for Conservation. London: Earthscan, 2003.
- Arnold, David and Ramachandra Guha, ed. Nature, Culture and Imperialism: Essays on the Environmental History of South Asia. New Delhi: Oxford UP, 2001.
- Bahuguna, Sunderlal. "Environment and Education". The Cultural Dimension of Ecology. Ed. Kapila Vatsyayan. New Delhi: D.K. Printworld. 1998.
- Crson, Rachel. Silent Spring. Boston: Houghton Mifflin, 1962.
- Guha, Ramachandra- Environmentalism: A Global History, New Delhi: Oxford UP, 2000.
- Hayward, Tim. Ecological Thought: An Introduction: Cambridge; polity, 1994.
- Merchant, Crolyn. The Death of Nature. New York: Harper, 1990.
- Gleick H.P. 1993. Water in Crisis, Pacific Institute for Studies in development Environment and security. Stockholm Env Institute. OUP 473 p.
- Heywood V and Watson R.E. 1995. Global biodiversity Assessment. CUP 1140p
- Odum FP. 1971. Fundamentals of Ecology. W.B Saunders Co. USA 574p
- Rao. M. N and Dutta A.K. 1987. Waste Water Treatmentt. Oxford and IBH Publ Co Pvt.
- Wagner K.D. 1998. Environmental Management. WB Saunders Co. Philadelphia, USA. 499p.

**MODEL QUESTION PAPER**  
**19UENS211: Environmental Studies**

**Time: Three hours**

**Maximum Marks: 80**

**Section-A**

Answer **all the questions**, each in a word or a sentence. Each question carries 1 mark.

1. Define the term environment.
2. Name the three 'R' s.
3. What forms the abiotic part of nature?
4. Bhopal Gas Leak Tragedy was caused by the release of \_\_\_\_\_ gas.
5. Expand IUCN.
6. What is ecocriticism?
7. What, according to Salim Ali, is the most important remedy for ecological balance?
8. How did the river appear in Rahel's eyes??
9. Why are humans called "ungrateful ones"?
10. What sinks to grief according to Frost?

**(10 x 1 = 10 marks)**

**Section-B**

Answer **any eight** of the following. Each question carries 2 marks.

11. Write a brief note on the four dynamic constituents of the environment.
12. What is deforestation?
13. Write a note on Women and Child Welfare
14. Explain watershed management.
15. What are the main characteristics of biodiversity hotspots?
16. What is Municipal Solid Waste?
17. Why is the History House described as having turned its back on Ayemenem?
18. What is Chandiram's complaint against the narrator?
19. How are frogs useful in paddy cultivation?
20. What were Wangari Maathai's mother's views about the fig trees?
21. Why is the tree compared to Lord Neelakanta?
22. What does the phrase "seagulls rippled with jet fuel" refer to?

**(8 x 2 = 16 marks)**

**Section-C**

Answer **any six** of the following. Each question carries 4 marks.

23. Define alternate food sources.
24. What are the important methods of conservation of biodiversity?
25. Write a short note on rainwater harvesting.
26. Write a note on AIDS.
27. Why is Environmental Studies considered multidisciplinary in scope?
28. Why is the Australian rainforest described as a living museum?
29. What does Salim Ali mean by saying that senseless use of advanced technology has tended to boomerang on humans?
30. Describe the ambience around the stream named Kanungu.
31. How does the narrator seek to establish that her generation was capable of refined thinking?

**(6 x 4 = 24 marks)**

**Section- D**

Answer **any two** of the following, each in about three hundred words. Each question carries 15 marks.

32. Discuss the various types of pollution and the effective strategies to contain them.
33. What is an ecosystem? What are the main types of ecosystems?
34. How does Sugatha Kumari present the importance of tree to the environment as a whole and to humans in particular?
35. Why does Sujatha Devi say, "Summits should take place inside the mind. Not at Rio"?

**(15 x 2 = 30 marks)**



## Language Course IV

### 19UEN212.1: ENGLISH GRAMMAR AND COMPOSITION

**Credits: 3**

**Total Lecture Hours: 72 (4/week)**

#### **Course Outcome:**

On completion of the course, the students should be able to

1. Have an appreciable understanding of English grammar.
2. Produce grammatically and idiomatically correct spoken and written discourse.
3. Spot language errors and correct them.
4. Have a good understanding of modern English grammar.
5. Produce grammatically and idiomatically correct language.
6. Improve their verbal communication skills.
7. Minimise mother tongue influence.
8. Write essays and letters on general topics enabling them to excel in competitive exams
9. Write CVs and Resumes to apply for various posts

#### **COURSE OUTLINES**

##### **Module 1**

Parts of Speech – Infinitive – gerund – nouns – pronouns- adjectives – verbs – adverbs – prepositions – conjunctions – determiners

##### **Module 2**

Sentence types – simple – complex – compound – sentence types based on sense – interrogative – assertive –negative – imperative – exclamatory – modal verbs– conditional clauses.

##### **Module 3**

Tenses – articles – voices – active – passive – reported speech. Subject verb agreement – Remedial grammar

##### **Module 4**

Précis writing – comprehension – letters – CV – cover letter – reports – essays.

Core Text: Hart, Steven, Aravind R. Nair and Veena Bhambhani. *Embark English for Undergraduates*. CUP, 2016.

Further Reading:

1. Moothathu, V. K. Concise English Grammar. Oxford University Press, 2012.
2. Leech, Geoffrey et al. English Grammar for Today: A New Introduction. 2nd Edition. Palgrave, 2008.
3. Carter, Ronald and Michael McCarthy. Cambridge Grammar of English. CUP, 2006.
4. Greenbaum, Sidney. Oxford English Grammar. Indian Edition. Oxford University Press, 2005.
5. Sinclair, John ed. Collins Cobuild English Grammar. Harper Collins Publishers, 2000.
6. Driscoll, Liz. Common Mistakes at Intermediate and How to Avoid Them. CUP, 2008.
7. Tayfoor, Susanne. Common Mistakes at Upper-intermediate and How to Avoid Them. CUP, 2008.
8. Powell, Debra. Common Mistakes at Advanced Level and How to Avoid Them. CUP, 2008.
9. Burt, Angela. Quick Solutions to Common Errors in English. Macmillan India Limited, 2008.
10. Turton. ABC of Common Grammatical Errors. Macmillan India Limited, 2008.
11. Leech, Geoffrey, Jan Svartvik. A Communicative Grammar of English. Third Edition. New Delhi: Pearson Education, 2009.

**MODEL QUESTION PAPER**  
**19UEN212.1: English Grammar and Composition**

Time: **Three hours**

Maximum Marks: **80**

**Section A**

Fill in the blanks as directed. **Answer all the questions.**

1. She plays the violin well,.....? (Add a suitable question tag)
2. The leaves fluttered \_\_\_\_\_ in the breeze. (Use the correct adverbial form of “slight”)
3. Chinese is a language ..... I find difficult. (Fill in with a suitable relative pronoun)
4. Gayathri \_\_\_\_\_ sing at the concert ((Choose will/could))
5. Sanjay has been living here ..... 2000. (Choose for/since)
6. It is a deserted street. (Identify the adjective)
7. Neither of the boys ..... absent. (Choose is/are)
8. Prevention is..... than cure. (Fill in with the suitable comparative)
9. The teacher put the papers ..... the drawer.(Supply a suitable preposition)
10. Pass the salt, please. (Identify the type of sentence)

(10 x 1 = 10 marks)

**Section B**

Answer any eight of the following questions as directed:

11. Fill in the blanks using “a”, “an”, “the’ or the “zero article”, wherever they are appropriate  
\_\_\_\_\_ chair I am sitting on is hard. But with \_\_\_\_\_ couple of pillows, I can make myself comfortable.  
Do you mind giving me \_\_\_\_\_ red pillow placed on \_\_\_\_\_ cot there?
12. Correct the following sentences:
  1. Despite of his illness he came to school.
  2. I am still remembering his service.
13. Rewrite the sentences beginning with “It”:
  1. To smoke too much is dangerous.
  2. This problem is not easy to solve.
14. Convert the following sentences as directed:
  1. How cold it is today! (Change into assertive)
  2. She obeys her parents. (Change into a question.)
15. Change into comparative and positive:  
Bangalore is the cleanest city in India.
16. Use the correct form of Question tag:
  1. She expects to meet him at the station.
  2. He hid behind the door.
17. Use the correct tense form of the verbs given in brackets:
  1. He never (talk) while he (drive) a car.
  2. By next year, he..... (complete) this novel and started the next.
18. Rewrite as directed.
  1. She came back. (Put the following adverbs – at six; hurriedly; to her room – in the right order)
  2. She has a ..... ribbon. (Put the following adjectives – blue, long – in the right order)
19. Do as directed.
  1. When I saw her last, she (live) with her aunt. (Use the correct tense form)
  2. He was killed by a robber by a knife. (Correct the sentence)
20. Rewrite as directed
  1. I am interested in cooking, and \_\_\_\_\_ prepare a feast in two hours. (Use can/could)
  2. The thief saw the police. He fled. (Combine the sentences using no sooner . . . than)
21. Rewrite the sentences.
  1. He talks English in a fluent way. (Convert the underlined phrase into an adverb)
  2. He is known for his honesty. (Convert the underlined noun into an adjective)
22. Fill in the blanks with the appropriate adverb or adjective
  1. The drunkards behaved \_\_\_\_\_ towards one another. We are experiencing \_\_\_\_\_ weather today. (rough/roughly)
  2. I can \_\_\_\_\_ understand what you have written. You have to work \_\_\_\_\_ to improve your handwriting. (hard/hardly)

**(8 x 2 = 16 marks)**

### Section C

Answer **any six** questions from the following sections (23 to 31):

23. Correct the following sentences: (All questions should be attempted)
1. The chief guest gave a brilliant speech.
  2. When I entered the room, I found my watch is stolen.
  3. Ooty is notorious for its sceneries.
  4. He carried all his luggages alone.
24. Fill in the blanks with appropriate tense forms  
I \_\_\_\_\_ just \_\_\_\_\_ (finish) my project here in the US. Now I \_\_\_\_\_ (go) back to Nigeria. I \_\_\_\_\_ (stay) there for the rest of my life. It \_\_\_\_\_ (be) summer in Nigeria this time of the year. I \_\_\_\_\_ (know) this but all my life I \_\_\_\_\_ (think) of “overseas” as a cold place of woollen coats and snow. So I \_\_\_\_\_ (buy) the thickest sweaters I could find.
25. Rewrite as directed. (All questions should be attempted)
1. On Teacher’s Day, students of our school handle all the classes (Change into passive)
  2. The Redfort is a very fascinating historical monument in India. (Change into the Comparative Degree)
  3. Among all the professions, medicine is the oldest. (Change into Positive)
  4. Vivek said, “The boys in the room are practicing a song to be sung at the Annual Day”. (Change into indirect speech)
26. Rewrite as directed. (All questions should be attempted)
1. Prakash said, “My parents are coming home tomorrow so I have arranged a party”. (Rewrite into reported speech)
  2. She said, “What a lovely flower!” (Change into indirect speech)
27. Change the voice:
1. The teacher has given a book to Ravi.
  2. The CEO is briefing the Secretary on the corrections to be made in the speech.
  3. My friend stole my watch.
  4. Ravi buys chocolates for me from the newly opened Bakery.
28. Your parents have visited you in your boarding school. Introduce your best friend to your parents.
29. Write five sentences on the “Importance of Value Education Classes”.
30. Write a paragraph on “Reading”.
31. Imagine you are the headmaster of a school. Write a letter to a book distributor regarding the purchase of books for the school library, requesting information about the price, availability of discounts etc.

(6x 4 = 24 marks)

### Section D

Answer **any two** of the following:

32. You are Abhisekh Sharma, a postgraduate in Journalism. Prepare a cover letter and resume for the post of Sub-editor in “The Indian Chronicles”, leading English daily.
33. (i) Write a précis on the following passage. (7 marks)
- Differences, big or small, can always be noticed even within a national group, however closely bound together it may be. The essential unity of the group becomes apparent when it is compared to another national group, though often the differences between two adjoining groups fade out or intermingle near the frontiers, and modern developments are tending to produce a certain uniformity everywhere. In ancient and medieval times, the idea of the modern nation was non-existent, and feudal, religious, racial or cultural bonds had more importance. Yet I think that at almost at any time in recorded history an Indian would have felt more or less at home in any part of India and would have felt as a stranger and alien in any other country. He would certainly have felt less of a stranger in countries which had partly adopted its culture or religion. Those who professed religion of non-Indian origin, or, coming to India, settle down here, became distinctively Indian in the course of a few generations, such as Christians, Jews, Parsees, Muslims. Indian converts to some of these religions never ceased to be an Indian on account of their change of faith. They were looked upon in other countries as Indians and foreigners, even though there might have been a community of faith between them. (217 words)
- (ii) Answer the following questions from the passage given above: (8 marks)
1. Which phenomenon is noticed at the frontiers of different nations?
  2. What features were prominent in ancient times?
  3. What happened to the immigrants in India in the course of a few generations?
  4. What is the quality of Indian converts?
- (7+ 8 = 15 marks)
34. Write an essay on “The Role of Media” (Answer in about two to three pages) (15 marks)
35. Write a report on the following topic in about 300 words. (15 marks)
- Stray dog menace in your locality.**

**Language course V (Additional Language II)**

**19UFR211.1: TRANSLATION AND COMMUNICATION IN FRENCH**

**No of Credits: 3**

**No of hours: 4 Hrs/week**

**COURSE OBJECTIVES:**

1. To ameliorate the level of language proficiency
2. To analyse the translated texts.
3. To enhance the ability to translate to the target language.

**COURSE OUTCOME:**

The students would be able to enhance their communication skills with the assistance of translation.

**SYLLABUS:**

**NAME OF TEXT: ECHO-A1 méthode de français**

Authors: J. Girardet & J. Pecheur

Publisher: CLE INTERNATIONALE

- Leçon 3 : On se détend ? (Pages : 22 -29)
- Leçon 4 : Racontez-moi (Pages : 30 – 44)
- Leçon 5 : Bon Voyage ! (Pages : 46 – 53)

**Reference books:**

- Connexions – Niveau 1 By Régine Mérieux and Yves Loiseau
- Le Nouveau Sans Frontières Vol I by Philippe Dominique
- Panorama Vol I by Jacky Girardet

**MODEL QUESTION PAPER**  
**19UFR211.1: TRANSLATION & COMMUNICATION IN FRENCH**

**TIME: 3HRS**

**MAX MARKS: 80**

**PART-A**

**Répondez à toutes questions suivantes:**

1. Quels loisirs aimez-vous ?
2. Qui est Jean Paul Sartre ?
3. Qu'est-ce que c'est « TV5 Monde » ?
4. Nommez un monument français ?
5. Qu'est-ce que c'est « SNCF » ?
6. Qu'est-ce que c'est « le Nouvel Observateur » ?
7. Quelles villes connaissez-vous en France ?
8. Quelle heure est-il maintenant ?
9. Nommez deux moyens du transport ?
10. Qui est le président actuel de la France ?

(10x1=10)

**PART-B**

**Répondez à 8 questions suivantes :**

11. Ecrivez en chiffres:
  - a. Trois heures dix
  - b. Cinq heures et quart
  - c. Huit heures moins vingt-cinq
  - d. Midi
12. Répondez par « vrai » ou « faux » :
  - a. Le français est très utilisé en Suisse et au Maroc.
  - b. Le Québec est une région de France.
  - c. Une commune est un petit village.
  - d. Les Français déjeunent entre 14h et 15h 30.
13. Complétez avec les prépositions qui conviennent :
  - a. Antonio est né ..... Espagne.
  - b. Il est venu .... Paris pour passer une semaine de vacances.
  - c. Il est arrivé hier ..... 10 heures.
  - d. Il habite .....un ami.
14. Choisissez le bon article :
  - a. Le week-end, Marie fait [le/du] sport. Elle aime [le/du] tennis. Elle fait aussi [un/du] vélo avec des amis.
  - b. Je connais [le/un] bon restaurant sur l'avenue des Champs-Élysées.
15. Quels sont les jours de la semaine ?
16. Rédigez un message de deux phrases :
  - a. Vous recevez l'invitation d'une amie pour la soirée au Saturne. Vous refusez.
17. Traduisez en français :
  - a. Are you interested ?
  - b. Clermont is a pleasant city.
  - c. See you soon.
  - d. Paul and Sophie work together.
18. Faites des comparaisons:
  - a. Entre L'Australie et La France
  - b. Entre Paris et Milan
19. Complétez avec « ce, cet, cette, ces » :
  - a. Qui sont .....personnages ?
  - b. Je connais.....acteur. c'est Depardieu.
  - c. Et .....chanteuse, c'est Laurie.
  - d. Regarde .....visiteur. C'est un personnage de cire !

20. Complétez avec « moi, toi, lui, elle, nous, vos, eux, elles » :
- Flore fait du sport avec Pierre et Antoine ?
    - Oui, elle fait du tennis avec .....
  - Flore habite chez Marie ?
    - Oui, elle habite chez .....
  - Elle travaille pour M. Dumont ?
    - Oui, elle travaille pour .....
  - Elle vient en vacances avec nous ?
    - Oui, elle vient avec .....
21. Complétez avec « pouvoir, vouloir, devoir » :
- Tu .....faire du ski ?
    - Je voudrais bien mais je ne .....pas skier.
  - Et toi, Flore, tu viens ?
    - Désolée. Je ne .....pas. Je .....travailler tout le week-end.
22. Formulez les informations suivantes comme dans l'exemple :
- Ex : 03-02-1970. Naissance de Celia. → Celia est née le 3 février 1970.
1992. Entrée à l'université.
  - Juin 1995. Diplôme de professeur d'anglais.
  - 25-08-1994. Rencontre avec William
  - Septembre 1998. Départ pour l'Australie.

(8x2=16)

### PART-C

#### Répondez à 6 questions suivantes :

23. Mettez les verbes au passé composé :
- « Je (aller) au cinéma avec Pierre. Nous (voir) un film très amusant. Puis nous (faire) une promenade au jardin des Tuileries. Après, je (rentrer) chez moi. »
24. Ecrivez l'heure :
- 09 :20
  - 15 :30
  - 16 :45
  - 00 :15
25. Trouvez les questions:
- .....? Non, Je n'ai pas compris.
  - .....? Non, Je n'ai pas lu le texte.
  - .....? Oui, J'ai travaillé bien.
  - .....? Oui, j'ai écouté bien.
26. Accordez les mots entre parenthèses :
- « [Cher] Eva,  
Je suis à Paris pour quinze [jour] avec des [copain]. C'est une très [beau] ville. »
27. Répondez :
- Est-ce que Tina est française ? Non, elle.....
  - Est-ce qu'elle parle bien français ? Non, elle.....
  - Est-ce qu'elle apprend le français ? Oui, elle .....
  - Est-ce qu'elle a des amis à Paris ? Oui, .....
28. Traduisez en anglais :
- « Chers amis,  
Il fait beau. La mer est bonne et l'île d'Oléron est magnifique. Laurent fait du gold. Moi, du vélo. On rencontre des gens sympas. Voulez-vous venir le week-end du 24 ? On a envie de découvrir deux ou trois restos avec vous. »
29. Complétez avec les adjectives possessives :
- « Noémie montre des photos à Lucas »
- Regarde ! Voici .....appartement à Laval.
  - Ici, c'est la maison de.....parents avec .....jardin.
  - Voici, .....amie Charlotte.

30. Traduisez en anglais :

« Je me suis inscrite à une école de langue pour travailler mon français. J'ai eu mon premier cours. Je suis rentrée à 10 heures, fatiguée. Je suis allée sur Internet et J'ai chatté jusqu'à minuit. J'adore parler avec Tom. Il connaît le monde entier. »

31. Traduisez en français :

- a. Of course! We can also take a taxi.
- b. Do you want to come to discover the region?
- c. They do a lot of activities.
- d. I am very happy.

(6x4=24)

#### PART-D

**Répondez à 2 questions suivantes:**

32. Vous allez habiter en France chez madame et monsieur Duval. Ils ne vous connaissent pas. Ecrivez-leur pour vous présenter. Indiquez votre nom, votre âge, votre profession, votre nationalité, votre niveau en français, vos loisirs.
33. Vous avez visité la ville de Cannes. Vous écrivez une carte postale à une amie. Rédigez cette carte postale.
34. Choisissez un voyage que vous avez fait et présentez-le.
35. C'est vendredi soir. Vous êtes seul(e). vous n'avez pas envie de rester chez vous. Vous avez envie de sortir. Vous téléphonez à vos amis. Rédigez ce dialogue.

(2x15=30)

**Language course V (Additional Language II)**  
**19UHN211.1: FICTION, SHORT STORY & NOVEL**

**No of Credits: 3**

**No of hours: 4 Hrs/week**

**Aims of the Course / Objectives**

To guide the students to the world of Hindi Fiction (Novel and short story). To develop the capacity of creative process and communication skills.

**Course Outcome**

The fiction generally activates the consciousness among young people. To facilitate in students a love for reading, assessing the character and the use of language. Develop many essential skills of vocabulary enhancement and sentence structure.

**Module 1**

Short story – ‘Swarna Kahaniyam’ – edited by

Dr. Girijakumari R.

Published by Lokbharathi Prakashan, Allahabad

Stories to be studied (Detailed)

- |                           |                      |
|---------------------------|----------------------|
| 1. Dooth ka Dam           | - Premchand          |
| 2. Heelibone ki Bathakein | - Agyeya             |
| 3. Hathiyare              | - Amarkanth          |
| 4. Nail cutter            | - Udaya Prakash      |
| 5. Hari Bindi             | - Mridula Garg       |
| 6. No Bar                 | - Jayaprakash Kardam |

**Module 2**

Novel (Non-Detailed)

Mobile - Kshama Sharma

Rajkamal Prakashan, Delhi

Books for General Reading

- |                                    |   |
|------------------------------------|---|
| 1. Adhunik Hindi Kahani            | - Dr. Lakshmi Narayan Lal<br>Vani Prakashan |
| 2. Hindi Kahani ka Ithihas 1, 2, 3 | - Gopal Rai<br>Raj kamal Prakashan          |
| 3. Hindi Upanyas ka Ithihas        | - Gopal Rai<br>Rajkamal Prakashan           |
| 4. Adhunikatha aur Hindi Upanyas   | - Indranath Madan, Rajkamal Prakashan       |
| 5. Kahani, Nayi kahani             | - Namvar Singh, Rajkamal Prakashan          |



**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**  
**Second Semester B.A/B.Sc Degree Examination**  
**Language Course (Additional Language II) - HINDI**  
**19UHN 211.1 Fiction, Short Story & Novel**  
**(2019 Admission onwards)**

**Time : 3 Hrs.**

**Max.Marks : 80**

**I. एक शब्द या वाक्य में उत्तर लिखिए?**

1. प्रेमचन्द का जन्म कहाँ हुआ?
2. मधु का पूरा नाम क्या है?
3. 'नदी के द्वीप' किसका उपन्यास है?
4. नवीन खन्ना क्या काम करता है?
5. चन्द्रा कौन है?
6. मधु और फरहत कहाँ काम करती थी?
7. 'पालगोमरा का स्कूटर' किसका कहानी संग्रह है?
8. मधु की बेटियों के नाम लिखिए?
9. राजेश किस कहानी का पात्र है?
10. फरहत के अनुसार आजकल टी.वी. पर कैसी सीरियलों की बाढ़ आयी है? (1×10=10 marks)

**II. किन्हीं आठ प्रश्नों के उत्तर पचास शब्दों में लिखिए?**

11. मधु ने टी.वी में युद्ध का कौन-सा दृश्य देखा?
12. प्रेमचन्द के चार उपन्यासों के नाम लिखिए?
13. मधु की माँ ने अपनी नौकरी क्यों छोड़ दी?
14. बाबु महेशनाथ कौन थे? गाँव के जच्चेखानों के सुधार में क्या-क्या बाधाएँ थीं?
15. फरहत क्यों कहती है कि 'घर की राजनीति, देश की राजनीति से ज़्यादा मुश्किल है।'?
16. शिकार की तलाश में गये हीली-बोन और कैप्टन दयाल ने लोमड़ी के बिल में क्या देखा?
17. फरहत की पारिवारिक स्थिति कैसी है?
18. कहानीकार जयप्रकाश कर्दम का परिचय दीजिए?
19. मधु मोबाइल क्यों खरीदना चाहती है?
20. महिला स्वतंत्रता का चित्रण हरी बिन्दी में कैसे किया है?
21. दफ़्तर के लोग मधु को सत्य हरिश्चन्द्र की नातिन क्यों कहते थे?
22. माँ अपनी हथेली कथावाचक के सामने क्यों फैला दी? (2×8=16 marks)

**III. किन्हीं छह प्रश्नों के उत्तर 120 शब्दों में लिखिए?**

23. 'प्रेमचन्द अब भी समकालीन है' - पठित कहानी के आधार पर विचार कीजिए।

24. विट्ठल भैया और मधु के संबन्ध पर प्रकाश डालिए?
25. कैप्टन दयाल ने हीली-बोन की क्या सहायता की?
26. "वह एक रात को चुपके से मेरे घर आ पहुँचा। गिडगिडाकर बोला जब तक मदद न करेंगे, मेरी किताब लिखी नहीं जाएगी। मुझे दया आ गई कि आदमी शरीफ है और इस के लिए कुछ कर देना चाहिए।" सप्रसंग व्याख्या कीजिए।
27. फरहत का चरित्र-चित्रण कीजिए।
28. हरी बिन्दी की नायिका पात्र की विशेषताएँ लिखिए?
29. 'नो बार' कहानी का उद्देश्य क्या है?
30. मधु को इन्क्रीमेन्ट मिलने पर साथियों की प्रतिक्रिया क्या थी?
31. क्षम शर्मा के व्यक्तित्व और कृतित्व पर प्रकाश डालिए?

(4×6=24 marks)

**IV. किन्हीं दो प्रश्नों के उत्तर 250 शब्दों में लिखिए?**

32. उपन्यास के तत्वों के आधार पर 'मोबाइल' उपन्यास की समीक्षा कीजिए?
33. 'दूध का दाम' कहानी सामाजिक रीति-रिवाजों पर तीखा प्रहार है।" इस उक्ति की आलोचन कीजिए?
34. 'हत्यारे' कहानी की कथावस्तु संक्षेप में लिखकर उसकी विशेषताओं पर प्रकाश डालिए?
35. मधु का चरित्र-चित्रण कीजिए?

(15×2=30 marks)

സെമസ്റ്റർ	:	II
കോഴ്സ് കോഡ്	:	19 UML 211.1
ലാംഗ്വേജ് കോഴ്സ്	:	V (അഡീഷണൽ ലാംഗ്വേജ് : II)
സമയക്രമം	:	ആഴ്ചയിൽ 4 മണിക്കൂർ
ക്രെഡിറ്റ്	:	3

**ഗദ്യസാഹിത്യം**

**പഠനലക്ഷ്യങ്ങൾ, ഫലങ്ങൾ:**

1. വിദ്യാർത്ഥികളുടെ ആശയവിനിമയശേഷി വർദ്ധിപ്പിക്കുക.
2. ഔദ്യോഗിക/ഭരണകാര്യങ്ങളും ശാസ്ത്രവിഷയങ്ങളും മലയാളഭാഷയിലൂടെ അവതരിപ്പിക്കാനുള്ള കഴിവാകുക.
3. ഭാഷാപരമായ പാകപ്പിഴകൾ പരിഹരിക്കുക, ഭാഷാശുദ്ധിനിലനിർത്തുക
4. വിവർത്തനത്തിൽ പ്രായോഗിക പരിശീലനം നൽകുക:
5. മാധ്യമ മലയാളത്തിൽ വിനിമയലോകം മനിലാക്കുക.
6. മലയാള ഗദ്യസാഹിത്യത്തിലെ പ്രധാനസാഹിത്യ കൃതികൾ പരിചയപ്പെടുത്തുക
7. രചനകളെ സ്വയം വിശകലനത്തിന് വിധേയമാക്കുക.

**പാഠ്യപദ്ധതി**

**മൊഡ്യൂൾ ഒന്ന് (27 മണിക്കൂർ) മാധ്യമ മലയാളം, ഉപന്യാസം**

മാധ്യമങ്ങൾ-സമൂഹവും മാധ്യമങ്ങളും - മാധ്യമങ്ങൾ തുറന്നുതരുന്ന വിനിമയസാധ്യതകൾ - സൈബർമലയാളം - സൈബർസാഹിത്യം - സാഹിത്യേതര രചനകൾ  
താഴെപ്പറയുന്ന ലേഖനങ്ങളുടെ വിശദപഠനം

1. മാധ്യമഭാഷ ഇന്ന് (മലയാളഭാഷയും ആഗോളവത്കരണവും) കേരള യൂണിവേഴ്സിറ്റി പ്രസിദ്ധീകരണം ഡോ. അനിതകുമാരി
2. മലയാളകാല്പനികത - ഡോ.പി.വി. വേലായുധൻപിള്ള
3. ജീവിതമെന്ന അത്ഭുതം - (ആമുഖം) ഡോ. വി.പി.ഗംഗാധരന്റെ അനുഭവങ്ങൾ
4. നമ്മുടെ ലോകം നാം സൃഷ്ടിക്കുന്നു - കെ.പി. കേശവമേനോൻ
5. വാക്കിന്റെ വരവ് - (ആലോചന എന്ന സമാഹാരത്തിൽ നിന്ന്) എം.എൻ. കാരശ്ശേരി

**മൊഡ്യൂൾ രണ്ട് (27 മണിക്കൂർ)**

**ചെറുകഥ**

മലയാള ചെറുകഥയുടെ വികാസപരിണാമങ്ങളെപ്പറ്റിയുള്ള സാമാന്യജ്ഞാനം. ആഖ്യാന തന്ത്രങ്ങളുടെ വൈചിത്ര്യം. പ്രമേയത്തിലും രൂപശിൽപ്പത്തിലും സംഭവിച്ച മാറ്റങ്ങൾ എന്നിവ മനിലാക്കുന്ന തരത്തിലുള്ള ബോധനസമ്പ്രദായങ്ങൾ സ്വീകരിക്കുക.

1. എനിക്ക് ആത്മഹത്യ ചെയ്യാൻ മതിയായ കാരണമില്ലയോ? - സി.വി. കുഞ്ഞിരാമൻ
2. പൊതിച്ചോറ് - കാരൂർ
3. കടൽത്തീരത്ത് - ഒ. വി. വിജയൻ
4. പത്രം - സക്കറിയ
5. ഹിഗ്ഗിറ്റ് - എൻ. എസ്. മാധവൻ
6. വീഡിയോ ചിത്രങ്ങൾ - അഷ്ടമൂർത്തി
7. കൃഷ്ണഗാഥ - കെ. ആർ മീര
8. തല്പം - സുഭാഷ് ചന്ദ്രൻ

**മൊഡ്യൂൾ മൂന്ന് (18 മണിക്കൂർ)**

**നോവൽ**

മലയാളസാഹിത്യത്തിന്റെ വികാസ പരിണാമങ്ങളെക്കുറിച്ചുള്ള സാമാന്യജ്ഞാനം ഉാകുന്നതരത്തിലുള്ള ബോധനസമ്പ്രദായം സ്വീകരിക്കുക. (സന്ദർഭവും സ്വാരസ്യവും വ്യക്തമാക്കുകയെന്നതരത്തിലുള്ള ചോദ്യത്തിനു നാലുകെട്ടിന്റെ ആദ്യനാലധ്യായം മാത്രമേ ഉപയോഗിക്കാവൂ)

**വിശദപഠനം:**

നാലുകെട്ട്: എം.ടി വാസുദേവൻ നായർ

**റഫറൻസ് ഗ്രന്ഥങ്ങൾ**

1. സമ്പൂർണ്ണ മലയാള സാഹിത്യ ചരിത്രം - എഡിറ്റർ പത്മന രാമചന്ദ്രൻ നായർ
2. കൈരളിയുടെ കഥ - എൻ. കൃഷ്ണപിള്ള
3. ആധുനിക സാഹിത്യ ചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - ഡോ.കെ.എം. ജോർജ്ജ്
4. മലയാളനോവൽ സാഹിത്യ ചരിത്രം - ഡോ.കെ.എം.തരകൻ
5. മലയാള ചെറുകഥാ സാഹിത്യചരിത്രം - ഡോ.എം.എം.ബഷീർ
6. നോവൽ സാഹിത്യം - കെ.സുരേന്ദ്രൻ
7. നോവൽ സ്വരൂപം - കെ.സുരേന്ദ്രൻ
8. നോവൽ സിദ്ധിയും സാധനയും - പി.കെ.ബാലകൃഷ്ണൻ
9. നോവൽ സാഹിത്യപഠനങ്ങൾ - ഡോ. ഡി.ബഞ്ചമിൻ
10. ആധുനിക നോവൽ ദർശനങ്ങൾ - കെ.എം. തരകൻ
11. ചെറുകഥാ പ്രസ്ഥാനം - എം.പി. പോൾ
12. ചെറുകഥ ഇന്നലെ, ഇന്ന് - എം. അച്യുതൻ
13. ചെറുകഥ - വാക്കുംവഴിയും - കെ.എസ്.രവികുമാർ
14. നോവൽ പഠനങ്ങൾ - ഡോ.പത്മന രാമചന്ദ്രൻ നായർ
15. ചെറുകഥാ പഠനങ്ങൾ - ഡോ.പത്മന രാമചന്ദ്രൻ നായർ
16. കഥയും ഫാൻസിയും - ഡോ.വത്സലൻ വാതുശ്ശേരി
17. കഥയിലെ ആത്മീയസഞ്ചാരങ്ങൾ - ഡോ.ഇ. രമാഭായി
18. കഥ അനുഭവവും ആഖ്യാനവും - ഡോ.കെ.പി.അപ്പൻ
19. കഥയും ഭാവുകത്വപരിണാമവും - ഡോ.കെ.എസ് രവികുമാർ
20. ഏകാന്തനഗരങ്ങൾ - ഡോ.പി.കെ രാജശേഖരൻ
21. ഭാരതപര്യടനം - കുട്ടികൃഷ്ണമാരാർ
22. മാധ്യമങ്ങളും മലയാളസാഹിത്യവും - കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്
23. മാധ്യമങ്ങളും മലയാളസാഹിത്യവും - എം.വി. തോമസ്, കേരള സാംസ്കാരിക പ്രസിദ്ധീകരണവകുപ്പ്
24. തെറ്റില്ലാത്ത മലയാളം - പ്രൊഫ. പത്മന രാമചന്ദ്രൻ നായർ
25. തെറ്റുംശരിയും - പ്രൊഫ. പത്മന രാമചന്ദ്രൻ നായർ

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**Second Semester BA/BSc Degree Examination**

**CBCSS**

**Language Course**

**19UML211.1: ഗദ്യസാഹിത്യം**

**Model Question Paper**

**Time: 3Hrs.**

**Max. Marks: 80**

**Section A**

ഒറ്റവാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരമെഴുതുക. 1 മാർക്കു വീതം.

1. മലയാളത്തിലെ ആദ്യ ചെറുകഥ ഏത്?
2. കാരൂരിന്റെ രണ്ട് കഥകളുടെ പേരെഴുതുക.
3. അധ്യാപക കഥകളെഴുതിയ ചെറുകഥാകാരൻ ആര്?
4. 'പത്രം' ആരുടെ ചെറുകഥയാണ്?
5. 'കുടല്പുരിന്റെ കഥാകാരൻ' എന്നറിയപ്പെടുന്നതാര്?
6. അസൂരവിത്ത് ആരുടെ നോവലാണ്?
7. 'വീഡിയോ ചിത്രങ്ങൾ' എന്ന കഥ എഴുതിയതാര്?
8. 'കുശ്ശിരി' ആരുടെ ചെറുകഥയാണ്?
9. 'മാധ്യമഭാഷ ഇന്ന്' എന്ന ലേഖനത്തിന്റെ കർത്താവ്?
10. 'വാക്കിന്റെ വരവ്' ആരുടെ ലേഖനമാണ്?

**(10x1=10മാർക്ക്)**

**Section B**

അരപ്പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും എട്ടെണ്ണത്തിന് ഉത്തരമെഴുതുക. 2 മാർക്ക് വീതം.

11. അധ്യാപക കഥ എന്ന നിലയിൽ പൊതിച്ചോറിന്റെ പ്രസക്തി വ്യക്തമാക്കുക.
12. പത്രം എന്ന ചെറുകഥയ്ക്ക് ഒരു ആസ്വാദനക്കുറിപ്പ് തയ്യാറാക്കുക.
13. മാധ്യമഭാഷയുടെ പ്രസക്തി വിശദമാക്കുക.
14. മലയാള സാഹിത്യത്തിൽ കാല്പനികതയ്ക്ക് എത്രത്തോളം പ്രാധാന്യമുണ്ട്? വിശദമാക്കുക.
15. 'ജീവിതമെന്ന അത്ഭുതം' എന്ന ലേഖനത്തിൽ ഡോ. വി. പി. ഗംഗാധരൻ വിശദമാക്കുന്ന അനുഭവങ്ങൾ എന്തെല്ലാം?

16. വാക്കിന്റെ ഉത്ഭവത്തെക്കുറിച്ച് എം. എൻ കാർശ്ശേരി കണ്ടെത്തുന്ന അഭിപ്രായങ്ങൾ എന്തെല്ലാം?
17. തെറ്റുണ്ടെങ്കിൽ തിരുത്തുക.  
1. പീഡനം 2. പ്രക്രിതി 3. അർത്ഥം 4. രാജ്ഞി
18. തെറ്റു തിരുത്തുക.  
അവിരാമമായി പെയ്തുകൊണ്ടിരുന്ന മഴയിലേക്ക് ഒടുവിൽ ഗത്യന്തരമില്ലാതെ അയാൾ സ്വയം ആത്മഹത്യ ചെയ്യുന്നതിനെക്കുറിച്ച് ആലോചിച്ചുകൊണ്ടിരുന്നു.
19. വീഡിയോചിത്രങ്ങൾ എന്ന കഥയിൽ ഉത്തരാധുനികതയുടെ അംശങ്ങൾ കണ്ടെത്താമോ? വിലയിരുത്തുക.
20. സി. വി. കുഞ്ഞിരാമന്റെ രചനാശൈലി വ്യക്തമാക്കുക.
21. നമ്മുടെ ലോകം എങ്ങനെയായിരിക്കണമെന്നാണ് കെ. പി. കേശവമേനോൻ അഭിപ്രായപ്പെടുന്നത്?
22. ആഗോളവൽക്കരണത്തെക്കുറിച്ച് ഡോ. ടി. അനിതാകുമാരിയുടെ അഭിപ്രായമെന്ത്?  
**(8x2=16മാർക്ക്)**

### Section C

ഏതെങ്കിലും 6 ചോദ്യങ്ങൾക്ക് ഒന്നരപുറത്തിൽ കവിയാതെ ഉത്തരമെഴുതുക. 4 മാർക്ക് വീതം.

23. എം. ടി. വാസുദേവൻനായരുടെ രചനാശൈലി 'നാലുകെട്ടി'നെ ആസ്പദമാക്കി പരിശോധിക്കുക.
24. മൂന്നിലൊന്നായി സംഗ്രഹിക്കുക.  
എത്ര മഹത്തായ കവിതയെഴുതിയ കവിയാണെങ്കിലും പുതുതായി എഴുതുന്ന കവിതയെക്കുറിച്ച് വായനക്കാർ അതെങ്ങനെ സ്വീകരിക്കുമെന്നോർത്ത് ഉത്കണ്ഠപ്പെടുകയും വിറകൊള്ളുകയും ചെയ്യുന്ന കവിമനസ്സുകളെക്കുറിച്ച് കേട്ടിട്ടുണ്ട്. വലിയ എഴുത്തുകാരിലും ഇത്തരം ഉത്കണ്ഠകളുണ്ടാകാറുണ്ട്. എന്നാൽ നമ്മുടെ നാട്ടിലെ ചില കവികൾക്ക് തങ്ങളെഴുതുന്ന എല്ലാറ്റിനെക്കുറിച്ചും വലിയ മതിപ്പാണ്, അഭിമാനവുമാണ്. തങ്ങളുടെ കവിതകളുടെ മഹത്വം മനസ്സിലാക്കാത്ത നിരൂപകരോട് അവർക്ക് വിദ്വേഷമാണ്, പൂച്ഛുവുമാണ്.
25. ആശയ വിപുലനം ചെയ്യുക.  
“കാരസ്കരത്തിൻ കുരു പാലിലിട്ടാൽ  
കാലാന്തരേ കയ്പു ശമിപ്പതുണ്ടോ”?
26. ആധുനിക ചെറുകഥയുടെ സവിശേഷതകൾ വിശദമാക്കുക.
27. മലയാളകവിതയിലെ കാല്പനികതയുടെ കടന്നുവരവ് എപ്രകാരമായിരുന്നു?
28. 'എനിക്ക് ആത്മഹത്യ ചെയ്യാൻ മതിയായ കാരണമില്ലയോ' എന്ന ചെറുകഥയ്ക്ക് ഒരു ആസ്വാദനം തയ്യാറാക്കുക.
29. ആധുനിക ചെറുകഥകളിൽ സക്കറിയയുടെ കഥകൾക്കുള്ള സ്ഥാനം വ്യക്തമാക്കുക.
30. ഉത്തരാധുനികതയുടെ സവിശേഷതകൾ വിശദമാക്കുക.

31. മലയാളത്തിലേക്ക് വിവർത്തനം ചെയ്യുക.

Twinkle twinkle little star  
How I wonder what you are  
Up above the world so high  
Like a diamond in the sky

(6x4=24മാർക്ക്)

**Section D**

മൂന്നു പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും രണ്ടു ചോദ്യത്തിന് ഉത്തരമെഴുതുക. 15 മാർക്ക് വീതം.

- 32. പരിസ്ഥിതിക കേന്ദ്രീകൃത വികസനത്തെക്കുറിച്ച് ഉപന്യസിക്കുക.
- 33. ആദ്യകാല ചെറുകഥകളുടെ സവിശേഷതകൾ ക്രോഡീകരിക്കുക.
- 34. മലയാള നോവൽ സാഹിത്യത്തിൽ 'നാലുകെട്ടി' നുള്ള പ്രാധാന്യം വിലയിരുത്തുക.
- 35. 'നമ്മുടെ ലോകം നാം സൃഷ്ടിക്കുന്നു' എന്ന ലേഖനത്തിൽ കെ. പി. കേശവമേനോൻ കണ്ടെത്തുന്നത് എന്തെല്ലാം? വിവരിക്കുക.

(2x15=30മാർക്ക്)

## Core Course II

### 19UZ0241: Animal Diversity II

No. of credits: 3

Total hours 54

No. of instructional hours per week: 2+2

#### Course outcome

CO1: Describe the general characteristics and classification of different classes of vertebrates.

CO2: Analyse the unique features and evolutionary relationships between each chordate group.

CO3: Understand the nature and bionomics of vertebrates.

CO4: Classify Phylum Hemi chordata to Mammalia with examples.

CO5: Study the adaptations and economic importance of specific vertebrates.

#### Module I: Introduction to Phylum Chordata

6hrs

Phylum Chordata: Chordate characters and their classification into three Sub phyla (Self-study)

Subphylum Hemichordata: Eg: Balanoglossus. Sub phylum Urochordata- General Characters (Self – study), Class Larvacea eg. *Oikopleura*; Class Ascidiacea eg. *Ascidia* (Mention -Ascidian tadpole larva, Retrogressive metamorphosis) Class Thaliacea eg. *Salpa*.

Sub phylum Cephalochordata- General Characters, eg. Amphioxus (Mention feeding behaviour).

#### Module II: Sub Phylum Vertebrata

10 hrs

General characters (Self-Study), Division 1 Agnatha–General characters, Class Cyclostomata eg. *Petromyzon*, Class Ostracodermi;

Division 2 Gnathostomata –General characters, Classification into Super class Pisces and Tetrapoda.

Super class Pisces- General Characters and classification, Class Placodermi, Class Chondrichthyes Sub class Elasmobranchii eg. Shark, Subclass Holocephali eg. *Chimaera*; Class Osteichthyes- Sub class Choanichthyes- Order 1 Crossopterygii eg. *Latimeria*, Order 2 Dipnoie. *Protopterus*, Subclass Actinopterygii-Super order Chondrostei eg. *Acipenser*. Super order Holostei eg. *Lepidosteus*, Super order Teleostei eg. *Anabas*, *Clarias*, *Ophiocephalus*, *Echeneis*. General topic: Accessory respiratory organs in fishes.

#### Module III: Super class Tetrapoda

4 hrs

Salient features, Class Amphibia - General characters (self-study). Classification- Order, Order Apoda eg. *Ichthyophis* Urodela eg. *Amblystoma*, Order Anura eg. *Bufo*, *Racophorous*, *Rana*, General topic: Parental care in Amphibians.

#### Module IV: Class Reptilia

10hrs

General characters (self- study). Classification – Subclass Anapsida - Order Chelonia eg. Chelone; Subclass Parapsida eg. *Ichthyosaurus*; Subclass Diapsida- Order Rhynchocephalia eg. *Sphenodon*, Order Squamata- Suborder Lacertilia eg. *Chamaeleon*, *Draco*, *Hemidactylus*, Suborder Ophidia eg. *Naja naja*, *Daboia*, *Bungarus*, *Enhydrina*, *Ptyas*, *Lycodon*, *Tropidonotus*, *Dryophis*, *Typhlops* and *Eryxjohnni*, Suborder Crocodilia eg. *Crocodylus*, *Alligator*; Subclass Synapsida eg. *Cynognathus*. General topic: Identification of poisonous and non-poisonous Snakes, Poison apparatus, biting mechanism and snake venom.

#### Module V: Class Aves

5hrs

General characters (self - study). Classification- Subclass Archeornithes eg. *Archeopteryx*; Subclass Neornithes- Super order Paleognathae eg. *Sruthio* and *Emu*, Super order Neognathae eg. Pigeon (External features, Feathers). General topic: Migration in birds, Flight adaptations of birds.

#### Module VI: Class Mammalia

11hrs

General characters (self-study) and classification of Class Mammalia - Subclass Prototheria eg. *Tachyglossus*; Subclass Metatheria eg. *Macropus*; Subclass Eutheria - Order Insectivora eg. *Paraechinus*, Order Dermoptera eg. *Galeopithecus*, Order Chiroptera eg. *Pteropus*, Order Primates eg. *Loris*, *Orangutan*, Order Carnivora eg. *Pantheraleo*, Order Cetacea eg. *Delphinus*, Order Perissodactyla eg. *Equus*, Order Artiodactyla eg. *Camelus*, *Hippopotamus*, Order Proboscidea eg. *Elephas*. Order Sirenia eg. *Dugong*, Order Hyracoidea eg. *Procavia*, Order Rodentia eg. *Rattus*, Order Lagomorpha eg. *Oryctolagus*, Order Edentata eg. *Dasyopus novemcinctus* (Armadillo), Order Pholidota eg. *Manis*, Order Tubilidentata eg. *Orycteropus*.

General topic: Adaptations of aquatic mammals.



## **Module VII: Comparative Study**

**8hrs**

Comparative account of Brain, Heart and Arterial system of Vertebrates.

NB: Topics related to syllabus can be given to students as assignment/ seminar. Power point presentation on study of any two animals from two different classes by students (may be included).

### **References**

1. Bhaskaran, K. K. and Biju Kumar, A. (2003). Chordate Zoology. Manjusha Publications. Calicut.
2. Ekambaranath Iyer. (2000). A Manual of Zoology. Vol. II S. Viswanathan and Co.
3. Jordan E. L. and P. S. Verma. (2002). Chordate Zoology. S. Chand and Co. New Delhi
4. Kotpal, R.L. (2000). Modern Textbook of Zoology: Vertebrates. Rastogi Publications, Meerut.
5. Verma, P.S. (2002). A Manual of Practical Zoology-Chordates. S. Chand and Co. Ltd.
6. William S. Beck, Karel, F., Liem and George Gaylord Simpson. (2000). Life: An introduction to biology. Harper Collins Publishers, New York.
7. Young J.Z. (2006). The life of Vertebrates. Oxford University Press.

**MODEL QUESTION PAPER**  
**19UZO241: ANIMAL DIVERSITY II**

**TIME 3 HOURS**

**MAX.MARKS 80**

**SECTION A**

**Answer all Questions. Each question carries 1 mark. (10 × 1= 10)**

1. What are Solenocytes?
2. Comment on Swim bladder.
3. What is Neoteny?
4. Explain Echolocation.
5. Explain the Dental formulae of humans.
6. Comment on Filoplumes.
7. What are Cycloid scales?
8. Explain Dasypus.
9. Explain Lophodont teeth.
10. What is Syrinx?

**SECTION B**

**Answer any eight questions. Each question carries 2 marks. (8 × 2=16)**

11. What are the diagnostic characters of Chordates?
12. Differentiate the subclass Anapsida from Diapsida.
13. Explain the structure and function of Air sacs.
14. Describe the salient features of *Ratitae* with an example.
15. Spendon is described as a living fossil-Discuss.
16. Explain the characteristics features of Chameleon.
17. Write a note on Placental Mammals.
18. Describe the different types of feathers of Pigeon.
19. Distinguish between Ctenoid and Ganoid Scales
20. Explain the significance of Axolotl larva
21. Write any four salient features of order Cetacea.
22. Draw a neat labelled diagram of the structure of teeth.

**SECTION C**

**Answer any Six questions. Each question carries 4 marks. (6 × 4=24)**

23. Explain the identification of poisonous and non-poisonous snakes.
24. Describe the adaptations of Aquatic Mammals.
25. Give a detailed account on the Flight adaptations of Birds.
26. Explain the general characters of Subclass Holocephali with an example.
27. Describe the Parental care in Amphibians.
28. Explain briefly the Dentition in Mammals.
29. Discuss the evolutionary significance of Archaeopteryx.
30. Give a comparative account of heart of fishes and Amphibians.
31. Describe the filter feeding mechanism of Amphioxus and add a note on its evolutionary significance.

**SECTION D**

**Answer anytwo questions. Each question carries 15 marks. (2 × 15=30)**

32. Elaborate an account on the accessory respiratory organs in fishes.
33. Write an essay on Egg laying Mammals.
34. Discuss the General characters of Class Amphibians and classify (orders) with examples.
35. With suitable diagrams, explain the structure of Ascidia and retrogressive metamorphosis of Ascidian tadpole larva.

## Complementary Course

### 19UCH231.4: Inorganic and Bioinorganic Chemistry

No. of credits: 2

No. of instructional hours per week: 4

Total hours: 36

#### Course outcome

CO1: To impart an idea of the biological importance of organometallic compounds

CO2: To get an understanding of the basics of nuclear chemistry and its applications

CO3: To inculcate an overview of transition metal complexes

CO4: To impart knowledge on the chemistry of biological processes

CO5: To study the biochemistry of trace elements

#### Module I :Organometallics

(9 hrs)

Definition and classification, Organo metallic compounds of Mg, Sn, Li, Hg, Fe and their synthesis, applications. Biological and environmental aspects of organic compounds – Organometallic compounds in medicines – organomercury, organoboron, organosilicon and organo arsenic compounds – outline of preparation and uses. Antitumour drugs, silylated derivatives of bioactive organic compounds in agriculture and horticulture. Environmental aspects of Organometallic compounds.

#### Module II Nuclear Chemistry

(9 hrs)

Natural radioactivity, modes of decay, Geiger–Nuttal rule, artificial transmutation and artificial radioactivity- nuclear stability, n/p ratio, mass defect and binding energy, nuclear fission and nuclear fusion, -applications of radioactivity-  $C^{14}$  dating, rock dating, neutron activation analysis and isotope as tracers.

#### Module III - Coordination Chemistry

(9 hrs)

Nomenclature, Coordination number and geometry - chelates – isomerism – structural and stereo isomerism valence bond theory of bonding in octahedral and tetrahedral complexes – drawbacks of valence bond theory – high and low spin complexes – colour and magnetic properties of transition metal complexes. Application of metal complexes in qualitative and quantitative analysis.

#### Module IV – Bio inorganic compounds

(9 hrs)

Metalloporphyrins – cytochromes – chlorophyll photosynthesis and respiration – haemoglobin and myoglobin, mechanism of  $O_2$  –  $CO_2$  transportation, nitrogen fixation, carbon fixation and carbon cycle. Biochemistry of iron toxicity and nutrition, essential and trace elements in biological systems.

#### References

1. Co-ordination Chemistry – F. Basolo and R.C. Johnson, Science Reviews, 1986.
2. Organometallic Chemistry, A Unified Approach, R.C. Mehrotra, A Singh, New Age International, 2000.
3. Concise Inorganic Chemistry – J.D. Lee, John Wiley, 2008.
4. Puri, Sharma and Kalia “Inorganic Chemistry”, Vishal, 2017.
5. Modern Inorganic Chemistry A.D. Madan, S Chand, 1987.

**MODEL QUESTION PAPER**  
**19UCH231.4: INORGANIC AND BIOINORGANIC CHEMISTRY**

**Time: Three Hours**

**Maximum Marks: 80**

**Section A**

*Answer all questions. Answer in one word to maximum two sentences. Each question carries one mark.*

1. Give the structure of Zeise's salt.
2. Write any one of the preparation methods of organolithium compounds.
3. What is ferrocene? How is it synthesized?
4. What are alpha particles?
5. Define the term radioactivity.
6. Write the IUPAC name of  $K_3[Co(NO_2)_4Cl_2]$
7. What are low spin complexes?
8. What do you mean by chelate?
9. What are metalloporphyrins?
10. Give an example of anaerobic respiration.

**Section-B**

*Short answer type . Answer any 8 questions from the following. Each question carries two marks*

11. What is reformatsky reaction?
12. What is cisplatin? Give its significance.
13. How are organomercurials prepared?
14. Explain Geiger Nuttal Rule.
15. What are half life period and average life period?
16. Define mass defect and binding energy.
17. Write the postulates of Werner's Coordination Theory.
18. What are poly dentate ligands? Give an example.
19. Explain the colours of transition metal complexes.
20. Differentiate respiration and photosynthesis.
21. What are trace elements?
22. What is the role of chlorophyll in photosynthesis?

**Section-C**

*Short essay. Answer any 6 questions from the following. Each question carries four marks.*

23. Write a note on organotin compounds.
24. Write a brief note on the applications of organometallic compounds in agriculture and horticulture.
25. One microgram of phosphorus- 32 was injected into a living system for biological tracer studies. The half life period of P-32 is 14.3 days. How long will it take for the radioactivity to fall to 10% of the initial value?
26. Explain the relation between nuclear stability and n/p ratio.
27. Write the biological effects of radiation.
28. Suggest the structure of  $[NiCl_4]$  on the basis of Valence Bond Theory.
29. Explain the magnetic properties of octahedral complexes with suitable examples.
30. Discuss briefly the biochemistry of iron toxicity and nutrition.
31. Metal ions play a variety of roles in biological systems. Explain.

**Section-D**

*Essay. Answer any 2 questions from the following. Each question carries fifteen marks.*

32. (a) Explain the synthesis and applications of Grignard reagent. (5 marks)  
(b) What are Frankland reagents? Give its significance. (5 marks)  
(c) Explain about organosilicon compounds in medicine. (5 marks)
33. (a) Explain carbon dating and rock dating. (5 marks)  
(b) Give the principle of neutron activation analysis. (5 marks)  
(c) Explain the terms nuclear fission and fusion with suitable examples. (5 marks)
34. (a) Write a note on Crystal Field Theory. (5 marks)  
(b) Explain the applications of complexes in qualitative analysis. (5 marks)  
(c) Write a brief note on isomerism in coordination complexes. (5 marks)
35. (a) Give brief outline of carbon cycle. (5 marks)  
(b) Explain nitrogen Fixation. (5 marks)  
(c) Write a short note on hemoglobin. (5 marks)

**Complementary Course**  
**19UBO231 ANATOMY, EMBRYOLOGY AND MICROTECHNIQUE**

Distribution of hours	Theory	Practical
Anatomy	20 hrs	32 hrs
Embryology	10 hrs	04 hrs
Microtechnique	06 hrs	00 hrs
<b>Total</b>	<b>36 hrs</b>	<b>36 hrs</b>

**Aim and Objectives of the Course**

- To make the learners aware of the internal morphology of plants
- To develop the expertise and skill in identifying the plants based on the anatomical characters
- To get an understanding on reproductive characteristics of angiosperms
- To have an understanding on the laboratory microtechniques

**MODULE-I : Histology**

1. Objectives and scopes of Plant Anatomy
2. Tissues-Meristems, Definition and Classification based on origin, position, growth Patterns and functions.
3. Apical meristems & theories on apical organization - Apical cell theory, Histogen theory, Tunica -Corpus theory, organization of root apex in dicots & monocots.
4. Permanent tissues-Definition, Classification-simple, complex and secretory.
5. Tissue systems-Epidermal tissue systems, Ground tissue systems & Vascular tissue systems. Different types of vascular arrangements.

**MODULE-II**

6. Primary structure-Root, Stem and leaf (Dicot & Monocot). Secondary growth of (stelar and extra stelar) Root and Stem, Cambium (structure and function) annular rings, heart wood and sap wood, tyloses, ring porous wood and diffuse porous wood, periderm formation, phellum, phellogen and phelloderm; lenticels.
7. Anomalous secondary growth-*Boerhaavia*.

**Practical**

1. Familiarize killing and fixing agents, stains
2. Simple permanent tissue - Parenchyma, Chlorenchyma, Arenchyma, Collenchyma and Sclerenchyma
3. Primary structure- Dicot Stem: *Hydrocotyle*

4. Monocot stem: *Grass*
5. Dicot root: *Limnanthemum*
6. Monocot root: *Colocasia*
7. Secondary structure-Stem (Normal type )-*Vernonia* or any normal type
8. Secondary structure-Root (Normal type) -*Tinospora, Ficus, Carica papaya*, or any normal type.
9. Anomalous secondary thickening-*Boerhaavia*

### **MODULE -III: Embryology**

1. Micro sporogenesis-structure and functions of wall layers.
2. Development of male gametophyte-Dehiscence of anther.
3. Megasporogenesis- Development of female gametophyte- Embryo sac- Development and types- Monosporic- Polygonum type
4. Pollination- Fertilization- Double fertilization. Structure of Embryo-Dicot (*Capsella*)

#### **Practical**

Students should be familiar with structure of anther and embryo.  
(Permanent slides can be used)

### **MODULE-IV: Microtechnique**

1. Killing and fixing agents- Carnoy's fluid, F.A.A
2. Stains and staining techniques double staining.  
General account; Stains: saffranin, hematoxylin, acetocarmine.

### **REFERENCES**

1. Esau K. 2006. Plant Anatomy -Wiley Eastern, New York.
2. Fahn A. 1985. Plant Anatomy-Pergamon Press, Oxford.
3. Maheswari P. 2011. Embryology of Angiosperms-Mc Graw Hill Book Co. London.
4. Pandey B.P. 1997. Plant Anatomy-S.Chand and co. New Delhi Biology - McGraw Hill Co, New York.
5. Prasad and Prasad 1972. Out lines of Botanical Micro technique, Emkay publishers, New Delhi.
6. Vashista P.C. 1984. Plant Anatomy-Pradeep Publications-Jalandhar.

### **Course Outcome**

- The students will develop a concise knowledge on the anatomical characteristics of angiosperms
- The students will acquire expertise and skill in identifying angiosperms based on the internal morphology
- The students will be familiarised with the concepts and mechanism of angiosperm reproduction
- The students will develop a basic understanding on laboratory microtechniques

## Model Question Paper

### 19UBO231: Anatomy, Embryology & Microtechnique

Time: 3 Hrs.

Max. Marks: 80

#### PART A (Answer all, 1 mark each)

1. Define Metachromasia
2. What is Formative Tissue
3. What are the features of Aerenchyma?
4. Composition of FAA
5. Define Conjoint Bundle
6. What is Sclereids?
7. Define Trichomes?
8. What is Transfer cell?
9. Define Entomophily
10. What is Mordant?

(10x1=10 Marks)

#### PART B (Answer any eight questions, 2 marks each)

11. Define double staining
12. Describe the differences between Protoxylem and Metaxylem
13. Mention the importance of Tracheids?
14. What is Hydathodes?
15. Write a note on Medullary Rays?
16. Explain Sieve tubes
17. What are the features of meristematic tissues?
18. Describe the importance of Xylem Parenchyma
19. Explain Quiescent Centre
20. Define Fibres
21. Describe Tyloses
22. Give a note on Tapetum

(8x2=16 Marks)

#### PART C (Answer any six questions, 4 marks each)

23. Describe the theories on shoot apex Organization.
24. Explain different types of Stomata with diagram
25. Explain the classification of stains with suitable examples
26. Describe the development of mega sporangium.
27. Explain the anatomy of a typical dicot leaf with diagram.
28. Describe the structure of a young anther
29. With the help of a diagram explain the structure of female gametophyte in angiosperms.
30. Describe double fertilization.
31. Explain different types of pollination in angiosperms.

(6x4=24 Marks)

#### PART D (Answer any two questions, 15 marks each)

32. Write an essay on Microsporogenesis in angiosperms.
33. Explain the different Types of Wood.
34. Explain anomalous secondary thickening in Boerhaavia stem.
35. Describe the simple permanent tissues and their functions with suitable diagram.

(2x15=30 Marks)

**Semester III**  
**Language Course VI**  
**19UEN311.1: READINGS IN LITERATURE I**

**No of Credits: 4**

**No of hours: 90 (5 per week)**

**COURSE OUTCOME**

On completion of the course, the students should be able to:

1. Understand the various genres of English literature
2. Understand and appreciate Indian literary discourse.
3. Look at the best pieces of Indian writings in English critically.
4. Analyze Indian literature as a cultural and interactive phenomenon.
5. Learn the English language through literature
6. Develop an understanding of the aesthetic, cultural and social aspects of Indian literature.
7. Help them analyze and appreciate literary texts in the Indian context.
8. Learn structures of the English language through the text.

**Module 1: Introduction to Literature**

What is literature – genres – Poetry: lyric, ode, ballad, sonnet, dramatic monologue – Drama: tragedy, comedy, one-act plays – Fiction: Novel, short story – Non-Fiction: Impersonal essay, Personal essay, biography, autobiography

**Module 2: Prose**

M.K.Gandhi	: <i>The Need for Religion</i>
Nirad C. Chaudhuri	: <i>Money and the English Man</i>
Arundhati Roy	: <i>The End of Imagination</i>

**Module 3: Poetry**

Rabindranath Tagore	: <i>Silent Steps</i>
Sarojini Naidu	: <i>The Soul's Prayer</i>
Nissim Ezekiel	: <i>The Railway Clerk</i>
Jayanta Mahapatra	: <i>An October Morning</i>
A.K. Ramanujan	: <i>The Striders</i>
Arun Kolatkar	: <i>An Old Woman</i>
Kamala Das	: <i>Nani</i>
Meena Alexander	: <i>Her Garden</i>

**Module 4: Short Stories**

Rabindranath Tagore	: <i>The Homecoming</i>
Mahasweta Devi	: <i>Arjun</i>
Abburi Chaya Devi	: <i>The Woodrose</i>
Anita Desai	: <i>Circus Cat, Alley Cat</i>

Core Text

Haneefa, S. and N.P. Rajendran, *Our Country, Our Literature*. Foundation Books. 2015

**Further Reading:**

1. Abrams, M.H. *A Glossary of Literary Terms* (Rev. ed.)
2. Hobsbaum, Philip. *Metre, Rhythm and Verse Form: The New Critical Idiom*. Indian Reprint. Routledge, 2007.
3. Prasad, Birjadish. *A Background to the Study of English Literature*. Macmillan, 2012.
4. Wainwright, Jeffrey. *Poetry: The Basics*. Indian Reprint. Routledge, 2009.
5. Hudson, W.H. *An Introduction to the Study of English Literature*. Maple Press. 2012.



**MODEL QUESTION PAPER**  
**19UEN311.1: Readings in Literature 1**

**Time: 3 hours**

**Max. Marks: 80**

**Section A**

**Answer all the ten questions:**

1. Where, according to Gandhi, does God reside?
2. What do the Indians rely upon, when their efforts are inadequate?
3. What is a cold war?
4. What does the expression 'silent steps' mean?
5. Death is the \_\_\_\_\_ of my face.
6. The poem 'The Railway Clerk' has been taken from \_\_\_\_\_.
7. The picture of the morning presented in the poem "An October Morning" is \_\_\_\_\_.
8. A.K. Ramanujan was not only a poet, but a \_\_\_\_\_ as well.
9. What does the poet compare the hill's crack to in 'An Old Woman'?
10. Who is the clumsy puppet in the poem 'Nani'?

(10 x 1 = 10 marks)

**Section B**

**Answer any eight of the following questions in a sentence or two:**

11. Why do we, according to Gandhi, live in a state of perpetual fear?
12. Why does Chandhuri say that spending is the positive urge of English people and saving the corrective one.
13. What does Roy call the theory of deterrence?
14. What are the various worldly sorrows according to the poem "Silent Steps".
15. What, according to God, is life and death in "The Soul's Prayer".
16. How does the speaker express his subordination in "The Railway Clerk".
17. What is the significance of the morning being compared to the jackal's snort.
18. What is the poet's say, "Not only prophets walk on water"
19. Can you distinguish between the speaker and the poet in the poem "An Old Women"?
20. Does the poet identify herself with Nani?
21. Why did Phatik's cousins jeer at him more than the other boys?
22. What really happened to Anna's child in 'Circus Cat, Alley Cat'?

(8 x 2 = 16 marks)

**Section C**

**Answer any six of the following questions in about 100 words:**

23. How can we be fearless in the world in Gandhi's opinion
24. Describe Chandhuri's experience with the BBC.
25. Comment on Roy's views on nuclear deterrence.
26. Explore the poet's concept of God as reflected in the poem "Silent Steps".
27. What are the poet's implorations to God in "The Soul's Prayer" ?
28. How does the use of Indianisms highlight the theme of the poem "The Railway Clerk"
29. Why do you think the morning is 'out of joint' in 'An October Morning'?
30. What is the significance of the title of the poem "The Striders" ?
31. Can you trace out the anguish of cultural rootlessness in the poem 'An Old Woman' ?

(6 x 4 = 24 marks)

**Section D**

**Answer any two of the following essays in about 300 words:**

32. How does Gandhi establish the need for religion in the essay.
33. How forcefully does Arundhati Roy argue against the dangers of nuclear weapons?
34. How far is Ketu representative of the dispossessed tribesmen of India?
35. Bring out the symbolism of the story 'Circus Cat, Alley Cat'.

(2 x 15 = 30 marks)

**Language course VII (Additional Language III)**

**19UFR311.1: LITERATURE IN FRENCH**

**No of Credits: 4**

**No of hours: 5 Hrs/week**

**COURSE OBJECTIVES:**

1. To enhance literary sensibility.
2. To introduce students to the world of French and Francophone literature.

**COURSE OUTCOME:**

The students would be acquainted with the French & Francophone literature and thereby they would be equipped to enrich their vocabulary.

**SYLLABUS:**

**NAME OF TEXT : ECHO-A1 méthode de français**

Authors: J. Girardet & J. Pecheur

Publisher: CLE INTERNATIONALE

- Leçon – 6 : Bon appetit ! (Pages : 54 – 61)
- Leçon – 7 : Quelle journée ! (Pages : 62 – 69)
- Leçon – 8 : Qu'on est bien ici ! (Pages : 70 – 81)

**The following poems to be studied:**

1. Le Pont Mirabeau - Guillaume Apollinaire
2. Déjeuner du Matin - Jacques Prévert
3. Noël - Théophile Gautier
4. Chanson d'Automne - Paul Verlaine
5. Soir d'hiver - Émile Nelligan
6. La cigale et la fourmi - Jean de la Fontaine

**Reference books:**

1. Connexions – Niveau 1 By Régine Mérieux and Yves Loiseau
2. Le Nouveau Sans Frontières Vol I by Philippe Dominique
3. Panorama Vol I by Jacky Girardet
4. A bouquet of French poems (Polyglot house) by Prof. T.P Thamby

**MODEL QUESTION PAPER**  
**19UFR311.1: LITERATURE IN FRENCH**

**TIME: 3HRS**

**MAX MARKS: 80**

**PART-A**

**Répondez à toutes questions suivantes:**

1. A quelle heure dinez-vous ?
2. Quel logement préférez-vous?
3. Quel pays voulez-vous visiter ?
4. Quel temps fait-il ?
5. Nommez deux pièces qu'on trouve dans un appartement ?
6. Quelle est la plus grande bibliothèque de la France ?
7. Qui a écrit le poème « Soir d'Hiver » ?
8. Nommez un pont français.
9. Quel est votre jour préféré de la semaine?
10. Que prenez-vous pour le déjeuner ?

(10x1=10)

**PART-B**

**Répondez à 8 questions suivantes :**

11. Quelles sont les saisons de l'année ?
12. Exprimez leur état physique ou leur besoin :  
Ex : il n'a rien mangé. → Il a faim.
  - a. Elle a fait 20km à pied.
  - b. Il a bu trop de whisky.
  - c. Il est au pôle Nord.
  - d. Il fait très chaud.
13. Complétez avec « aller » ou « venir » :
  - Aux vacances de février, je ..... dans les Alpes faire du ski. Tu peux .....avec moi ?
  - Je ne peux pas. Je .....en Grèce avec Marie. Mais l'été prochain, je voudrais .....chez toi, dans ta maison de campagne. Tu es d'accord ?
14. Complétez avec l'article qui convient :
  - Vous voulez .....verre de vin ou vous prenez .....eau ?
  - J'ai préparé ..... rôti de bœuf. Vous n'êtes pas végétarien ? Vous mangez .....bœuf ?
15. Mettez les verbes entre parenthèses a la forme qui convient :  
*« Deux femmes parlent de leur emploi du temps »*
  - a. Je suis employée dans un cinéma. Alors je (se coucher) tard.
  - b. Et bien sûr, vous (se lever) tôt.
  - c. Non, je na (se lever) pas avant 9 heures !
  - d. Et qui (s'occuper) des enfants ?
16. Complétez :  
Après le repas
  - Tu veux .....the ?
  - Non, merci, je n'aime pas....the. Je préfère ....café.
  - Alors....café ?
17. Complétez les réponses avec une forme « à + pronom » :  
Ex : C'est ton portable ? Oui, il est à moi.
  - a. C'est le dictionnaire de Pierre ?  
Oui, .....
  - b. Les enfants, ce sont vos jeux vidéo ?  
Oui, .....
  - c. Ce sac est à Marie ?  
Non, il ..... Il est à Julie.
  - d. Ce stylo n'est pas à toi, Pierre ?  
Si, .....
18. Transformez à l'impératif :
  - a. Tu dois te lever.
  - b. Tu dois te préparer.

- c. Nous devons être en forme.
  - d. Nous devons nous réveiller à 7h.
19. Complétez avec « quelque chose, ne.....rien, quelqu'un, ne.....personne » :
- J'ai ..... à te dire. Mais ne raconte cette histoire à .....
  - D'accord.
  - Melissa n'est pas partie seule au stage de Bruxelles. Elle est partie avec .....
  - Son mari sait..... ?
20. Dites si les phrases suivantes sont vraies ou fausses :
- a. Avec le TGV, on peut traverser Paris très vite.
  - b. Il y a un aéroport à Nantes.
  - c. Les Français prennent le petit déjeuner en famille.
  - d. Beaucoup de restaurants n'acceptent plus de clients après 14h 30.
21. Complétez ce dialogue avec les questions :
- a. .... ? Oui, Je pars en vacances.
  - b. .... ? Dans les Alpes.
  - c. .... ? En aout.
  - d. .... ? Avec Marie, Vanessa et Luc.
22. Complétez avec un adjectif possessif ou la forme « à + moi, toi, lui etc » :
- Pierre montre une photo à un ami :*
- « Regarde cette photo, c'est .....maison de campagne. Là, ce sont .....enfants et ici, c'est .....chien.
- Tu loues cette maison ou elle est ..... ? »

(8x2=16)

### PART-C

Répondez à 6 questions suivantes :

23. Répondez :
- a. Alexandre est venu ? Non, il .....
  - b. Tu as dansé avec François ? Non, je .....
  - c. Vous avez bien mangé ? Non, je .....
  - d. Luc et Marie ont joué de la guitare ? Non, .....
24. Mettez les verbes entre parenthèses a la forme qui convient :
- Tu (prendre) un croissant ?
  - Non, merci. Je (faire) un régime. Et Marie aussi. Nous ne (manger) plus de pâtisseries et nous ne (boire) plus de boissons sucrées.
25. Donner-leur des conseils. Utilisez les verbes indiqués :
- Demain, ils vont jouer un match de football.
  - Se coucher tôt – bien manager – ne pas se fatiguer – se détendre.
26. Quelle est la morale de « La Cigale et La fourmi » ?
27. Décrivez le poème « Noel » ?
28. Pourquoi le poète est triste dans le poème « Chanson d'autonome » ?
29. Que savez-vous du poème « Le Pont Mirabeau » ?
30. Quelle est l'humeur du poète dans le poème « Soir d' Hiver » ?
31. Qui signifie-t-il, le poème « Déjeuner du Matin » ?

(6x4=24)

### PART-D

Répondez à 2 questions suivantes :

32. Présentez votre logement idéal.
33. Vous logez à l'hôtel Astérix, rue de Rivoli. Une amie doit venir vous voir. Envoyez un message à cette amie pour expliquer comment aller jusqu'à votre hôtel.
34. Vous avez changé de domicile. Envoyez un message à un(e) ami(e) et écrivez en quelque phrase :
- La ville ou le village
  - Le quartier et la rue
  - L'immeuble et les voisins
  - L'appartement.
35. Vous allez déjeuner au restaurant « L'Assiette » avec Un(e) ami(e). Rédigez ce dialogue.

(2x15=30)

## Language course VII (Additional Language III)

### 19UHN311.1: POETRY AND GRAMMAR

No of Credits: 4

No of hours: 5 Hrs/week

#### Aims of the Course / Objectives

To sensitize the student to the aesthetic aspects of literary appreciation and to introduce Hindi poetry. To understand the grammar of Hindi.

#### Course Outcome

Understanding the role played by the poets of Bhakti cult in Literature and Society. Developing philosophy of life inspiring by the vision of eminent modern Hindi poets. Develop approach of Hindi Grammar

#### Module I

Poetry Collection (Detailed) – Kavya Sudha

Edited by Dr. V. Bhaskar

Jawahar Pusthakaalaya, Mathura

Poems to be studied

- |     |                          |                          |         |
|-----|--------------------------|--------------------------|---------|
| 1.  | Kabeer                   | Doha                     | 1 to 5  |
|     |                          | Pada                     | 1       |
| 2.  | Thulsidas                | Pada                     | 3 & 5   |
| 3.  | Soordas                  | Pada                     | 1,3 & 4 |
| 4.  | Nirjar                   | - Maidhilisharan Gupt    |         |
| 5.  | Prathibimb               | - Sumithranandan Panth   |         |
| 6.  | Kahde mem kya ab Dekkoom | - Mahadevi Varma         |         |
| 7.  | Oh Megh                  | - Mukthibodh             |         |
| 8.  | Kavitha ki bath          | - Agyeya                 |         |
| 9.  | Machali                  | - Sarveswar Dayal Saxena |         |
| 10. | Dhabba                   | - Kedarnath Singh        |         |
| 11. | Proxy – 4                | - Venugopal              |         |
| 12. | Machiz                   | - Sunitha Jain           |         |

#### Module 2

Long Poems (Non-Detailed)

Prescribed Text book – ‘Panchrang’ Edited by Dr. V.V. Viswam

Hindi Vidyapeth, Kerala

Poems to be studied

- |    |                     |   |                |
|----|---------------------|---|----------------|
| 1. | Vah phir jee Udhi   | - | Nagarjun       |
| 2. | Ek yathra ke Dauran | - | Kumvar Narayan |

#### Module 3

Grammar- Vyavaharik Hindi Vyakaran: Anuvad tatha Rachana

By Dr H Parameswaran

Published by Radhakrishna Prakashan, Delhi

Topics to be studied

Varna, Ling, Vachan, Karak, Sangya, Sarvanam, Visheshan, Kriya, Kal

Book for General Reading

- |    |                                       |   |   |
|----|---------------------------------------|---|---|
| 1. | Hindi Kavya Ka Ithihas                | - | Ramswaroop Chaturvedi<br>Lokbharati Prakashan   |
| 2. | Kabir, Soor, Thulsi                   | - | Yogendra Pratap Singh<br>Lokbharati Prakashan   |
| 3. | Adhunik Hindi Kavitha                 | - | Viswanath Prasad Tivari<br>Lokbharati Prakashan |
| 4. | Lambi Kavithayen<br>Vaicharik Sarokar | - | Dr. Bal dev Vanshi<br>Vani Prakashan            |

5. Nayi Kavitha - Dr. Jugadish Gupt  
Rajkamal Prakashan
6. Samakaleen Hindi Kavitha - Viswanath Prasad Tivari  
Lokbharati Prakashan
7. Hindi Vyakaran - Kamatha Prasad Guru  
Vani Prakashan

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**  
**Third Semester B.A/B.Sc Degree Examination**  
**Language Course (Additional Language III) - HINDI**  
**19UHN 311.1 Poetry and Grammar**  
**(2019 Admission onwards)**

**Time : 3 Hrs.**

**Max.Marks : 80**

**I. एक शब्द या वाक्य में उत्तर लिखिए?**

1. 'रामचरितमानस' के रचनाकार कौन है?
2. कबीरदास की प्रामाणिक रचना का नाम क्या है?
3. वचन किसे कहते हैं?
4. द्विवेदी युग के प्रतिनिधि कवि का नाम लिखिए?
5. 'लोकायतन' किसका महाकाव्य है?
6. 'घर' शब्द का बहुवचन क्या है?
7. 'यामा' काव्यकृति के लिए किसको ज्ञानपीठ पुरस्कार मिला था?
8. कवि वेणुगोपाल का जन्म कहाँ हुआ?
9. 'आत्मजयी' किसका प्रबन्धकाव्य है?
10. 'क्रिया' किसे कहते हैं?

(10×1=10 marks)

**II. किन्हीं आठ प्रश्नों के उत्तर पचास शब्दों में लिखिए?**

11. पुरुषवाचक सर्वनाम किसे कहते हैं? उसके भेदों को समझाइए?
12. 'वह फिर जी उठी' कविता का प्रतिपाद्य क्या है?
13. 'माचिस' कविता में नारी जीवन की किस त्रासदी का वर्णन किया है?
14. संज्ञा किसे कहते हैं? उसके कितने भेद हैं?
15. कबीरदास के अनुसार सच्चे गुरु का लक्षण क्या है?
16. तुलसीदास की नवधा भक्ति का स्वरूप समझाइए?
17. स्त्रीलिंग शब्दों के बहुवचन कैसे बनाये जाते हैं?
18. 'ओ मेघ' कविता का सन्देश क्या है?
19. 'कह दें मैं क्या अब देखूँ' कविता में अभिव्यक्त कवयित्री की विचारधारा का परिचय दीजिए?
20. अज्ञेय द्वारा प्रतिपादित 'कविता की बात' क्या है?
21. हर बार प्लेट में मछली को देखने पर कवि को क्या लगता है?
22. संख्या वाचक विशेषण और परिमाणवाचक विशेषण में क्या अन्तर है?

(8×2=16 marks)

**III. किन्हीं छह प्रश्नों के उत्तर 120 शब्दों में लिखिए?**

23. 'निर्झर' कविता का सारांश लिखिए?
24. 'प्रतिबिंब' कविता का भाव समझाए?
25. कारक किसे कहते हैं? कारक के भेदों को सोदाहरण समझाइए?
26. सूरदास की 'बाललीला वर्णन' पर प्रकाश डालिए?
27. प्राक्सी-4 कविता में चित्रित मध्यवर्गीय मानसिकता पर प्रकाश डालिए?
28. लिंग परिवर्तन के नियम लिखिए?
29. सूरदास की भक्ति पद्धति का परिचय दीजिए।
30. कवि नागार्जुन के कृतित्व पर प्रकाश डालिए?
31. भावार्थ लिखिए।

जाके मुंह माथा नाही, नाहिं रूप कुरूप।

पुहुप वास ते पातरा, ऐसा तत अनूप।।

(6×4=24 marks)

**IV. किन्हीं दो प्रश्नों के उत्तर 250 शब्दों में लिखिए?**

32. 'धब्बा' कविता का मूल्यांकन कीजिए?
33. 'एक यात्रा के दौरान' कविता का सारांश लिखकर उसकी विशेषताओं पर प्रकाश डालिए?
34. सर्वनाम किसे कहते हैं? उसके भेदों को सोदाहरण समझाइए?
35. काल किसे कहते हैं? काल के भेदों को सोदाहरण समझाइए?

(2×15=30 marks)



സെമസ്റ്റർ : III  
 കോഴ്സ് കോഡ് : 19 UML 311.1  
 ലാംഗ്വേജ് കോഴ്സ് : VII (അഡീഷണൽ ലാംഗ്വേജ് : III)  
 സമയക്രമം : ആഴ്ചയിൽ 5 മണിക്കൂർ (18×5=90 മണിക്കൂർ)  
 ക്രെഡിറ്റ് : 4

## ദ്വ്യശ്യകലാസാഹിത്യം

**പഠനലക്ഷ്യങ്ങൾ, ഫലങ്ങൾ:**

1) ദ്വ്യശ്യകലാ സംസ്കാരത്തിന്റെ സമ്പന്നതയെക്കുറിച്ചുള്ള അറിവ് നേടുക. കഥകളി, തുള്ളൽ, നാടകം, സിനിമ എന്നീ ദ്വ്യശ്യകലകളെയും അവയ്ക്ക് ആധാരമായ സാഹിത്യപാഠങ്ങളെയും പരിചയപ്പെടുത്തുക.

**പാഠ്യപദ്ധതി**

**മൊഡ്യൂൾ ഒന്ന് (36 മണിക്കൂർ)**

**ആട്ടക്കഥ, തുള്ളൽ, സാഹിത്യം**

കഥകളിയുടെ ഉത്ഭവവികാസ പരിണാമങ്ങൾ, പ്രധാന ആട്ടക്കഥാകൃത്തുക്കൾ

1. നളചരിതം ആട്ടക്കഥ (നാലാംദിവസം) - ഉണ്ണായിവാര്യർ  
(നളദമയന്തീ സംവാദം വരെ)
2. കാർത്തവീര്യാർജ്ജുനവിജയം തുള്ളൽ - കുഞ്ചൻ നമ്പ്യാർ

**മൊഡ്യൂൾ രണ്ട് (36 മണിക്കൂർ)**

**നാടക സാഹിത്യം**

സംസ്കൃത നാടക പ്രസ്ഥാനം

- മലയാള വിവർത്തന നാടകങ്ങൾ

1. മലയാള ശാകുന്തളം(വിവ:) - എ.ആർ.രാജരാജവർമ്മ (നാലാം അങ്കം  
വിശദപഠനം. മറ്റ് അംഗങ്ങൾ സാമാന്യപഠനം)

2. ആ മനുഷ്യൻ നീതന്നെ - സി. ജെ. തോമസ്

3. രാവുണ്ണി - പി. എം. താജ്

**മൊഡ്യൂൾ മൂന്ന് (18 മണിക്കൂർ)**

**തിരക്കഥാപഠനം**

- ഒഴിമുറി** - **ജയകാന്തൻ**

**റഫറൻസ് ഗ്രന്ഥങ്ങൾ**

1. കേരള സാഹിത്യ ചരിത്രം - ഉള്ളൂർ
2. സാഹിത്യ ചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - ഡോ.കെ.എം.ജോർജ്ജ്
3. കൈരളിയുടെ കഥ - എൻ.കൃഷ്ണപിള്ള
4. നാട്യശാസ്ത്രം - ഭരതമുനി
5. കഥകളി - ജി.കൃഷ്ണപിള്ള
6. കഥകളിരംഗം - കെ.പി.എസ്. മേനോൻ

- |                                       |                                 |
|---------------------------------------|---------------------------------|
| 7. കഥകളിയും സാഹിത്യവും                | - മാടശ്ശേരി                     |
| 8. കഥകളി വിജ്ഞാന കോശം                 | - അയ്മനം കൃഷ്ണകൈമൾ              |
| 9. നളചരിതം വ്യാഖ്യാനം                 | - എം.എച്ച്. ശാസ്ത്രികൾ          |
| 10. കഥകളി മഞ്ജരി                      | - ഡോ.എസ്.കെ നായർ                |
| 11. ആത്മകഥ                            | - പി.കൃഷ്ണൻ നായർ                |
| 12. ദി ആർട്ട് & ലിറ്ററേച്ചർ ഓഫ് കഥകളി | - ഡോ.എസ്.കെ. നായർ               |
| 13. നാടകദർപ്പണം                       | - എൻ.എൻ. പിള്ള                  |
| 14. നാടകം ഒരു പഠനം                    | - സി.ജെ.തോമസ്                   |
| 15. ഉയരുന്ന യവനിക                     | - സി.ജെ.തോമസ്                   |
| 16. നാടക പഠനങ്ങൾ                      | - എഡിറ്റർ പന്മന രാമചന്ദ്രൻ നായർ |
| 17. കഥയും തിരക്കഥയും                  | - എ.ജി. രാജ്കുമാർ               |
| 18. സിനിമയും മലയാളസാഹിത്യവും          | - മധു ഇറവങ്കര                   |
| 19. മലയാള സിനിമ                       | - സിനിക്                        |
| 20. ചലച്ചിത്രത്തിന്റെ പൊരുൾ           | - വിജയകൃഷ്ണൻ                    |
| 21. ചലച്ചിത്ര സമീക്ഷ                  | - വിജയകൃഷ്ണൻ                    |
| 22. സിനിമയുടെ രാഷ്ട്രീയം              | - രവീന്ദ്രൻ                     |

# FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM

Third Semester BA Degree Examination

CBCSS Malayalam (Additional Language - 1)

19UML311.1 ദൃശ്യകലാസാഹിത്യം

Time : 3 Hrs.

Max.Marks : 80

### Section A

I. ഒരു വാക്കിലോ/ വാക്യത്തിലോ ഉത്തരമെഴുതുക. 1 മാർക്ക് വീതം

1. നളചരിതം ആട്ടക്കഥയ്ക്ക് ഏ.ആർ.രാജരാജവർമ്മ രചിച്ച വ്യാഖ്യാനമേത്?
2. രാമനാട്ടത്തിന്റെ ഉപജ്ഞാതാവാര്യം?
3. “അഗ്നിയല്ലാതെ ദഹിപ്പിക്കുമോ?” ആരെക്കുറിച്ചാണ് പറയുന്നത്?
4. അഭിജ്ഞാന ശാകുന്തളത്തിന്റെ ആദ്യ മലയാളവിവർത്തനമേത്?
5. മണിപ്രവാളശാകുന്തളം ആരുടെ കൃതിയാണ്?
6. നാടകത്തിലെ പഞ്ചസന്ധികൾ ഏതെല്ലാം?
7. ‘നളോപാഖ്യാനം’ മഹാഭാരതത്തിലെ ഏത് പർവ്വത്തിൽ ഉള്ളതാണ്?
8. നളചരിതത്തെ മലയാളത്തിലെ ശാകുന്തളം എന്ന് വിശേഷിപ്പിച്ചതാര്യം?
9. പന്മന രാമചന്ദ്രൻ നായരുടെ നളചരിത വ്യാഖ്യാനമേത്?
10. കൃഷ്ണനാട്ടത്തിന് ആധാരമായ കൃതിയേത്? (1×10=10)

### Section B

II. അരപ്പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും 8 ചോദ്യത്തിന് ഉത്തരമെഴുതുക. 2 മാർക്ക് വീതം.

11. “ഈ ആശ്രമം ഹന്തഃ ശമപ്രധാനം; കശ്യാ തുടിക്കുന്നിതു; കാര്യമെന്നോ?” സന്ദർഭമെന്ത്?
12. “ചെന്തളിരിനൊപ്പമധരം; ചെറുശാഖകളോടീട-  
 ണ്തിടുന്നു ഭൃജം;  
 പുമലർപ്പോലെ മനോജ്ഞം പുമേനിയതിൽ  
 തികഞ്ഞ താരൂണ്യം” - ആരെക്കുറിച്ചാണ് ഇപ്രകാരം പറയുന്നത്? വിശദീകരിക്കുക.
13. “സുകൃതമില്ലാത്തവർക്കു സുചിരം പ്രയത്നം കൊണ്ടും സുജനസംഗമമുണ്ടോ സുലഭമായി വരുന്നു” സന്ദർഭം എഴുതി ആശയം വിശദീകരിക്കുക.
14. “ഉർവ്വീസുരചാപലം പെരുതേ പാരിൽ-  
 സർവ്വവിദിതം കേവലം” - ഇങ്ങനെ പറയാൻ കാരണമെന്ത്?
15. “നേർന്ന നേർച്ചകളും മമ സഫലാനീ” - ഇങ്ങനെ ചിന്തിക്കാൻ കാരണമെന്ത്?
16. “മര്യാദയോർത്തു വെളിവാൽത്തളിയിച്ചുമില്ല;  
 മാരന്റെ ചേഷ്ടയവളൊട്ടു മറച്ചുമില്ല” - സന്ദർഭം വിശദമാക്കുക.
17. “സന്താപമേകാനുമകറ്റുവാനും ചെന്താർശരൻ  
 താനൊരു ഹേതുവായി;  
 ഇക്കണ്ട ലോകത്തിനു വർഷമേകാൻ

കാർകൊണ്ടെഴും വാസരമെന്നപോലെ” - ആശയം വ്യക്തമാക്കുക.

- 18. “ഇഷ്ടപ്രവാസമതിനാലുളവാമവസ്ഥ കഷ്ടം!തുലോമബലമാർക്കൊരുതർക്കമില്ല” ഈ വരികളുടെ സാംഗത്യമെന്ത്?
- 19. “ഏറ്റവസ്തു തിരികെകൊടുത്ത പോ- ലേറ്റവും തെളിമപുണ്ടിതെൻ മനം” - ആരുടെ വാക്കുകൾ? കാരണമെന്ത്?
- 20. “വിരഹം മേ മർമ്മദാരണം; അതിലേറെനല്ലുമാരണം” ഇങ്ങനെ ചിന്തിക്കാൻ കാരണമെന്ത്?
- 21. “മുറ്റുമതിനായി സംഗതി വന്നു മറ്റൊരു കാര്യവുമേതുമില്ല” - സന്ദർഭം വിശദമാക്കുക.
- 22. “ക്ലേശവിനാശത്തിനുമുന്നം കൗശലമേതത്” - സന്ദർഭമേത്? (8×2=16)

**Section C**

**III. ഒന്നര പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും ആറ് ചോദ്യത്തിന് ഉത്തരമെഴുതുക. 4 മാർക്ക് വീതം**

- 23. കാശ്യപൻ ദുഷ്യന്തനു നൽകുന്ന സന്ദേശത്തിന്റെ അർത്ഥതലങ്ങൾ എന്തൊക്കെ? വിശദമാക്കുക.
- 24. കാളിദാസ സൃഷ്ടികളായ അനസൂയാ പ്രിയംവദമാർക്ക് ശാകുന്തളം നാടകത്തിലുള്ള സ്ഥാനമെന്ത്?
- 25. ശകുന്തള ആശ്രമത്തിൽ നിന്ന് യാത്രയാകുമ്പോൾ പ്രകൃതിയ്ക്കുണ്ടാകുന്ന ഭാവമാറ്റങ്ങൾ എന്തെല്ലാം? വിശദമാക്കുക.
- 26. ഋതുപർണ്ണൻ - കഥാപാത്ര നിരൂപണം ചെയ്യുക.
- 27. നളനോടു ദമയന്തി തന്റെ നിരപരാധിത്വം വെളിപ്പെടുത്തുന്നതെങ്ങനെ?
- 28. ശാകുന്തളം രണ്ടാമങ്കത്തിൽ പ്രണയസുരഭിലയായ ശകുന്തളയുടെ മനോവ്യാപാരം വർണ്ണിച്ചിരിക്കുന്നത് എപ്രകാരമാണ്?
- 29. “വിരഹമോ കഠോരം, കടലിതുവീതഗാധപാരം” - ഈ പരിഭവനത്തിനു പിന്നിലുള്ള മാനസികവ്യഥ അനാവരണം ചെയ്യുക.
- 30. ‘നളചരിതം ആട്ടക്കഥയും’ ‘അഭിജ്ഞാനശാകുന്തളം’ നാടകവും നാടകീയതയിൽ സമരസപ്പെടുപോകുന്നതെങ്ങനെ?
- 31. ദുഷ്യന്തന്റെ രാജകൊട്ടാരത്തിൽ എത്തിയ ശാർങ്ഗരവ - ശാരദതന്മാർക്ക് പട്ടണം കണ്ടപ്പോഴുണ്ടായ അനുഭവം കാളിദാസൻ എങ്ങനെ വർണ്ണിക്കുന്നു? (6×4=24)

**Section D**

**IV. മൂന്നുപുറത്തിൽ കവിയാതെ ഏതെങ്കിലും രണ്ട് ചോദ്യത്തിന് ഉത്തരമെഴുതുക 15 മാർക്ക് വീതം**

- 32. “നളചരിതം അരങ്ങിലും പാഠത്തിലും വിസ്മയങ്ങൾ തീർത്തത് കാവ്യശൈലികൊണ്ടാണ്.” ഈ പ്രസ്താവനയോട് ഉദാഹരണസഹിതം പ്രതികരിക്കുക.
- 33. ‘അഭിജ്ഞാനശാകുന്തളം’ കാലാതീതമായി വായിക്കപ്പെടുന്നതും അനുഭവവേദ്യമാകുന്നതും രചനാ സൗന്ദര്യം കൊണ്ടാണോ? വിശദമാക്കുക.
- 34. ചരാചരങ്ങളെ ഏകോദര സഹോദരങ്ങളായി കാണുന്ന കാഴ്ചപ്പാട് ശാകുന്തളം നാലാം അങ്കത്തെ ആസ്പദമാക്കി വിലയിരുത്തുക.
- 35. “നളചരിതത്തിലെ ഭാഷ സംസ്കൃതമാകുന്ന ചെമ്പും മലയാളമാകുന്ന വെളുത്തീയവും ചേർത്തുരുക്കിയ ഒരു വെങ്കലഭാഷയാണ്.” എന്ന കേരളപാണിനിയുടെ അഭിപ്രായം പാഠഭാഗത്തെ മുൻനിർത്തി ചർച്ചചെയ്യുക. (2×15=30)

## Foundation Course II

### 19UZO321: Experimental Zoology, Instrumentation, Biostatistics and Bioinformatics

No. of credits: 3

Total hours 54

No. of instructional hours per week: 3+2

#### Course outcome

CO1: Learn the fundamental characteristics of science with its impact on human life.

CO2: Enable the students to systematically pursue Zoology in relation to other disciplines that come under the fabric of Science.

CO3: Study the application of scientific methods for scientific data interpretation.

CO4: To introduce the students to bioethical issues in science related to research, publication, patents, plagiarism etc.

CO5: To familiarizes students with the understanding of tools and techniques in Biology.

CO6: To introduce the students to various career options and research institutions in Biology.

#### Module I: Research and career options in Zoology

8 hrs

Institutes of Zoological and Scientific importance in India-Location, major achievements and present activities (academic and scientific) – Zoological Survey of India, Central Marine Fisheries Research Institute (CMFRI), Central Institute of Fisheries Technology (CIFT), Rajiv Gandhi Centre for Biotechnology (RGCB), ICAR & CSIR, NIO, NIST, Centre for Cellular and Molecular Biology, National, Bioinformatics Centre and Library, Indian Institute of Sciences, Kerala Forest Research Institute, Indian Institute of Technologies (IIT), National Centre for Biological Sciences (NCBS), Asoka Trust for Research in Ecology and the Environment, Centre for DNA Finger printing and Diagnostics, Central Drug Research Institute, JNTBGRI, NCBS.

#### Module II: Biology-The science of life

2 hrs

History of Biology in ancient times, Landmarks in the progress of Biology, Branches of Biology Nature and scope of Zoology, Websites for Zoology studies (Specify few such as *web of life*, *Encyclopedia of life*, *Species 2000* etc. (self-study).

#### Module III: Bioethics in science and research

1hrs

Bioethics in science (brief account only), publications and patents, Ethics in research, plagiarism

#### Module IV: Biostatistics –Data collection and presentation

13 hrs

Introduction to Biostatistics: Variable and attribute; Population vs. sample; Census vs. sample survey; Arrangement of data; Frequency distribution. Graphical presentation of data: Line diagram; Bar diagram; Pie chart; Histogram.

Measures of central tendency: Arithmetic mean; Mode; Median. Measures of dispersion: Variance; Standard deviation; Standard error of mean; Standard score. Testing of hypothesis and goodness of fit: Null hypothesis, Level of significance, Probability, Normal distribution, Error of inference, Student's t-test, and Chi-square test.

#### Module V: Instrumentation - Tools and Techniques in Biology

14 Hrs

Scientific Drawing – Purpose and principles, Basic understanding on the Principle and uses of the following) Microscopy a) Light microscopy, b) Compound microscope, c) Phase contract microscope, Fluorescence microscopy, II) Electron microscopy a) Scanning (SEM), b) Transmission (TEM). Instrumentation Techniques: PH meter, Separation Techniques -Centrifuges, Chromatography, Electrophoresis, and Analytical Techniques- Spectrophotometer.

#### Bioinformatics

19 Hrs

#### Module VI

4 hrs

Overview of Information Technology – features of the modern personnel computer and peripherals networks and internet. Introduction to operating system. DOS/Windows. Linux. Purchase of Technology, License, Guarantee, Warranty

**Module VII****7 Hrs**

Definition, Nature and scope of bioinformatics, Contrast between Bioinformatics and computational biology ; key bio-sequences in molecular biology- DNA, RNA and amino acid sequences. Popular data bases in bioinformatics- NCBI, DDBJ, PDB, OMIM; BLAST and FASTA Sequence file formats, Approach of comparative Biology based on sequence comparison , the basic idea of sequence comparison (Algorithms not required). – Idea of scoring matrices.

**Module VIII****8 Hrs**

The Blast search engine – Important features – Idea of multiple sequence Alignment – Proteomics : Basic ideas of protein structure prediction- concept of homology modeling, idea of molecular phylogenetics – Advantages and computational procedure (only description of use of a package of PHYLIP ). Basic concepts of computer aided drug discovery. General description of drug discovery pipeline concept of personalized medicine.

Bioinformatics Tools : (1) Molecular visualization software – RASMOL (basic features only) (2) ORF finding (3) Gene Finding (4) BLAST (5) Hydrophobicity Prediction (6) Single Nucleotide Polymorphism (SNP) prediction using GENSIP – Central drug Research Institute .

**References**

1. Aggarwal S.K. (2009) Foundation Course in Biology – Students Edition.
2. Arthur, M Lesk (2000), Introduction to bioinformatics, Oxford Publishers
3. Bajpai P,K, (2018) Biological Instrumentation and methodology. S. Chand and Company Limited.
4. Bowler Peter, J and Iwan Rhys Morus (2005) Making modern Science: A Historical Survey. University of Chicago Press, Chicago.
5. Claverie and Notredame (2003) bioinformatics, A Beginner's guide. Wiley and Dreamtech, India Pvt. Ltd.
6. Debbies Holmes, Peter Moody and Diana Dine (2006) Research Methods for the Biosciences. International student Edition. Oxford University Press.
7. Ernest Mayr (1982) The growth of Biological Thought: Diversity, Evolution and Inheritance Published by Harvard University Press.
8. Gieryn, T.F. (1999) Cultural Boundaries of Science. University of Chicago press.
9. Graeme D. Ruxton and Nick Colegrave. (2006) Experimental design for the life science, 2nd edition. Oxford University press.
10. Killick H.J. (1971) Beginning Ecology- Ibadan University Press.
11. Marie M. (2005) Animal Bioethics Principles and Teaching Methods

## MODEL QUESTION PAPER

19UZO321: Experimental Zoology, Instrumentation, Biostatistics and Bioinformatics

TIME 3 HOURS

MAX.MARKS 80

### SECTION A

Answer all Questions. Each question carries 1 mark. (10 × 1= 10)

1. Define the term scientific temper.
2. What is resolving power of a microscope?
3. Explain phosphorescence.
4. Define principles of colorimetry.
5. What is IPR?
6. What is a theory?
7. Probability distribution of a statistic is called?
8. What is fixation ?
9. What is chi-square test?
10. Write any two statistical softwares

### SECTION B

Answer any eight questions. Each question carries 2 marks. (8 × 2=16)

11. Explain merits of Arithmetic mean?
12. Elucidate the working principle of Chromatography?
13. Add note on ICZN and ICBN.
14. What are the aims and achievements of zoological and scientific Institutes in India?
15. What are Pie charts? List out its uses?
16. State four principles in classification.
17. Explain various sampling methods?
18. List out various websites for Zoology studies
19. Explain the principle of Electrophoresis.
20. Explain the methods in experimental science.
21. What is virtual testing?
22. Mention four different methods used for statistical analysis.

### SECTION C

Answer any Six questions. Each question carries 4 marks. (6 × 4=24)

23. What is meant by standard error?
24. What is  $R_f$  value?
25. Explain the principles of different types of centrifuges.
26. What are the main differences between TEM and SEM.
27. Explain the principles of nomenclature.
28. What is the difference between deductive and inductive models?
29. Explain Scientific Drawing.
30. Describe phase contrast microscope.
31. "Science is the quest for power, not for the truth". Discuss the statement in the current global context.

### SECTION D

Answer anytwo questions. Each question carries 15 marks. (2 × 15=30)

32. Explain various methods of collecting primary data.
33. Write a brief account of the important revolutions in Science and Technology.
34. What are the uses of X ray crystallography in sciences.
35. Briefly describe the Major branches of biology. Point out the nature and scope of Zoology.

**Complementary Course**  
**19UCH331.4: ORGANIC CHEMISTRY**

**No. of credits: 3**

**No. of instructional hours per week: 5**

**Total hours: 54**

**Course outcome**

CO1: To impart an idea mechanism of organic reactions

CO2: To get an understanding of the basics of stereochemistry of organic compounds

CO3: To inculcate an overview of the preparation and properties of carbohydrates

CO4: To impart knowledge about biomolecules like amino acids, proteins and enzymes

CO5: To study the biological role of lipids and nucleic acids

CO6: To acquire knowledge about industrially important polymers

**Module I – Mechanisms in organic substitution reactions (9 hours)**

Electron displacement in organic compounds – Inductive, electromeric and mesomeric effects, influence of inductive effect on acidic and basic properties of organic compounds, hyperconjugation and steric effect. Reaction mechanism – Bond fission, rate determining step, nucleophilic substitution of alkyl halides  $S_N^1$  &  $S_N^2$  reactions. Effect of structure on reactivity as illustrated by methyl, ethyl, isopropyl and tertiary butyl groups. Electrophilic addition to lycer and propene –Markownikoff's rule, free radical addition, peroxide effect.

**Module II – Stereochemistry (9hours)**

Optical isomerism, chirality, racemisation and resolution, relative and absolute configuration, asymmetric synthesis, optical isomerism due to restricted rotation. Geometrical isomerism, E and Z nomenclature. Aldoximes and ketoximes.

Rotational isomerism. Rotation about carbon – carbon single bond, conformation of ethane, propane, butane, cyclohexane, axial and equatorial bonds.

**Module III – Carbohydrates (9 hours)**

Classification, configuration, glyceraldehydes, erythrose, threose, ribose, 2-deoxy ribose, arabinose, glucose, fructose and mannose. Preparation and properties of glucose and fructose – Pyranoside structures of glucose and fructose, furanoside structure of fructose (structure elucidation not expected). Mutarotation and epimerization. Conversion of glucose into fructose and vice versa.

**Module IV – Amino acid and Proteins (9 hours)**

Classification and properties – synthesis of glycine, alanine and tryptophan – polypeptides and proteins, peptide linkage, peptide synthesis, polypeptides, primary, secondary, tertiary and quaternary structure of proteins, test for proteins, Enzymes – Characteristics, catalytic action, theory of enzyme catalysis – Michaelis – Menton theory – Co-enzymes.

**Module V– Nucleic acids and Lipids (9 hours)**

RNA, DNA – their biological role, hydrolysis of nucleoproteins, elementary idea regarding the structure of nucleic acids.

Lipids – Classification oils, fats and waxes, iodine value and saponification value, properties of oils and fats – phospholipids

**Module VI – Polymers (9 hours)**

Classification with example – natural and synthetic polymers – condensation and addition polymerization. Elastic fibres, thermoplastics and thermosetting plastics. Terpenes – classification, isoprene rule, essential oils, elementary study of citral and geraniol (structure elucidation not required) Rubber – structure – Vulcanisation of rubber – synthetic rubber – neoprene, butyl rubber, Buna S, Buna N

**Referances**

1. Organic Chemistry Vol I and II – I.L. Finar, Pearson, 2002.
2. Biophysical Chemistry – Principles and Techniques – A. Upadhyay. K.Upadhyay& N. Nath, Himalaya, 2009.
3. Reaction Mechanism in Organic Chemistry – Mukherjee and Singh – Macmillan, 2007.
4. Physical Chemistry – P.C. Rakshit, Levant Books, 1969.
5. Essentials of Physical Chemistry – Bahl, Tuli & Arun Bahl, S Chand, 2014.
6. Principles of Organic Chemistry – M. K. Jain, S. Nagin &Co, 1978.



**MODEL QUESTION PAPER**  
**19UCH331.4: ORGANIC CHEMISTRY**

**Time:3hours**

**Max.Marks : 80**

**SECTION – A**

*(Answer all questions. Answer in one word to maximum two sentences. Each question carries one mark)*

1. Which is more acidic acetic acid or trichloro acetic acid? Why?
2. Explain Markonikoff's rule with example
3. Represent the configurations of D and L lyceraldehydes
4. Draw the ring structures of glucose and fructose
5. Define mutarotation
6. Give two example of essential aminoacids .
7. Describe a colour test for proteins
8. Define saponification value
9. Give the name and structure of the base present in RNA but not in DNA.
10. What is vulcanization of rubber?

**(1 X 10 =10Marks)**

**SECTION – B**

*(Short answer type. Answer any 8 questions from the following. Each question carries two marks.)*

11. Describe hyperconjugative effect with suitable examples
12. Discuss the optical isomerism of tartaric acid.
13. Which of the following are optically active ? Why?  
(i) 2-chloropropane (ii) 2-chlorobutane (iii) 3-chloropentane
14. Give four differences between enantiomers and diastereoisomers.
15. What is meant by denaturation of proteins?
16. Distinguish between mutarotation and epimerization.
17. Classify the carbohydrates on the basis of behavior towards hydrolysis.
18. What are lipids? How will you classify them?
19. Give a test to distinguish RNA and DNA
20. How is terpenes classified?.
21. What is polymerization? Give an example of linear polymers?
22. Draw the structure of geraniol

**(2 X 8 = 16 Marks)**

**SECTION – C**

*(Short essay type. Answer any 6 questions from the following. Each question carries four marks.)*

23. Explain  $S_N^1$  and  $S_N^2$  reactions? Give examples
24. Give an account of inductive effect and show how it is applied to predict the strength of organic acids?
25. Give an account of asymmetric synthesis.
26. Determine the R & S notations of meso tartaric acid and L- glyceraldehydes.
27. What are essential oils? Explain its function with examples.
28. How is glucose is converted into fructose and vice-versa?
29. What is meant by Isoelectric point of aminoacids.
30. Classify polymers based on molecular forces
31. Explain the cleansing action of soap.

**(4x6 = 24marks)**

**SECTION – D**

*(Answer any 2 question. Each question carries 15 marks)*

32. (a) Explain the effect of structure on reactivity.  
(b) Explain electrophilic addition reactions with examples  
(c) What are meso compounds? Are they optical active? Explain with a suitable example.

33. (a) Write notes on different conformations of ethane and cyclohexane  
(b) Give an account of the configurations of monoaccharides  
(c) Discuss briefly the structure of Protein.
34. (a) Discuss general physical and chemical properties of oils and fats  
(b) Describe the functions of RNA and DNA  
(c) Explain the structure of DNA
35. (a) Give an account of synthetic rubbers  
(b) Discuss the classification of polymers on the basis of structure  
(c) Write a note on detergents.

**(15 X 2 = 30marks)**

**Complementary Course**  
**19UBO331 PLANT SYSTEMATICS AND CROP IMPROVEMENT**

<b>Distribution of hours</b>	<b>Theory</b>	<b>Practical</b>
<b>Angiosperm Taxonomy</b>	27 hrs	32 hrs
<b>Economic Botany</b>	08 hrs	04rs
<b>Ethno Botany</b>	04 hrs	00 hrs
<b>Pharmacognosy</b>	04 hrs	00 hrs
<b>Crop Improvement</b>	11 hrs	00 hrs
<b>Total</b>	54 hrs	36 hrs

**Aim and Objectives of the Course**

- To characterize the angiosperm diversity on a systematic perspective
- To develop skills and expertise to identify angiosperms upto the family level
- To get an understanding on the art and science of plant breeding

**MODULE -I: Angiosperm Taxonomy**

1. Definition, Scope and significance of Taxonomy.
2. Systems of classification:
  - a. Artificial (Brief account)
  - b. Natural- Bentham and Hooker (detailed account)
  - c. Phylogenetic (Brief account)
3. Basic rules of binomial Nomenclature. Definition and importance of Herbarium

**MODULE -II: Floral Morphology**

Parts of a flower, types of inflorescenc (Cymose, Racemose, Special type- Cyathium - Breif account only) aestivation and placentation, Floral diagram and Floral formula.

**MODULE -III**

A study of the following families with emphasis on the morphological peculiarities and economic importance of its members. (Based on Bentham and Hooker's System)

- |                |                   |                 |               |
|----------------|-------------------|-----------------|---------------|
| 1. Annonaceae  | 2. Malvaceae      | 3. Rutaceae     | 4. Fabaceae   |
| 5. Rubiaceae   | 6. Asteraceae     | 7. Apocyanaceae | 8. Solanaceae |
| 9. Verbenaceae | 10. Euphorbiaceae | 11. Liliaceae   | 12. Poaceae   |

**Practical****32 hrs**

1. Students must be able to identify the angiosperm members included in the syllabus. Draw labeled diagram of the habit, floral parts, L.S of Flower, T.S. of ovary, Floral diagram, Floral formula and describe the salient features of the member in technical terms.
2. Students must submit the practical records at the time of practical examination.

**MODULE-IV Economic Botany****8 hrs**

Study of the Botanical name, family, morphology of useful parts, and utility of the following;

1. Cereals and Millets - Paddy and Ragi
2. Legumes - Ground nut, Black gram
3. Sugar yielding plants - Sugarcane
4. Spices & condiments - Cumin, Clove, Cardamom and Pepper
5. Fibre - Cotton
6. Dyes - Henna
7. Resins - Asafoetida
8. Tuber crops - Tapioca, Colocasia
9. Tropical fruits - Banana, Jack fruit
10. Oil yielding Plants - *Seasamum*, *Cocos*
11. Medicinal plants - *Ocimum*, *Adhathoda*, *Sida*, *Turmeric*

**Practical****4 hrs**

Identify the economic products obtained from the plants mentioned under economic Botany.

**MODULE V****4 hrs****a) Ethnobotany**

1. Introduction and relevance .
2. Ethnobotanically important plants.

**b) Pharmacognosy**

1. Definition & scope of pharmacognosy.
2. Sources of crude drugs-roots, rhizome, bulb, corm, leaves, stem, flowers, fruits & seeds.

**MODULE -VI Crop Improvement**

1. Introduction, Objectives in plant breeding.
2. Plant introduction, Agencies of plant introduction in India, Procedure of introduction-Acclimatization-Achievements.
3. Selection-mass selection, pure line selection and clonal selection.

4. Hybridization: Procedure of hybridization, inter generic, inter specific, inter varietal hybridization with examples. Composite and synthetic varieties.
5. Heterosis and its exploitation in plant breeding.
6. Polyploidy breeding.
7. Breeding for disease resistance.
8. Mutation breeding

## REFERENCES

1. Davis P.H. and Haywood V.H. 1963. Principles of Angiosperm Taxonomy. Oliver and Royd, London.
2. Jain S.K. 1987. Glimpses of Ethanobotany. Oxford and IBH publishing Company, New Delhi.
3. Jain S.K. 1987. A manual of Ethanobotany. Scientific Publishers, Jodhpur
4. Jefftey C.A. 1982. An Introduction to plant Taxonomy. Cambridge University Press, Cambridge, London.
5. Jones S.B. Jr. and Luchsinger, A.E. 1986. Plant Systematics (2nd edition). Mc Graw-Hill Book Co., NewYork.
6. Kapoor L.D. 2001. Hand Book Of Ayurvedic Medicinal Plants. CRC Press New York, Ane Books Pvt.Ltd.
7. Lawrence G.H.M. 1951. Taxonomy of vascular Plants. Macmillan, New York.
8. Naik V.N. 1984. Taxonomy of Angiosperms. Tata McGraw Hill, New York.
9. Pandey S.N. and Misra S.P. 2008 Taxonomy of Angiosperms; Ane books Pvt.Ltd.
10. Radford A.E. 1986. Fundamentals of Plant Systematics Harper and Row, New York.
11. Singh G. 1999. Plant Systematics: Theory and practice Oxford & IBH Pvt. Ltd., New Delhi.
12. Verma V. 2009. Text Book of Economic Botany. Ane Books Pvt.Ltd.

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## Course Outcome

- The students will have an idea on the diversity and distribution status of Angiosperms with special reference on their taxonomic treatment
- The students will develop skill and expertise in identifying angiospermic plants belonging to different families
- The students will understand the basic concepts and techniques in plant breeding

## Model Question Paper

### 19UBO331: Plant Systematics & Crop Improvement

Time: 3 Hrs.

Max. Marks: 80

#### PART A (Answer all, 1 mark each)

1. Expand ICBN
2. What is Herbarium?
3. What are the importance of Floral formula
4. Mention two point about Syngenesious condition
5. What is Apocarpy?
6. Give the binomial for henna
7. Define ethnobotany
8. What is Acclimatization?
9. Define Inter-generic hybridization
10. Explain Ray florets

(10x1=10 Marks)

#### PART B (Answer any eight questions, 2 marks each)

11. Differentiate hypogyny and perigyni
12. Short note on Pureline selection
13. Give the names of any two plant introducing agencies in India
14. List out the scope of ethnopharmacology
15. Give the binomial and utility of any two spices
16. Describe the gynoeceium in Solanaceae
17. List out the androecial characters of Annonaceae
18. Explain Didynamous condition
19. Give the binomials of any two economically important plants in Liliaceae
20. Give a note on Floral diagram
21. Comment on Specific epithet
22. Explain the fruits in Poaceae

(8x2=16 Marks)

#### PART C (Answer any six questions, 4 marks each)

23. Explain the procedure of mutation breeding
24. Describe the basic rules of binomial system of nomenclature
25. Illustrate different aestivation types
26. Explain the floral characters in Malvaceae
27. Illustrate the floral characters of Apocyanaceae
28. List out the salient features of Euphorbiaceae
29. Comment on phylogenetic system of classification
30. Give a short note on tuber crops
31. Explain indetail the polyploidy breeding

(6x4=24 Marks)

#### PART D (Answer any two questions, 15 marks each)

32. Describe Bentham and Hooker's system of classification with its merits and demerits
33. Describe the different types of inflorescences in angiosperms with diagrams
34. What are the reasons for considering Asteraceae as the most advanced family among dicotyledons?
35. Explain heterosis and comment on its applications in crop breeding

(2x15=30 Marks)

**Semester IV**  
**Language Course VIII**  
**19UEN411.1: READINGS IN LITERATURE II**

**No of Credits:4**

**No of hours: 90 (5 per week)**

**COURSE OUTCOME**

On completion of the course, the students should be able to:

1. Understand and appreciate literary discourse.
2. Look at the best pieces of writings in English critically.
3. Analyze literature as a cultural and interactive phenomenon.
4. Learn the English language through literature
5. Understand the aesthetic, cultural and social aspects of global literature.
6. Analyze and appreciate literary texts in the global context.
7. Learn structures of the English language through the text.

Module 1: Poetry

Module 2: One-Act Play

Module 3: Prose

Module 4: Fiction

**COURSE MATERIAL**

**Module 1: Poetry**

1. William Shakespeare : *Sonnet 30*
2. John Keats : *Ode to a Nightingale*
3. Robert Frost : *Mending Wall*
4. David Malouf : *The Bicycle*
5. Maya Angelou : *Poor Girl*
6. Gabriel Okara : *Once Upon a Time*

**Module 2: One-Act Play**

1. Anton Chekhov : *The Marriage Proposal*

**Module 3: Prose**

1. E. V. Lucas : *Bores*
2. Jawaharlal Nehru : *A Glory has Departed*
3. Bertrand Russell : *How to Escape from Intellectual Rubbish*

**Module 4: Fiction – Short stories**

1. Charles Lamb and Mary Lamb : *Tales from Shakespeare - King Lear*
2. Charles Lamb and Mary Lamb : *Tales from Shakespeare – Merchant of Venice*
3. O. Henry : *Retrieved Information*
4. A.J. Cronin : *Two Gentlemen of Verona*

Core Text:

Sadasivan, Leela. *Perspectives in Literature*. Foundation Books 2015

**Further Reading**

1. Abrams, M.H. *A Glossary of Literary Terms* (Rev. ed.)
2. Hobsbaum, Philip. *Metre, Rhythm and Verse Form: The New Critical Idiom*. Indian Reprint. Routledge, 2007.
3. Prasad, Birjadish. *A Background to the Study of English Literature*. Macmillan, 2012.
4. Wainwright, Jeffrey. *Poetry: The Basics*. Indian Reprint. Routledge, 2009.
5. Hudson, W.H. *An Introduction to the Study of English Literature*. Maple Press. 2012.

**MODEL QUESTION PAPER**  
**19UUEEN411.1: Readings in Literature II**

**Time: Three hours**

**Maximum Marks: 80**

**Section-A**

Answer **all the questions**, each in a word or a sentence. Each question carries 1 mark.

1. Who is Lancelot Gobbo?
2. Who is the illegitimate son of the Earl of Gloucester?
3. Who does Nehru refer to in “We have failed to protect”?
4. Why does Keats wish for a “draught of vintage”?
5. A foundation stone of a bore is \_\_\_\_\_.
6. What is the attitude of the poet towards the bicycle?
7. What was the reason for the tourist’s interest in the two boys?
8. Why was Jimmy Valentine imprisoned?
9. What happens after Natalia accepts the marriage proposal?
10. What does the poet mean by the terms “unlearn” and “relearn”?

**(10 x 1 = 10 marks)**

**Section-B**

Answer **any eight questions**, each in a short paragraph not exceeding 50 words. Each question carries 2 marks.

11. What was the contract that Shylock made Antonio sign before giving him the loan?
12. Write a brief note on the storm scene in ‘King Lear’.
13. What is the greatest asset of a Bore?
14. How did the brothers help to defeat the German army in ‘Two Gentlemen of Verona’?
15. What is the “gap” that the poet refers to in ‘Mending Wall’?
16. What is Ivan’s outlook towards lottery and luck?
17. What is the mistake that Aristotle made according to Russell?
18. Why does the poet say that his “grievances” are foregone?
19. Do you think nostalgia is the predominant theme in the poem, “Once Upon a Time”?
20. Who is Mid-May’s eldest child?
21. What is the divine quality that Gandhi possessed?
22. Why did Lomov visit his neighbour?

**(8 x 2 = 16 marks)**

**Section-C**

Answer **any six questions** in about 100 words. Each question carries 4 marks.

23. Describe the first meeting between Lomov and Natalia?
24. Comment on the role of the Fool in ‘King Lear’.
25. How does the story of ‘The Two Gentlemen of Verona’ give promise of greater hope for human society?
26. Nehru feels Gandhi does not need any monument in bronze. Why?
27. What are the two ways of avoiding fear in ‘How to Escape from Intellectual Rubbish’?
28. What are the two opposing ideas of the two neighbours?
29. Comment on the phrase ‘Once Upon a Time’ as the title and the opening line of the poem.
30. Do you think money exercises power and has an adverse effect on personal relationships in ‘The Lottery Ticket’?
31. Trace the elements of a farce in ‘The Marriage Proposal’?

**(6 x 4 = 24 marks)**

**Section-D**

Answer **any two** of the following, each in about three hundred words. Each question carries 15 marks.

32. How does Maya Angelou treat the themes of love and deception in ‘Poor Girl’?
33. Discuss how the theme of ingratitude is treated in the play, ‘King Lear’.
34. What are the ways suggested by Russell to escape from “intellectual rubbish”.
35. In ‘The Proposal’ by Anton Chekhov, what idea does each of the characters represent?

**(15 x 2 = 30 marks)**



**Language course IX (Additional Language IV)**

**19UFR411.1: CULTURE & CIVILIZATION**

**No of Credits: 4**

**No of hours: 5 Hrs/week**

**COURSE OBJECTIVES:**

1. To acquaint the students with French culture and civilization.
2. To comprehend, compare and understand better the civilization of one's native place.

**COURSE OUTCOMES:**

The students would be able to comprehend French culture and civilization and thereby be able to compare and grasp better the civilization of one's native place.

**SYLLABUS:**

**NAME OF TEXT : ECHO-A1 méthode de français**

Authors: J. Girardet & J. Pecheur

Publisher: CLE INTERNATIONALE

- Leçon- 9 : Souvenez-vous ! (Pages : 86 -93)
- Leçon – 10 : On s'appelle ? (Pages : 94 – 101)
- Leçon – 11 : Un bon conseil ! (Pages : 102 – 109)
- **The following topics on Kerala culture with special emphasis on festivals, tourist centres, cuisine and cities are to be asked as short essays and long essays.**
  - » L'Onam – la fête unique du Kerala
  - » Le Vishou,
  - » Une ville touristique favori du Kerala
  - » Le Kerala – Le Pays du Dieu
  - » L'importance touristique du Kerala
  - » Un écrivain célèbre du Kerala
  - » Un plat traditionnel du Kerala

**Reference books :**

1. Connexions – Niveau 1 By Régine Mérieux and Yves Loiseau
2. Le Nouveau Sans Frontières Vol I by Philippe Dominique
3. Panorama Vol I by Jacky Girardet

**MODEL QUESTION PAPER**  
**19UFR411.1: CULTURE & CIVILIZATION**

**TIME: 3HRS**

**MAX MARKS: 80**

**PART-A**

**Répondez à toutes questions suivantes:**

1. Qui est le fils de votre père ?
2. Vous avez un ordinateur ?
3. Qu'est-ce que vous faites pour rester en contact avec vos amis ?
4. Nommez deux parties du corps ?
5. Quel numéro fait-on pour appeler les pompiers en France ?
6. Que faites-vous si vous avez perdu votre carte bancaire en France ?
7. Nommez un film français que vous avez regardé ?
8. Pourquoi utilisez-vous l'internet ?
9. Jusqu'à quand peut-on dire « Bonjour » en France ?
10. En France, qu'est-ce que vous devez faire quand on vous fait un cadeau ?

(10x1=10)

**PART-B**

**Répondez à 8 questions suivantes :**

11. Complétez en utilisant un pronom complément direct :  
Leo : J'ai rencontré une fille sympa. Je ..... aime bien.  
Marco : Tu .....vois souvent ?  
Leo : Oui, Je .....appelle.
12. Remplacez les mots soulignés par un pronom complément direct ou indirect :
  - Tu connais la nouvelle ? Clémentine a quitté Antoine !
  - Elle a quitté Antoine quand ?
  - Il y a un mois. Elle a écrit une lettre à Antoine. Elle a dit à Antoine qu'elle allait vivre à Toulouse.
  - Et les enfants ?
  - Elle a emmené les enfants.
13. Mettez les verbes entre parenthèses à l'imparfait :  
« A Paris. J'(avoir) une chambre dans le Quartier Latin. J'(étudier) à l'Ecole de médecine. C'(être) une belle époque. Le soir, nous (danser) à la Huchette.
14. Mettez les verbes suivants à l'imparfait :
  - a. Connaitre : Elle .....
  - b. Lire : Je .....
  - c. C. habiter : Nous .....
  - d. Regarder : Vous .....
15. Répondez :
  - a. Vous jouez encore au football ?
  - b. Vous lisez encore des bandes dessinées ?
16. Vous êtes en vacances en France. Que faites-vous dans les situations suivantes :
  - a. Dans la rue, une voiture brule.
  - b. Vous avez perdu votre carte bancaire.
17. Faites des phrases avec « *Souvent* » et « *Quelquefois* » :
18. Transformez les mots ci-dessous aux mots de la répétition :
  - a. Faire
  - b. Lire
  - c. Prendre
  - d. Dire
19. Donnez deux raisons pour lesquels vous utilisez l'ordinateur.
20. Rédigez un court message pour votre répondeur.
21. Peut-on vivre sans le téléphone portable ? Exprimez votre avis.
22. Ecrivez deux phrases pour présenter des actions que vous avez déjà faites :  
Ex : J'ai déjà mangé des escargots !

(8x2=16)

## PART-C

### Répondez à 6 questions suivantes :

23. Mettez le récit suivant au passé. Utilisez le passé composé et l'imparfait :  
« Nous allons au bord de la mer pour le week-end. Il fait chaud. Il y a beaucoup de monde. Je prends un bain. Puis, avec mon frère, nous faisons du surf. Le soir, nous sommes fatigués. »
24. Répondez en utilisant un pronom :  
Ex : Vous apprenez bien le vocabulaire ? → Oui, je l'apprends.  
a. Vous faites les exercices ? → Oui, Je .....  
b. Vous regardez la chaîne française TV5 ? → Oui, Je .....  
c. Vous regardez les films ? → Oui, Je .....  
d. Vous comprenez les acteurs ? → Non, Je .....
25. Rapportez le dialogue :  
Ex : Lisa dit à Paul qu'elle a envie de sortir...  
Lisa : J'ai envie de sortir.  
Paul : Ou tu veux aller ?  
Lisa : Je voudrais aller danser. Tu veux venir ?  
Paul : Je suis fatigué.  
Lisa : Je ne veux pas sortir seule.  
Paul : Appelle Marie.
26. Dites ce qu'ils sont en train de faire, ce qu'ils viennent de faire, ce qu'ils vont faire :  
a. Paul part en vacances (arriver à la gare, monter dans le train, chercher sa place).  
b. Marie va faire une course (sortir, acheter du pain, rentrer dans cinq minutes).
27. Présentez votre voisin.
28. Rédigez en quatre phrases les souvenirs de votre premier livre.
29. Présentez un écrivain du Kerala que vous connaissez.
30. Présentez le film dernier que vous avez regardé.
31. Une amie vous a prêté un livre il y a six mois. Elle vous le demande. Vous lui renvoyez ce livre avec un petit mot. Exprimez vos excuses, vos remerciements, votre plaisir d'avoir lu ce livre.

(6x4=24)

## PART-D

### Répondez à 2 questions suivantes :

32. Faites un arbre généalogique de votre famille. Alors, présentez votre famille.
33. Pourquoi le Kerala est appelé comme « Le Pays du Dieu » ?
34. Décrivez une fête unique du Kerala.
35. Vous décidez de quitter votre travail ou d'arrêter vos études. Vous avez d'autres projets. Vous rencontrez un(e) ami(e) et vous parlez de ces projets.

(2x15=30)

## Language course IX (Additional Language IV)

### 19UHN411.1: DRAMA, TRANSLATION & COMMUNICATIVE HINDI

No of Credits: 4

No of hours: 5 Hrs/week

#### Aims of the Course / Objectives

To appreciate and analyze the dramatic elements in literature. To understand the distinct features of Hindi Drama. To understand the process of translation and the qualities of a translator. To familiarize official correspondence in Hindi. Learn Hindi for effective communication. To familiarize the technical terms used in offices.

#### Course Outcome

Understanding the Drama 'Nepatya Rag' written by Mira Kaanth in context of struggle for independence of women in patriarchal society. Students got scope to gain knowledge about the forms of exploitation faced by women in feudalistic system. To develop communication skills in Hindi. Get jobs for their livelihood.

#### Module 1

Drama

Prescribed textbook – 'Nepathya Rag' by Mira Kaanth  
Published by Bharatheey Gyanpeeth, New Delhi

#### Module 2

Translation

Textbook – 'Anuvad evam Vyavaharik patra vyavahar'  
By Prof. Vanaja K. V  
Published by Govind Prakashan Mathura  
(Passages 1 to 8 should be studied.)

#### Module 3

Communicative Hindi

Patravvyavahar

Text: 'Anuvad evam Vyavaharik patra vyavahar' By Prof. Vanaja K. V  
Published by – Govind Prakashan, Mathura  
(Invitation letter, Leave letter, Letter to (Father, Son, Friend), Application letter for employment, Letters regarding orders, Letters of enquiry and Letters of complaint).

Technical Terminology

Prescribed Textbook – Anuvad Evam Vyavaharik Patra Vyavahar  
Prof, Vanaja K V  
Published by – Govind Prakashan, Mathura

Varthalap

Text: 'Bolchal ki Hindi'  
By Dr Susheela Gupt  
Published by Lok Bharati Prakashan  
(Chapters 2 to 16 should be studied)

Books to General Reading

1. Samakaleen Hindi Natak aur Rangmanch  
Dr. Narendra Mohan  
Vani Prakashan
2. Hindi Natak - Dr. Bachan Singh  
Radhakrishna Prakashan
3. Sattothar Hindi Natak - Dr. K.V. Naryana Kurup  
Lokbharati Prakashan
4. Anuvad Sidhanth aur Prayog – Dr. G. Gopinathan  
Lokbharati Prakashan
5. Patravvyavahar Nirdeshika - Bholanath Thivari  
Vani Prakashan

**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**  
**Fourth Semester B.A/B.Sc Degree Examination**  
**Language Course (Additional Language IV) - HINDI**  
**19UHN 411.1 Drama, Translation and Communicative Hindi**  
**(2019 Admission onwards)**

**Time : 3 Hrs.**

**Max.Marks : 80**

**I. एक शब्द या वाक्य में उत्तर लिखिए?**

1. मीरा कान्त का जन्म कहाँ हुआ?
2. मालवगणनायक विक्रमादित्य के नवरत्नों में आयुर्वेद के विद्वान कौन थे?
3. वराह मिहिर किस गाँव के निवासी है?
4. सुबन्धु भट्ट को खना प्यार से क्या पुकारती थी?
5. किसने 'कुमार सम्भवम्' की रचना की?
6. 'बृहत-जातक' ग्रंथ के रचयिता कौन है?
7. इतिहास की पहली महिला ज्योतिषी कौन थी?
8. 'ततः किम' किसका उपन्यास है?
9. 'Casual Leave' का हिन्दी अनुवाद क्या है?
10. 'संघ लोक सेवा आयोग' का अंग्रेज़ी अनुवाद क्या है? (10×1=10 marks)

**II. किन्हीं आठ प्रश्नों के उत्तर पचास शब्दों में लिखिए?**

11. मीरा कान्त के चार नाटकों के नाम लिखिए?
12. मेधा अपने कार्यालय में क्यों दुःखी है? उसके ऑफिस में चल रही 'पोस्ट मॉडर्न प्रॉब्लम' क्या है?
13. स्वास्थ्य के बारे में धन्वन्तरि की राय क्या है?
14. 'निर्धन पुरुष' के वेष में वराह मिहिर से मिलने कौन आया था? क्यों?
15. महादेवी ज्योतिष्मती खना से क्या जानना चाहती है?
16. महाराज भर्तृहरि ने संन्यास क्यों स्वीकार किया था?
17. विक्रमादित्य खनादेवी को क्यों सभासद बनाना चाहते हैं?
18. वररुचि के स्त्री विषयक दृष्टिकोण का परिचय दीजिए?
19. वराह मिहिर ने अनुवाद के लिए कौन-सी व्याख्या दी है?
20. नाटककार मीराकान्त का परिचय दीजिए?
21. अंग्रेज़ी पारिभाषिक शब्द लिखिए?

- |               |                   |
|---------------|-------------------|
| 1. Accountant | 2. Administration |
| 3. Code       | 4. Notification   |

**22. हिन्दी पारिभाषिक शब्द लिखिए?**

- |                |              |
|----------------|--------------|
| 1. अवर सचिव    | 2. कार्यक्रम |
| 3. प्रमाण-पत्र | 4. सचिवालय   |

(8×2=16 marks)

**III. निम्नलिखित खंडों से किन्हीं छह प्रश्नों के उत्तर 120 शब्दों में लिखिए?**

**खण्ड 'ख' से एक प्रश्न का उत्तर अनिवार्य है।**

**खण्ड क**

23. पत्र-लेखन के महत्व पर प्रकाश डालिए?
24. आचार्य वराह मिहिर की चरित्रगत विशेषताओं पर प्रकाश डालिए?
25. आवश्यक पुस्तकों की माँग करते हुए वाणी प्रकाशन, दिल्ली के प्रकाशक के नाम पत्र लिखिए?
26. खनादेवी को सभासद् बनाने के प्रस्ताव पर नवरत्नों की प्रतिक्रिया क्या थी?
27. रसोई घर में माँ के साथ बातचीत का नमूना लिखिए?
28. 'परन्तू... यह निर्धन पुरुष था कौन.... साम्राज्य की चिन्ता में डूबा। घुटनों से नीचे तक पहुँचते वे हाथ क्या किसी निर्धन के थे?' सप्रसंग व्याख्या कीजिए?
29. अनुवाद किसे कहते हैं? अनुवाद करते समय किन किन बातों पर ध्यान रखना चाहिए?

**खण्ड 'ख'**

**निर्देश: हिन्दी में अनुवाद कीजिए**

30. The government, however, cannot do everything by itself. So it looks to the people for help. Infact, the most wonderful thing about our plans is the way in which the people have come forward to improve their lives by working together. By far, the best example of this is the community development programme. This is the right step in the right direction. It will lead us to progress and prosperity. On it depends the future of India to a large extend.
31. I am extremely glad to note the progress of Hindi in South India. A common language for the whole of India is a necessity. There are many advantages in making Hindi the national language. There is no possibility of Hindi endangering the provincial languages. Hindi is a fine rope with which we can bind the whole of India together. Some people complain that it is difficult to learn other languages. But there is really no difficulty in that. You can find many people in Europe knowing four or five languages, besides their mother tongue.

(6×4=24 marks)

**IV. किन्हीं दो प्रश्नों के उत्तर 250 शब्दों में लिखिए?**

32. खना का चरित्र-चित्रण कीजिए?
33. केरल हिन्दी प्रचार सभा, तिरुवनन्तपुरम के हिन्दी विभाग में एक अतिथि अध्यापक का पद खाली है। उक्त पद में आपकी नियुक्ति के लिए सचिव के नाम एक पत्र लिखिए?
34. कॉलज में विभिन्न व्यक्तियों के साथ बातचीत का नमूना तैयार कीजिए।
35. 'नेपथ्य राग' नाटक के नामकरण की सार्थकता पर विचार कीजिए? (2×15=30 marks)

സെമസ്റ്റർ	:	IV
കോഴ്സ് കോഡ്	:	19UML 411.1
ലാംഗ്വേജ് കോഴ്സ്	:	IX (Add lang:IV)
സമയക്രമം	:	ആഴ്ചയിൽ 5 മണിക്കൂർ (18×5= 90 മണിക്കൂർ)
ക്രെഡിറ്റ്	:	4

**ഭാഷാപ്രായോഗിക പഠനം**

**പഠനോദ്ദേശ്യം**

1. വിദ്യാർത്ഥികളുടെ ആശയവിനിമയശേഷി വർദ്ധിപ്പിക്കുക.
2. ഔദ്യോഗിക/ഭരണകാര്യങ്ങളും ശാസ്ത്രവിഷയങ്ങളും മലയാളഭാഷയിലൂടെ അവതരിപ്പിക്കാനുള്ള കഴി വ്യാകൃതം.
3. മലയാള ഭാഷ കൈകാര്യം ചെയ്യുമ്പോൾ ഉപയോഗിക്കുന്ന പാഠകൃതികൾ സ്വയം തിരഞ്ഞാൻ പ്രാപ്തമാക്കുക.
4. പദം, വാക്യം, ചിഹ്നം എന്നിവ തിരിച്ചറിയുന്നതിലൂടെ പ്രായോഗികപരമായ ഭാഷാശുദ്ധി നിലനിർത്തുക.
5. മലയാള ഭാഷ അനായാസം കൈകാര്യം ചെയ്യാനുള്ള കഴിവ് നേടിക്കൊടുക്കുക.
6. വിവർത്തനത്തിൽ പ്രായോഗിക പരിശീലനം നൽകുക.

**പാഠ്യപദ്ധതി :**

**മൊഡ്യൂൾ - ഒന്ന് (18 മണിക്കൂർ)**

പദശുദ്ധി - വാക്യശുദ്ധി, വാക്യ രചനയിൽ ശ്രദ്ധിക്കേണ്ട കാര്യങ്ങൾ, ഭാഷാ പ്രയോഗത്തിലെ ശരി തെറ്റുകൾ - നല്ല മലയാള ശൈലി - ശൈലീ ഭംഗം - വാക്യങ്ങളും വാക്യങ്ങളും തിരിച്ചറിയുന്നതിലൂടെ ശുഭൃതവാനുള്ള പ്രായോഗിക പരിശീലനം.

**മൊഡ്യൂൾ - രണ്ട് (18 മണിക്കൂർ)**

ശബ്ദ കോശജ്ഞാനം, വാക്യങ്ങളുടെ അർത്ഥം വിപരീത ശബ്ദങ്ങൾ സമാന ശബ്ദങ്ങൾ നാനാർത്ഥങ്ങൾ, പദച്ഛേദം, ചേർത്തെഴുത്ത്, എതിർ ലിംഗം, അർത്ഥ വ്യത്യാസം. മുതലായവയിലൂടെ വിദ്യാർത്ഥികളുടെ ഭാഷാ ഗ്രഹണ ക്ഷമത വർദ്ധിപ്പിക്കുന്നു.

**വിശദീകരണം:**

**മൊഡ്യൂൾ മൂന്ന് (18 മണിക്കൂർ)**

1. ആശയ വിപുലനം .... പ്രകൃഷ്ട കാവ്യ മാതൃകകളിലെ ഉദ്ധരണികൾ നൽകി, ആശയം വിപുലീകരിച്ച് എഴുതാനുള്ള ശേഷി വർദ്ധിപ്പിക്കും വിധം അഭ്യാസ പ്രവർത്തനങ്ങൾ നടത്തുക.
2. പരാവർത്തനം: തന്നിരിക്കുന്ന പാഠ്യഭാഗം എടുത്തുറച്ചിലുകൾ വരാതെ ഗദ്യരൂപത്തിലാക്കുവാനുള്ള പരിശീലനം
3. മൂന്നിലൊന്നായി സംഗ്രഹിക്കൽ: ആശയ ചോരണം വരാതെ സുദീർഘങ്ങളായ മാതൃകകൾ സംഗ്രഹിക്കാനുള്ള ശേഷി.
4. ഉത്തരം കണ്ടെത്തൽ: ഗദ്യ-പദ്യ മാതൃകകളിൽ നിന്ന് ഉത്തരം കണ്ടെത്തുന്നതിലൂടെ ശേഷി വളർത്തുന്നു.

**മൊഡ്യൂൾ നാല് (36 മണിക്കൂർ)**

1. ഉപന്യാസം : നിർവ്വചനം., വിവിധ ഉപന്യാസ മാതൃകകൾ, ഒരു ഉപന്യാസം തയ്യാറാക്കുമ്പോൾ ശ്രദ്ധിക്കേണ്ട കാര്യങ്ങൾ, പ്രായോഗിക ഒരു ഉപന്യാസം തയ്യാറാക്കുമ്പോൾ ശ്രദ്ധിക്കേണ്ട കാര്യങ്ങൾ, പ്രായോഗിക മാതൃകകളിലൂടെ ഏതൊരു വിഷയത്തെക്കുറിച്ചും ഉപന്യാസം തയ്യാറാക്കുവാനുള്ള പരിശീലനം.

**വിശദീകരണം**

- 1. ആ മനുഷ്യൻ നീതന്നെ : സി.ജെ. തോമസ്
- 2. രാവുണ്ണി : പി.എം. താജ്

**മൊഡ്യൂൾ മൂന്ന് (18 മണിക്കൂർ)**

**തിരക്കഥാപഠനം**

ചലച്ചിത്രനിർമ്മിതിയിൽ തിരക്കഥയ്ക്കുള്ള പ്രാധാന്യത്തെക്കുറിച്ചുള്ള അന്വേഷണ നേടണം

**വിശദീകരണം**

- 1) ഒഴിമുറി : ജയകാന്തൻ
- 1. കേരള സാഹിത്യ ചരിത്രം - ഉള്ളൂർ
- 2. സാഹിത്യ ചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - ഡോ.കെ.എം.ജോർജ്ജ്
- 3. കൈരളിയുടെ കഥ - എൻ.കൃഷ്ണപിള്ള
- 4. കുഞ്ചൻ നമ്പ്യാർ വാക്കും സമൂഹവും - കെ.എൻ.ഗണേഷ്
- 5. കഥയും തിരക്കഥയും - എ.ജി.രാജ്കുമാർ
- 6. സിനിമയുടെ ലോകം - അടൂർ ഗോപാലകൃഷ്ണൻ
- 7. ആധുനിക മലയാള സിനിമ - കെ.പി. രാമൻ കുട്ടി
- 8. സിനിമയുടെ വഴിയിൽ - ഐ.ഷൺമുഖദാസ്
- 9. സഞ്ചാരിയുടെ വീട് - ഐ.ഷൺമുഖദാസ്
- 10. കഥയും തിരക്കഥയും - എ.ജി. രാജ്കുമാർ
- 11. സിനിമയും മലയാളസാഹിത്യവും - മധു ഇറവങ്കര
- 12. മലയാള സിനിമ - സിനിക്
- 13. ചലച്ചിത്രത്തിന്റെ പൊരുൾ - വിജയകൃഷ്ണൻ
- 14. ചലച്ചിത്ര സമീക്ഷ - വിജയകൃഷ്ണൻ
- 15. സിനിമയുടെ രാഷ്ട്രീയം - രവീന്ദ്രൻ
- 16. കാഴ്ചയുടെ അശാന്തി - രവീന്ദ്രൻ
- 17. സിനിമയെ കണ്ടെത്തൽ - എം.എഫ്.തോമസ്
- 18. മലയാള സിനിമ അരനൂറ്റ് - (എഡി) കെ.ജയകുമാർ
- 19. എം.ടി, കല, കാലം, വൃത്തി - (എഡി) കെ.ജയകുമാർ
- 20. എം.ടി. കഥയും പൊരുളും - (എഡി) എം.എം. ബഷീർ
- 21. എം.ടി.യുടെ സർഗ്ഗപ്രപഞ്ചം - കേരളഭാഷാഇൻസ്റ്റിറ്റ്യൂട്ട്
- 22. എം.ടി.കല,കാലം,സ്വത്വം - ഡോ.എ.എസ്. പ്രതീഷ്



**FATIMA MATA NATIONAL COLLEGE (AUTONOMOUS), KOLLAM**

**Fourth Semester B.A Degree Examination May 2019**

**CBCSS**

**19UML 411.1: ഭാഷാപ്രായോഗിക പഠനം**

**Time : 3 Hrs.**

**Max.Marks : 80**

**Section A**

- I. ഒറ്റവാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരമെഴുതുക. 1 മാർക്ക് വീതം**
1. 'തലപ്പാവ്' എന്ന സിനിമയുടെ സംവിധായകൻ ആര്?
  2. 'റൂഥ്' ആരുടെ നാടകം ആണ്?
  3. പി.എം. താജിന്റെ ഏതെങ്കിലും രണ്ട് നാടകങ്ങളുടെ പേര് എഴുതുക.
  4. തുള്ളൽ വിഭാഗങ്ങൾ ഏതെല്ലാം?
  5. സ്യമന്തകം ഓട്ടൻതുള്ളൽ ആരുടെ കൃതി?
  6. അമ്പലപ്പുഴ ശ്രീകൃഷ്ണസ്വാമി ക്ഷേത്രം മലയാളത്തിലെ ഏത് കവിതയുമായി ബന്ധപ്പെട്ടിരിക്കുന്നു?
  7. 'ഇനി വായന ഇനി വായന' ആരുടെ കൃതി?
  8. 'മധുരം നിന്റെ ജീവിതം' ആരെക്കുറിച്ചുള്ള കൃതിയാണ്?
  9. മലയാളത്തിലെ ഇബ്സൺ എന്നറിയപ്പെടുന്ന നാടക്യത്താര്?
  10. മലയാളത്തിൽ ആദ്യമായി പ്രഹസനങ്ങൾ രചിച്ചത് ആര്? (1×10=10)

**Section B**

- II. ഏതെങ്കിലും 8 ചോദ്യത്തിന് അരപ്പുറത്തിൽ കവിയാതെ ഉത്തരമെഴുതുക 2 മാർക്ക് വീതം.**
11. ജോർദ്ദാൻ എങ്ങോട്ടാണ് ഒഴുകുന്നത് - സന്ദർഭം വ്യക്തമാക്കുക.
  12. ഇ-വായന എന്നാൽ എന്ത്?
  13. കണ്ണുള്ളത് തുറക്കാൻ മാത്രമല്ല അടയ്ക്കാൻ കൂടിയാണ് - സന്ദർഭം വ്യക്തമാക്കുക.
  14. ഇതര നാടകങ്ങളിൽ നിന്നും തനത് നാടകം എങ്ങനെ വ്യത്യാസപ്പെട്ടിരിക്കുന്നു?
  15. ബ്ലോഗെഴുത്തിന്റെ സവിശേഷതകൾ വ്യക്തമാക്കുക.
  16. രാവണൻ കാർത്തവീര്യാർജ്ജുനന്റെ അഹങ്കാരം ശമിപ്പിച്ചതെങ്ങനെ?
  17. കാർത്തവീരാർജ്ജുനം തുള്ളൽ ഏത് വിഭാഗത്തിൽപ്പെടുന്ന വിശദമാക്കുക.
  18. രാവുണ്ണി എന്ന നാടകത്തിന്റെ കേന്ദ്രഭാവം എന്ത്?
  19. കാർത്തവീര്യാർജ്ജുന വിജയത്തിൽ കാർത്തവീര്യന്റെ അഹങ്കാരം ശമിപ്പിക്കുന്നതെങ്ങനെ?
  20. ഓട്ടൻ തുള്ളലിലെ വേഷവിധാനത്തെ കുറിച്ച് വിവരിക്കുക.

### Section C

#### II. ഏതെങ്കിലും 6 ചോദ്യത്തിന് ഒന്നരപുറത്തിൽ കവിയാതെ ഉത്തരമെഴുതുക 4 മാർക്ക് വീതം.

- 21. 'ആ മനുഷ്യൻ നീ തന്നെ' എന്ന ശീർഷകത്തിന്റെ സാങ്കല്പം പരിശോധിക്കുക.
- 22. തിരുവിതാംകൂർ ഭാഷയിലെ മനോഹാരിത 'ഒഴിമുറിയിൽ' എങ്ങനെ ആവിഷ്കരിച്ചിരിക്കുന്നു?
- 23. ഒഴിമുറി ചർച്ചചെയ്യുന്ന ജീവിതസംഘർഷം വിവരിക്കുക.
- 24. കാർത്തവീരാർജ്ജുന വിജയം തുള്ളലിൽ പ്രകടമാകുന്ന സാമൂഹിക ആക്ഷേപഹാസ്യം വ്യക്തമാക്കുക.
- 25. രാവുണ്ണി എന്ന നാടകപ്രമേയ സവിശേഷത വിശദമാക്കുക.
- 26. 'ബൽഗേബ' എന്ന കഥാപാത്ര നിരൂപണം ചെയ്യുക.
- 27. നാഥൻ എന്ന പ്രവാചകന്റെ കടന്നുവരവ് 'ആ മനുഷ്യൻ നീ തന്നെ' എന്ന നാടകത്തെ എത്രമാത്രം സംഘർഷാത്മകമാക്കുന്നു? വ്യക്തമാക്കുക.
- 28. ബൈബിൾ രചനകളുടെ മേന്മയും പരിമിതിയും വ്യക്തമാക്കുക.
- 29. പാപബോധം ആ മനുഷ്യൻ നീ തന്നെ എന്ന നാടകത്തിൽ എങ്ങനെ കടന്നു വരുന്നു?
- 30. മലയാള നിരൂപണത്തിലെ വേറിട്ട മുഖമാണ് കെ.പി. അപ്പന്റേത് - വിശദമാക്കുക.
- 31. സി. ജെ. യുടെ ദാർശനികമായ വിചാരധാരകൾ 'ആ മനുഷ്യൻ നീ തന്നെ'യിൽ എത്രത്തോളം പ്രതിഫലിക്കുന്നു.

### Section D

#### IV. മൂന്നുപുറത്തിൽ കവിയാതെ രണ്ടുചോദ്യത്തിന് ഉത്തരമെഴുതുക. 15 മാർക്ക് വീതം.

- 32. തനത് നാടകത്തിന്റെ പൊതു സവിശേഷതകൾ വിശദമാക്കുക.
- 33. ബൈബിൾ കഥയെ നാടകീയമായി ചിത്രീകരിക്കുന്നതിനുള്ള സി.ജെ.യുടെ കഴിവ് 'ആ മനുഷ്യൻ നീ തന്നെ' എന്ന നാടകത്തെ ആസ്പദമാക്കി ചർച്ച ചെയ്യുക.
- 34. കടക്കണിയിൽ അകപ്പെട്ടുപോയ ഒരാളുടെ മാനസിക വ്യഥകളെ രാവുണ്ണി എന്ന നാടകത്തിൽ എപ്രകാരം ചിത്രീകരിച്ചിരിക്കുന്നു?
- 35. നമ്പ്യാരുടെ കൃതികൾ ഉത്തമമായ സാമൂഹിക പരിഹാസങ്ങൾ ആണ്. കാർത്തവീരാർജ്ജുന വിജയത്തെ ആധാരമാക്കി വിലയിരുത്തുക.

## Core Course III

### 19UZO441: Environmental Biology, Habitat Destruction and Disaster Management

No. of credits: 3

Total hours: 54hrs

No. of instructional hours per week: 3

#### Course outcome:

CO1: To learn the principles, applications and management of environmental science.

CO2: To study various aspects of anthropogenic impact on environment.

CO3: To familiarize students with basic concepts of disaster management.

CO4: To study the inherent morphological and physiological bases of behavioural pattern exhibited by vertebrates

CO5: To get knowledge of conservation strategies.

CO6: To understand the basic animal distribution pattern globally.

#### Ecology

33hrs

##### Module I: Components of ecosystem

4hrs

Environmental factors - abiotic factors, light, temperature, soil, water, air; biotic factors- autotrophs, phagotrophs and saprotrophs; ecosystem and inter-relationship between biotic and abiotic factors.

##### Module II: Biogeochemical cycle

6hrs

Biogeochemical cycles: Basic types of biogeochemical cycles - gaseous cycle-carbon and nitrogen cycles, mention sedimentary cycles (P and S), recycling pathways and recycle index. Limiting Factors- basic concepts Liebig's law of minimum, Shelford's law of tolerance, combined concept of limiting factors, Light and temperature as limiting factors.

##### Module III: Habitat Ecology

11hrs

Biosphere classification- lithosphere, hydrosphere and atmosphere –physical features, fauna and their adaptations of aquatic, terrestrial and marine habitats (self-study).

Population ecology: Properties of population- density, natality, mortality, age distribution, biotic potential, environmental resistance and carrying capacity, population growth forms, J and S shaped curves, emigration, immigration and migration, population fluctuation. Community ecology: Definition and characters, species diversity; stratification; dominance; ecotone and edge effect; ecological indicators; community periodicity, succession (self-study)interaction.

##### Module IV: Anthropogenic impact on ecosystem

12hrs

Ionizing radiation and radioisotopes, (ionizing radiation and human health), radiation accidents and other exposures, disposal of radioactive wastes, pesticides like DDT, endosulphan, furadan, insect repellants, e-wastes, Global environmental issues, GATT, Green house effects and climate changes, Acid rain, Global warming, Ozone depletion/ thinning, Desertification, deforestation, Developmental projects-construction of Dams, Hydroelectric projects, Thermal power projects. Monoclonal plantations, GMOs and their impact on ecosystem. Monitoring of pollutants – physical, chemical and biological.

#### Habitat destruction and Conservation Biology

21 hrs

##### Module V: Introduction

7hrs

Background - information for conservation initiations. (Habitat loss, and fragmentation, poaching of wild life and trade, Man wild life conflicts, Invasive Alien Species) Endangered and Endemic species (IUCN red list). Environmental movements: Chipko, Narmada bhachao Andolan, Silent valley movement. Environmental reports: Maghav Gadgil, Kasthurirangan report.

##### Module VI: Conservation Strategies (*Ex situ* and *In situ* conservation)

8hrs

*Ex situ* conservation- The strategy of *ex situ* conservation, Methods of *ex situ* conservation, Long time captive breeding, Short term propagation and release, Animal translocations, Animal reintroduction, Zoos and botanical gardens, Conservation of biodiversity in seed banks, Gene banks and germ plasma reserves; On - farm conservation.

*In situ* conservation: Definition, Advantages and disadvantages, Strategies, National parks and sanctuaries, Biosphere reserves, Critical sites of protected areas and pollution, Management of protected areas, Conservation

beyond parks ,sanctuaries and reserves. Ramsar sites in Kerala.

## **Module VII: Disaster Management**

**6hrs**

Introduction to Disaster Management, Classification of disaster-Natural and Anthropogenic mediated Hazards: causes, consequences and mitigation measures for: Earthquake, Tsunami, Cyclone, Flood, Drought and Landslides.

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## MODEL QUESTION PAPER

**19UZO441: Environmental Biology, Habitat Destruction and Disaster Management**

**Time: 3 Hrs**

**Max Marks:80**

### Section A

**Answer all questions. Each question carries one mark. (10× 1= 10)**

1. Define abiotic factors
2. What are edaphic factors?
3. What is cyclomorphosis?
4. What is phagotroph?
5. Define recycle index.
6. What is Red Data Book?
7. What is limiting factors?.
8. What is lithosphere.
9. Comment on immigration.
10. Comment on Chipko movement

### Section B

**Answer any Eight questions. Each question carries 2 marks. (8×2=16)**

11. What is carrying capacity?
12. What are rare species?
13. What are Biosensors?
14. Write a note on ecotone.
15. What is stratification?.
16. Elaborate on monoclonal plantations
17. Write a note on sigmoid growth curve.
18. Comment on acid rain
19. Comment on habitat loss
20. Describe gene banks
21. Write a note on Endemic species
22. What are perfect cycles?

### Section C

**Answer any SIX questions. Each question carries 4 marks. (6×4= 24)**

23. Write a note on causes of habitat loss.
24. Elaborate on monitoring of pollutants.
25. Explain on the disposal of e waste.
26. Elaborate on the adaptations of desert organisms.
27. Write a note on succession
28. What are GMOs?
29. Comment on Earthquakes.
30. Write a note on biological nitrogen fixation
31. Comment on Madhav Gadgil report.

### Section D

**Answer any TWO questions. Each question carries 15 marks. (2×15 = 30)**

32. Write an essay on biodiversity conservation methods and its significance.
33. Write an essay on biogeochemical cycles.
34. Explain the habitat loss and disaster management.
35. Write an essay on impacts of deforestation on environment.

## Core Course IV

### 19UZO442: Practical I - Instrumentation, Animal Diversity I and Animal Diversity II

No. of credits: 4

No. of instructional hours per week: 2

#### Course outcome:

CO1: To familiarize students with bio instruments used for Zoological studies.

CO2: To provide a hands on training experience in anatomy through simple dissection and mountings.

CO3: To familiarize students with conventional organ system in common, easily available animals.

CO4: To emphasize the adage that 'seeing is believing' typical examples and economically important specimen (preserved) to be studied.

#### Methodology and Perspectives of Zoology

##### 1) Instrumentation

(Giving emphasis on the principle; description and use of the equipment concerned)

- Compound Microscope.
- Micrometer. (Measurement of a given animal in slide mount)
- Camera Lucida.
- pH meter. ( Measurement of a PH of a given sample )
- Colorimeter/Spectrophotometer.
- Electrophoresis apparatus.
- Estimation of Mean, Median, Mode and SD of a given data.
- Graphical representation of the data provided.

#### Animal Diversity I

##### Minor Practicals

1. Earthworm – body setae
2. Honey bee – mouth parts
3. Prawn – appendages

##### Major Practical – (Any Two)

1. Earthworm – nervous system
2. **Earthworm- digestive system**
2. Cockroach – nervous system
3. **Cockroach- digestive system**
4. Prawn – nervous system
5. **Prawn- reproductive system**

##### Taxonomy

Identification, Classification up to class and brief note of the following specimens.

1. Protista – *Actinophrys, Noctiluca, Paramecium, Opalina*– any 2
2. Phylum Porifera – *Euplectella, Spongilla*- any 1
3. Phylum Cnidaria – *Hydra, Obelia, Physalia, Aurelia, Sea anemone, Madrepora*– any 3
4. Phylum Nematoda – *Ascaris* male and female (entire)
5. Phylum Platyhelminthes – *Bipalium, Fasciola, Taeniasolium*– any 1
6. Phylum Annelida – *Earthworm, Nereis, Leech, Aphrodite, Arenicola*– any 1
7. Phylum Onychophora – *Peripatus*
8. Phylum Arthropoda – *Cockroach, Limulus, Eupagurus, Sacculina, Honey bee, Lepisma, Scorpion* – any 3
9. Phylum Mollusca – *Chiton, Pila, Xancus, Dentalium, Perna, Mytilus, Teredo, Sepia, Octopus*. – any 2
10. Phylum Echinodermata – *Starfish, Brittle star, Sea urchin, Sea cucumber, Sea lily* – any 2

Submit any three common agricultural pest – Paddy, coconut, stored grain

## Animal Diversity II

### Minor practical

1. Fishes - Placoid scales of *Scoliodon*, cycloid and ctenoid scales of *Anabas*
2. Fish - Brain

### Major practical

1. Fish – Viscera-Flag label the parts and write notes.
2. Fish – Alimentary canal-Flag label the parts and write notes.

### Osteology

Human limb bones, girdles, typical vertebra, atlas, axis, thoracic and lumbar vertebrae and lower jaw.  
Turtle - carapace and plastron

### Taxonomy

Identification, classification up to order and brief note of the following specimens.

1. Prochordates –Amphioxus (entire)
2. Pisces - 2 cartilaginous fishes, 2 fishes with accessory respiratory organs, 2 edible fishes, 2 culturable fishes and 2 Cat fishes.
3. Amphibia - any 3 (representing the three orders).
4. Reptilia - 2 poisonous and 2 non -poisonous snakes, *Draco*, *Chameleon*
5. Aves - Different feathers, Pigeon.
6. Mammals – Bat

**Complementary Course**  
**19UCH431.4: PHYSICAL CHEMISTRY**

**No. of credits: 3**

**No. of instructional hours per week: 3**

**Total hours: 54**

**Course outcome**

CO1: To impart a concrete idea of the rates of chemical reactions

CO2: To get an understanding of the basics of ionic equilibria

CO3: To inculcate an overview of the properties of colloidal and its applications

CO4: To study the theory and applications of UV-Visible and NMR spectroscopy

CO5: To learn about the different instrumental methods used in chemical analysis

CO6: To impart knowledge on different liquid systems

**Module I. Chemical kinetics**

**9 hours**

Chemical kinetics, catalysis, rate of reactions, various factors influencing rate, order, molecularity, zero, first, second, third order reactions ( derivation of first order only) fractional life time, units of rate constants, influence of temperature on reaction rates, Arrhenius equation, Calculation of Arrhenius parameters, Collision theory, catalysis, different types of catalysis, intermediate compound formation theory and adsorption theory.

**Module II. Ionic equilibrium**

**9 hours**

Arrhenius, Lowry- Bronstead and Lewis concept of acids and bases,  $K_w$  and pH, pH of strong and weak acids,  $K_a$  and  $K_b$ , mechanism of buffer action, Henderson equation - pH of buffer, Hydrolysis of salt, Degree of hydrolysis and hydrolysis constant .

**Module III Colloids**

**9 hours**

Colloidal state: Types of colloids, preparation of colloids-Purification of colloids – ultra filtration and electrodialysis, Kinetic, optical and electrical properties of colloids. Ultra microscope, Electrical double layer and zeta potential. Coagulation of colloids, Hardy-Schulz rule. Micelles and critical micelle concentration, sedimentation Application of colloids – Cottrell precipitator, purification of water and delta formation.

**Module IV Spectroscopy**

**9 hours**

UV-Visible Spectroscopy- absorption, types of electronic transitions, effect of conjugation, concept of chromophore, auxochrome, bathochrome, hypochromic shifts, hyperchromic and hypochromic effects. UV-Visible spectra of enes. Calculation of  $\lambda_{max}$ . simple applications of UV spectroscopy, conjugation, functional group and geometrical isomerism

Principle of NMR, nuclear spin, chemical shift, spin-spin coupling,  $\tau$  and  $\delta$ , PMR of simple organic molecules, principle of MRI .

**Module V- Instrumental methods of Chemical Analysis**

**9 hours**

Principle – instrumentation and applications of Atomic absorption spectroscopy- flame emission spectroscopy- Thermal methods - thermogravimetry (TG) - Differential thermal analysis (DTA) - Gas Chromatography- HPLC – Introduction to zone electrophoresis and capillary electrophoresis.

**Module VI Solutions**

**9 hours**

Liquid-Liquid system:- Completely miscible, ideal and non-ideal mixtures, Raoult's law, vapour pressure-composition and temperature-composition curves, fractional distillation, deviation from Raoult's law, Azeotropic mixtures, partially miscible liquid system, critical solution temperature, Conjugate layers, example for upper, lower and upper cum lower CST, Theory of steam distillation

**Referances**

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4. Elementary organic spectroscopy, Y.R Sharma, S chand & Company
5. Principles of Physical Chemistry, B.R.Puri, R.L.Sharma & Pathania, Vishal Publishing
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**MODEL QUESTION PAPER**  
**19UCH431.4: PHYSICAL CHEMISTRY**

**Time:3hours**

**Max.Marks :80**

**SECTION – A**

**(Answer all questions. Answer in one word to maximum two sentences. Each question carries one mark)**

1. What are the units of rate constants for first and second order reactions?
2. Give one example of a reaction in which order and molecularity have different values.
3. Define pH.
4. State Hardy-Schulze rule.
5. Distinguish between lyophobic colloids and lyophilic colloids.
6. Define chemical shift
7. Explain chromophore with an example.
8. What is meant by a buffer solution? Give one example each for acid buffer and basic buffer solution.
9. What is meant by the term ideal solution?
10. Write a short note on zone electrophoresis

**SECTION - B**

*(Short answer type. Answer any 8 questions from the following. Each question carries two marks.)*

11. What are the factors which affect the rate of a chemical reaction?
12. Write down the expression that gives the dependence of the rate constant of a chemical reaction on the absolute temperature and explain the terms involved.
13. Explain briefly Lewis concept of acids and bases with two examples
14. What is zeta potential? How does it arise?
15. What is critical micelle concentration? Discuss the structure of micelles in polar and nonpolar media
16. Tetra Methyl Silane (TMS) is chosen as a reference compound in NMR studies. Give reasons
17. What are the different types of electronic transitions?
18. Explain the working of Hollow Cathod Lamp
19. What is the difference between GC and HPLC?
20. Explain the terms Degree of hydrolysis and hydrolysis constant.
21. What are the conditions at which the solutions deviate from ideal behaviour?
22. Calculate the mole fraction of alcohol,  $C_2H_5OH$  and water in a solution made by dissolving 9.2 g of alcohol in 18 g of water.

**(8 X 2 = 16 Marks)**

**SECTION - C**

*(Short essay type. Answer any 6 questions from the following. Each question carries four marks.)*

23. What is energy of activation? What happens to the energy of activation in presence of a catalyst.
24. Explain Half life period of a reaction. A first order reaction has a specific reaction rate of  $2.31 \times 10^{-3} \text{ s}^{-1}$ . Calculate the half life period of the reaction.
25. Calculate the pH of a buffer solution containing 0.2 mole of  $NH_4Cl$  and 0.1mole of  $NH_4OH$  per litre.  $K_b$  for  $NH_4OH = 1.85 \times 10^{-5}$ .
26. Derive the relation between  $K_h$ ,  $K_w$  and  $K_a$ .
27. Give an account of applications of colloids.
28. Explain ultra filtration and electro dialysis techniques used for the purification of colloids
29. Which of the following will show spin-spin coupling in their NMR spectra? If coupling is observed, give the spin multiplicity : (a)  $ClCH_2CH_2Cl$  (b)  $CH_3COCH_3$  (c)  $CH_3CHO$  (d)  $ClCH_2CH_2I$
30. Briefly explain TGA taking suitable example
31. Explain the principle of Fractional Distillation.

**(6 X 4 = 24marks)**

**SECTION – D**

*(Answer any 2 question. Each question carries 15 marks)*

32. (a) Differentiate between Molecularity and order of a reaction with examples  
(b) Discuss the Kinetic, optical and electrical properties of colloids  
(c) Explain the protective action of colloids

33. (a) Discuss the principle and applications of AAS  
(b) Distinguish between AAS and FES  
(c) Explain the applications of TGA and DTA
34. (a) Discuss the factors responsible for deviation from Raoult's law by taking suitable examples.  
(b) Define critical solution temperature. Explain systems having upper and lower CST using examples  
(c) Explain the applications of UV spectroscopy
35. (a) Discuss the advantages of Bronsted-Lowery concept over Arrhenius concept and also the limitations of the Bronsted-Lowery concept.  
(b) The salt of strong acid and strong base does not undergo hydrolysis. Explain.  
(c) Explain the underlying principle in an NMR spectrum and interpret the low resolution NMR spectrum of ethanol molecule.

**(15 X 2 = 30marks)**

# SYLLABUS FOR LABORATORY COURSES

## 19UCH432.4

No. of credits: 4

No. of instructional hours per week: 2

### Course outcome

CO1: To impart an idea of the reactions of functional groups in organic compounds

CO2: To identify organic compounds

CO3: To attain skill in micro scale analysis and handling glasswares in the laboratory

CO4: To develop accuracy and precision in volumetric estimations

CO5: To record experiments systematically

### Qualitative Analysis

Systematic analysis with a view to identify the organic compound (aromatic – aliphatic, saturated – unsaturated, detection of elements and detection of functional groups) – glucose, alcohols, phenols, halogen compounds, nitro compounds, amino compounds, aldehydes, ketones, carboxylic acids, amides, urea, thiourea and esters. Only monofunctional compounds are to be given.

### Organic preparations

1. Acetanilide from aniline
2. Meta dinitrobenzene from nitro benzene
3. Benzoic acid from benzyl chloride

A student has to analyse at least twelve organic compounds.

### Volumetric Analysis

#### A. Acidimetry and alkalimetry

- a. Preparation and standardization of decinormal HCl using sodium carbonate as primary standard
- b. Estimation of a strong base and a weak base using standardized HCl
- c. Estimation of sodium hydroxide using (i) Std. oxalic acid and (ii) Std. HCl
- d. Determination of sodium hydroxide, and sodium hydroxide and sodium carbonate in a mixture (indicator method)
- e. Preparation and standardization of decinormal NaOH using oxalic acid as primary standard.
- f. Estimation of a strong acid using standardized NaOH

#### B. Permanganometry

- a. Standardization of  $\text{KMnO}_4$  by oxalic acid/sodium oxalate and Mohr's salt
- b. Estimation of oxalic acid/sodium oxalate
- c. Estimation of Mohr's salt
- d. Estimation of calcium

#### C. Dichrometry

- a. Preparation of Std.  $\text{K}_2\text{Cr}_2\text{O}_7$  and estimation of ferrous iron by external and internal indicators.
- b. Estimation of ferric iron by reduction with stannous chloride (internal indicator).

#### D. Iodimetry and Iodometry

- a. Standardisation of sodium thiosulphate using std potassium dichromate
- b. Estimation of copper in a solution
- c. Estimation of iodine

#### E. Complexometric titrations

- a. Standardisation of EDTA using std Mg or  $\text{Zn}^{2+}$  ion solution.
- b. Estimation of any one metallic ion from  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Zn}^{2+}$  or  $\text{Ni}^{2+}$

A student has to carry out at least twelve experiments in this class.

### Chromatography

- a. Paper chromatographic separation of mixture of nitroanilines, amino acids and sugars
- b. Separation of a mixture of dyes by column chromatography.

### Gravimetric Analysis

- a. Estimation of water of hydration in barium chloride crystals
- b. Estimation of barium in barium chloride solution.

This laboratory based course reinforces the qualitative and quantitative chemical analysis that the student has learned in the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> semesters

**Complementary Course**  
**19UBO431 PLANT PHYSIOLOGY & APPLIED BOTANY**

<b>Distribution of hours</b>	<b>Theory</b>	<b>Practical</b>
<b>Plant Physiology</b>	30 hrs	14 hrs
<b>Environmental Biology</b>	08 hrs	12 hrs
<b>Horticulture</b>	06 hrs	02 hrs
<b>Plant Biotechnology</b>	10 hrs	08 hrs
<b>Total</b>	<b>54 hrs</b>	<b>36 hrs</b>

**Aim and Objectives of the Course**

- To develop an understanding on physiological phenomenon in plants
- To develop skills and expertise to interpret the theories and mechanisms in plant physiology
- To get an understanding on the applied fields in Botany

**MODULE -I: Plant Physiology**

1. **General introduction** :Physiological processes,their significance and applications.

2. **Water relations of plants**:Importance of water to plant life.

a.**Absorption of water**-organs of absorption, root and root hair. Physical aspect of absorption -imbibition,diffusion and osmosis.Plant cell as an osmotic system;Water potential and osmotic potential.Plasmolysis and its significance,practical applications.Mechanism of water absorption-active and passive absorption ,root pressure.Pathway of water across root cells.

b.**Ascent of sap**-Vital and physical theories.

c.**Loss of water from plants**:transpiration-cuticular,lenticular and stomatal mechanism-theories-starch sugar hypothesis, potassium ion theory. Significance of transpiration-guttation, anti-transpirants, factors affecting transpiration.

3. **Mineral nutrition**: Macro and micro elements, role of essential elements and their deficiency symptoms. Mechanism of mineral absorption (a) passive absorption-ion exchange and Donnan equilibrium (b) Active absorption-carrier concept.

**MODULE-II**

4.**Photosynthesis**: Introduction, significance and general equation. Photosynthetic apparatus, structure and function of chloroplast, quantasomes-

solar spectrum and its importance- Fluorescence and two pigment systems-raw material for photosynthesis-Mechanism of photosynthesis- Light reaction- cyclic and non cyclic photophosphorylation. Hill reaction, Darkreaction: Calvencycle. Comparative study of C3, C4 and CAM plants. Photorespiration. 5. Factors affecting photosynthesis-Law of limiting factor.

### **MODULE-III**

6. **Respiration**:Introduction,definition ,significance and general equation. Respiratory substances, types of respiration- aerobic and anaerobic. Aerobic respiration- glycolysis, Kreb's cycle, terminal oxidation. Anaerobic respiration-fermentation: alcoholic and lactic acid fermentation. Energy relation of respiration - R.Q and its significance- Factors affecting respiration.

7. **Translocation of solutes**: Path way of movement, phloem transport, mechanism of transport- Munch hypothesis, protoplasmic streaming theory-activated diffusion hypothesis, electro osmotic theory.

8. **Growth**: Phases of growth-vegetative and reproductive growth-growth curve-plant growth regulators-Auxins,Gibberellins,Cytokinins,Ethylene,Abscisic acid-Synthetic plant hormones-practical applications. Senescence and abscission. Photoperiodism.

#### **Practical**

**14 hrs**

1. Water potential of onion peel/Rhoeo peel by plasmolytic method
2. Papaya petiole osmoscope.
3. Determination of water absorption and transpiration ratio.
4. Measurement of rate of transpiration using Ganong's potometer or Farmer's potometer.
5. Evolution of oxygen during photosynthesis.
6. Evolution of CO<sub>2</sub> during respiration.
7. Ganong's respirometer and measurement of R.Q
8. Simple respiroscope
9. Alcoholic fermentation using Kuhne's fermentation vessel
10. Geotropism using Clinostat.
11. Measurement of growth using Arc auxanometer.

### **MODULE -IV: Environmental Biology**

1. Definition- Scope and relevance
2. Ecosystems- Concept of an ecosystems- Structure and function of an ecosystem
3. Biotic and abiotic components- Energy flow in an ecosystem.
4. Ecological succession- Definition & types (Hyrosere & Xerosere).
5. Food chains-Food web & ecological Pyramids.
6. Introduction-types,characteristic features,structure and functions of the following ecosystems.

a) 1.Forest ecosystem 2.Grassland ecosystem 3.Desert ecosystem 4.Aquatic ecosystems-Ponds,Estuaries.

b) Plant adaptations-Morphological,anatomical and physiological adaptations of- Hydrophytes,Xerophytes,Halophytes,Epiphytes,Parasites.

**Practical**

**12 hrs**

1. Study of ecological and anatomical modifications of Xerophytes,Hydrophytes,Halophytes,Epiphytes and Parasites.
2. Observation and study of different ecosystems mentioned in the syllabus.

**MODULE –V: Horticulture**

1. Introduction to horticulture
2. Garden tools and implements
3. Methods of vegetative propagation:Cutting,grafting,layering,special methods of propagation,propagation by seeds.
4. Media for propagation of plants-soil,sand,Cocopeat,Sphagnum moss,vermiculture,soil mixture,nursery beds
5. Manures-organic and inorganic

**Practical**

**02hrs**

Methods of vegetative propagation:Cutting,grafting,layering,special methods of propagation-propagation by seeds.

**MODULE –VI: Plant Biotechnology**

1. Introduction-History-Major achievements-Biotechnology in india
2. Plant Tissue culture-Culturte media;composition,preparation and sterilization-Totipotency:definition and importance. Dedifferentiation and redifferentitation-Callus and suspension culture,meristem culture-Somatic embryogenesis,Anther culture and production of haploids.

**Practical**

**08 hrs**

Preparation of media, sterilization, inoculation and callus induction (Demonstration only)

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### **Course Outcome**

- The students will have an idea on the theories and principles in plant physiology
  - The students will be familiarised with the applied branches in Botany
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**Model Question Paper**  
**19UBO431: Plant Physiology & Applied Botany**

Time: 3 Hrs.

Max. Marks: 80

**PART A (Answer all, 1 mark each)**

1. Define PAR
2. What is terminal oxidation?
3. What is Donnan equilibrium?
4. What is meant by totipotency?
5. Define guttation
6. Which element's deficiency causes mottling in plants?
7. Give an example for a synthetic auxin
8. Define imbibition
9. Define water potential
10. Which is the reaction centre of PS I (10 x 1 = 10 Marks)

**PART B (Answer any eight questions, 2 marks each)**

11. Point out the differences between active absorption and passive absorption
12. Write any four advantages of vermicomposting
13. Mention the significance of haploid plants
14. Write a note on the physiological adaptations of xerophytes
15. Define plasmolysis and mention its significance
16. Differentiate osmotic pressure and turgor pressure
17. Briefly describe the root pressure theory
18. Give the differences between PS I and PS II
19. Write a note on the irrigation tools used in horticulture
20. What is the significance of CAM in succulent plants?
21. Write any four differences between diffusion and osmosis
22. Give an account on the anaerobic breakdown of pyruvic acid (8 x 2 = 16 Marks)

**PART C (Answer any six questions, 4 marks each)**

23. Write a note on somatic embryogenesis
24. Describe the types of grafting
25. Write a note on TCA cycle and give its significance
26. Depict the light reaction of photosynthesis
27. What are ecological pyramids? Explain the different types of ecological pyramids
28. Describe the vegetative propagation methods
29. Differentiate organic and inorganic manures
30. Explain the components and constitution of tissue culture media.
31. Explain in detail terminal oxidation. (6 x 4 = 24 Marks)

**PART D (Answer any two questions, 15 marks each)**

32. Write an essay on C3 cycle of photosynthesis
33. Explain different plant tissue culture techniques.
34. Write an essay on the structure and functions of a pond ecosystem.
35. Describe the theories on Ascent of Sap. (2 x 15 = 30 Marks)



## Semester V

### Core Course V

#### 19UZO541: Cell Biology and Molecular Biology

No of credits: 4

Total hours: 90

No of instructional hours per week: 5

#### Course outcome:

CO1: To educate the students on the basic structure and function of a cell.

CO2: To familiarises the students with the concept of Cell signalling and signal transductions.

CO3: To introduce the concept of cell division and abnormal cell division leading to cancer

CO4: To equip the students with characteristic features of aging.

CO5: To introduce the principles of molecular biology and gene manipulation.

CO6: To familiarises the mechanism and application of bacterial recombination.

#### Cell Biology

56 hrs

##### Module I: Cell and Cell organelles

40 hrs

History, development and scope of cell biology, discovery of cells; cell theory and its modern version (self-study). Cell and its components: Basic types of cells- prokaryotic and eukaryotic, nature and comparison (self-study). Ultra structural organization and functions: Plasma membrane- ultra structure- fluid mosaic model, functions of plasma membrane, trans-membrane transport. Cell communication- cell signalling and signal transduction, basic elements involved. Mitochondria- structure, functions, mention oxidative phosphorylation and electro transport chain. Endoplasmic reticulum - morphology, types, functions and formation. Golgi bodies - morphology, types, functions (role in secretion) and formation. Lysosomes- morphology, mention major groups of enzymes, classification, polymorphism and functions. Microbodies - morphology, major enzymes, peroxisomes and glyoxisomes functions. Ribosomes - different types, subunits, functions. Proteasomes - structure, ubiquitin - tagged protein degradation. Centrioles and basal bodies- structure and functions. Cytoskeleton- microtubules, microfilaments and intermediate filaments- examples and functions. Interphase nucleus - gross structure and functions; nuclear envelope- pores and pore complexes; nuclear lamina, formation of NE; nucleoplasm- nature and importance. Nucleolus - structure, nucleolar cycle, nucleolar organizer and functions. Chromatin - euchromatin and heterochromatin, nucleosomes, unit fibre, solenoid fibre, and higher order of organization, condensation and coiling. Chromosome - structure of a typical metaphase chromosome; giant chromosomes- polytene chromosomes, lamp brush chromosomes; endomitosis.

##### Module II: Cell Division

8 hrs

Cell cycle- G1, S, G2, and M phases (mention G0, and D0 stages and their significances); amitosis (brief account only). Mitosis, Meiosis: description of all stages, synaptonemal complex, significance.

##### Module III: Biology of Cancer

4 hrs

Characteristics of cancer cells, dedifferentiation of cancer cells, theories of cancer, carcinogenesis, oncogenes and tumour suppressor genes.

##### Module IV: Aging

4 hrs

Cellular and other changes related to aging- apoptosis, causes of aging, mention free radicals and superoxide dismutase (SOD). Aging related disorders-Osteoporosis, hypertension.

#### Molecular Biology

34 hrs

##### Module V: Introduction History, development and scope

10 hrs

Nature of genetic material: search for the genetic material, Griffith's experiment, transformation, contributions of Avery, MacLeod and McCarty, Conrat & Stern's experiment with TMV, Hershey & Chase's experiment, and transduction. Composition and structure of nucleic acids - Watson - Crick model of DNA, clover leaf model of tRNA, different types of DNA and RNA; DNA replication in prokaryotes and eukaryotes - Semi conservative method, Messelson & Stahl experiment, replication machinery and mechanism; modification and repair of DNA.

**Module VI: Gene Expression****15 hrs**

Contributions of Garrod, one gene – one enzyme hypothesis, one gene one polypeptide hypothesis, central dogma of Molecular Biology, central dogma reverse, colinearity of genes and gene products. Genetic code - deciphering / cracking the GC, characteristics of GC, codon assignment and wobble hypothesis. Mention contributions of Nirenberg and his associates, Khorana and his associates. Transcription of RNAs - RNA polymerases, transcription factors, mechanism of transcription, posttranscriptional modifications of mRNA, rRNA and tRNA, reverse transcription, translation – machinery and mechanism; post translational modification of proteins; role of chaperones in protein normal folding and protection.

**Module VII: Gene regulation****5 hrs**

In prokaryotes (inducible and repressive systems); operon concept – Lac operon and Trp operon

**Module VIII: Bacterial Recombination****4 hrs**

Transformation, conjugation and transduction (general and specialized transduction).

**Suggested topics for Assignments/ seminars**

1. Basic properties of cells
2. A brief history of studies on structure of plasma membrane
3. Role of Ca<sup>++</sup> in signal transduction
4. Chemical components of a) endoplasmic reticulum, b) Golgi bodies c) Lysosomes d) Ribosomes
5. Model of ribosome structure
6. Lysosomes and storage diseases

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**MODEL QUESTION PAPER**  
**19UZO541: CELL AND MOLECULAR BIOLOGY**

**Time 3 hrs.**

**Max.Marks : 80**

**Section A**

**Answer ALL questions. Each question carries one mark.**

1. What is Genetic code?
2. Describe one gene - one polypeptide concept.
3. What is Z DNA?
4. Comment on mRNA.
5. What is cell theory?
6. Define Autocrine signalling
7. What are cytokines?
8. Define aging
9. Define Nucleosome
10. What is heteroduplex?

**(10× 1= 10)**

**Section B**

**Answer any eight questions. Each question carries two marks.**

11. Explain Wobble hypothesis.
12. Comment on the contribution of A.E.Garrod.
13. Distinguish between Nucleotide and nucleoside with examples.
14. Comment on rRNA.
15. Explain the Watson and Crick model of DNA.
16. Write a short note on ATP synthase
17. What is unit membrane concept of Plasma membrane?
18. What are Desmosomes?
19. What is Signal transduction?
20. What is Endosymbiont hypothesis?
21. Explain generalized transduction?
22. What are Peroxisome?

**(8×2=16)**

**Section C**

**Answer any six questions. Each question carries four marks.**

23. Explain the structure of tRNA?
24. Give an account on Electron transport chain.
25. Give a comparative account on Prokaryotes and Eukaryotes.
26. Explain Dedifferentiation and Metastasis in cancer cells.
27. Explain the mechanism of conjugation.
28. Write a note different hydrolyzing enzymes in lysosomes.
29. Write anote on theories of Cancers
30. Elaborate on mitosis.
31. Explain the functions of Golgi bodies

**(6×4=24)**

**Section D**

**Answer any TWO questions. Each question carries 15 marks.**

32. Write an essay on Gene regulation in prokaryotes.
33. Explain Meselson- Stahl experiment to prove that replication in DNA is Semi-conservative.
34. Write an essay on Functions of plasma membrane.
35. Describe bacterial recombination.

**(2×15=30)**

## Core Course VI

### 19UZO542: Genetics and Biotechnology

No. of credits: 4

Total hours: 72

No. of instructional hours per week: 4

#### Course outcome:

CO1: To educate the students on the basic concept of genetic mechanism operating in man.

CO2: To learn the mechanism of crossing over and inheritance patterns in man.

CO3: To understand the principles and techniques involved in DNA technology and get an overview of modern techniques like PCR, Hybridoma technology, gene therapy and Human cloning

CO4: To have a thorough understanding of the ethical implications in field of animal science and biotechnology

#### Genetics

37 hrs

##### Module I: Introduction to Genetics

8 hrs

Introduction, Mendel and his experiments, Correlation between Mendel's theory and chromosome behaviour (self-study); genetic terminology gene, allele, genotype, phenotype, genome; wild type and mutant type, test cross, back cross and reciprocal cross. Interaction of genes: Allelic, incomplete dominance, lethal and co-dominance, non-allelic, complementary gene action (self-study); Co-epistasis (comb pattern in fowl), dominant (feather coat) and recessive (coat colour), polygenic action (skin colour), pleiotropic (one example). Multiple alleles- ABO Blood group system, Rh group and its inheritance.

##### Module II: Linkage and crossing over

8 hrs

Linked genes, linkage groups, chromosome, theory of linkage, theory of chromosomal crossing over, factors affecting crossing over and its significance. Chromosome mapping (brief account only). Sex Linkage: Characteristics of sex linked inheritance, sex linked inheritance of man (colour blindness and haemophilia), incompletely sex linked genes, holandric genes, sex limited genes and sex influenced genes.

##### Module III: Sex Determination

8 hrs

Environmental factors on sex determination, mention genic balance theory, chromosomal mechanism of sex determination, (XXXY, XX-XO, ZZ-ZW), sex determination in man, role of Y chromosome, Barr bodies, dosage compensation and Lyon hypothesis. Chromosome mosaicism. Mention inter sex, gynandromorph and hermaphrodite.

##### Module IV Mutation

6 hrs

Mutation, Types of mutations - somatic, germinal, spontaneous, induced, autosomal and allosomal, euploidy and aneuploidy. Chromosomal mutation, Gene mutation, molecular basis of mutation, Factors causing mutation.

##### Module V: Cytoplasmic inheritance

3 hrs

Mitochondrial DNA, kappa particles in paramecium, maternal effects in Drosophila.

##### Module VI: Human Genetics

4 hrs

Karyotyping, normal chromosome complement, pedigree analysis, chromosomal anomalies in man, autosomal (eg. Down syndrome, Edwards syndrome), allosomal (eg. Klinefelters syndrome, Turner's syndrome) Biochemical genetics: Human biochemical genetics, biochemical pathway of phenyl alanine, tyrosine metabolism in normal man. Disorders-Phenylketonuria, Alkaptonuria, Tyrosinosis and Albinism.

##### Module VII: Population Genetics

5 hrs

Introduction to population genetics, Gene pool and Gene frequency-Factors influencing gene frequency, Hardy-Weinberg's law- Applications of Hardy-Weinberg's formula to population genetics.

#### Biotechnology

35 hrs

##### Module VIII: Introduction-Scope of biotechnology

8 hrs

Branches of biotechnology. Genetic engineering and recombinant DNA technology: History, Procedure of genetic engineering, (restriction endonucleases, ligases), major steps in cutting and joining of DNA, Vectors - plasmids, Cosmid, bacteriophage; probes, linkers, host cells, Method of recombinant DNA formation- transformation, transfection and non-bacterial transformation.

**Module IX: Molecular Techniques** **5 hrs**

Genomic library, construction of genomic library and cDNA library, Polymerase Chain Reaction-basic steps, types and applications of PCR, DNA sequencing (Sanger method, Automated sequencing), patenting DNA sequences.

**Module X: Blotting Techniques** **5 hrs**

Southern, Northern and Western blotting, DNA fingerprinting.

**Module XI: Human Genome Project** **5 hrs**

Hybridoma technology and monoclonal antibodies; gene transfer techniques (chemical treatment, electroporation, lipofection, microinjection, retro viral vector method, embryonic stem cell method and shot gun method); transgenic microbes, plants and animals.

**Module XII: Gene therapy** **3 hrs**

Somatic gene therapy and germ line gene therapy; gene doping and its implications; DNA vaccines; Human cloning –therapeutic and reproductive cloning.

**Module XIII: Ethical issues and Regulations in Biotechnology** **4 hrs**

Definition, Biosafety-guideline, Implementation of biosafety guidelines, Ethical implications on transgenic animals

**Suggested topics for Assignments / Seminars**

1. Mendel's Law
2. Human Blood groups
3. Inter sexes, hermaphrodites and gynaromorphs
4. Genetic Counselling
5. Human Genome Project
6. Applications of DNA Fingerprinting
7. Ethical and social issues of Biotechnology
8. Complementary gene action
9. Incomplete dominance
10. Chemical mutagens in food

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11. Gerald Karp (1996). Cell and Molecular Biology - Concepts and Experiments. JohnWiley & sons, Inc. N.Y.
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13. Max Levitan. (1988). Text Book of Human Genetics. Oxford University Press, N.Y.
14. Old, R. W. and Primrose, S.B. (1994). Principles of Gene Manipulation. Blackwell Scientific Publications London
15. Peter J Russell (1998) Genetics. The Benjamin cummings publishing co., Inc. Menlo Park, California.
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17. William H Elliott and Daphne C Elliott. (1997). Biochemistry and Molecular Biology. Oxford University Press, N. Y.

**MODEL QUESTION PAPER**  
**19UZ0542: GENETICS & BIOTECHNOLOGY**

**Time: 3 hrs**

**Max.Marks: 80**

**Section A**

**Answer all questions. Each question carries one mark.**

1. Define allele.
2. What are homologous chromosomes?
3. Define pleiotropism.
4. What do you mean by Epistasis?
5. What are transgenic organisms?
6. What is meant by VNTR's?
7. What is anti-sense therapy?
8. What does Hardy-Weinberg law state?
9. Define Gene mutation.
10. What is OMIM?

**(10 x1 =10)**

**Section B**

**Answer any EIGHT in one paragraph.**

11. What are complementary genes?
12. With the help of a suitable example, explain Incomplete Dominance.
13. Write on Somatic Gene Therapy.
14. Differentiate between genotype and phenotype.
15. What is a test cross?
16. State the differences between Proteomics and Metabolomics.
17. Define Epistasis. Mention the 2 types of epistasis and give an example for each.
18. Mention any 4 applications of DNA Fingerprinting.
19. Enumerate the factors affecting crossing over.
20. Differentiate between sex limited and sex influenced genes.
21. What does Lyon hypothesis emphasize?
22. Draw a neatly labeled diagram of a bacteriophage.

**(8x2 =16)**

**Section C**

**Answer any SIX of the following in a paragraph not exceeding 120 words.**

23. Explain polygenic inheritance.
24. Explain the significance of a paternity test.
25. With a suitable example, explain polygenic inheritance.
26. Describe Western Blotting.
27. Define allelic interactions and elaborate on any one.
28. Briefly describe Germline Therapy.
29. With suitable illustrations, explain two heritable sex linked disorders of man
30. Explain PCR.
31. Citing Kappa particles in Paramecium, explain cytoplasmic inheritance.

**(6X4=24)**

**Section D**

**Write essays on any TWO of the following. Each question carries 15 marks.**

32. Taking the ABO blood group system as example, briefly explain Multiple Allelism. Also mention its significance, the disorders associated with it and the other blood group types observed.
33. Elaborate on the various Gene Transfer Techniques.
34. Explain in detail the methodology of Genetic Engineering.
35. Explain Inborn Errors Of Metabolism.

**(2x15=30)**

## Core Course VII

### 19UZO543: Microbiology and Immunology

No. of credits: 4

Total hours: 72

No. of instructional hours per week: 4

#### Course outcome:

CO1: To understand basics of microbial classification.

CO2: To familiarize the concept of techniques in microbiology

CO3: To update the student on the scope and importance of clinical immunology and create an awareness about the inherent dangers of microbes

CO4: To enable the student to understand the principles and mechanisms of immunology

CO5: To learn the malfunctioning and disorders of the immune system

CO6: To get a broad understanding of microbes and their economic importance with special reference to pathogenic forms.

**Microbiology** **35 hrs**

**Module I: Introduction to Microbiology** **10 hrs**

Classification of microbes/ particles: broad classification- viruses- different groups, examples; mention viroids and prions, Mycoplasmas, Rickettsiae and Chlamydiae; Bacteria: 1. Archaea – significance of extreme life forms (Methanoarchaea , extreme halophiles and thermophiles); Eubacteria (=Bacteria) Major groups of Eubacteria: Bergey's system of classification; modern methods of classification of Eubacteria (outline only with familiar examples)- Nonphotosynthetic proteobacteria:- (Fermentative Rods and Vibrios) ex. Vibrio, Pasteurella (oxidative rods and cocci) eg. Pseudomonas, Azotobacter, Rhizobium; Chemo-lithotrophic bacteria:-eg. Nitrifying, sulphur and iron bacteria; Firmicutes (eg. Staphylococcus) and Actinobacteria (Coryneform bacteria); Phototrophic bacteria (Cyanobacteria); Fungi-Classification.

**Module II: Applied microbiology** **9 hrs**

Various fields: emphasis on environmental, agricultural, medical, biotechnological, industrial and strategic fields.

**Module III: Techniques in Microbiology** **2 hrs**

Replica plating, Staining, Streaking, Agar diffusion test, Fermentation test – tube (aerobic & anaerobic).

**Module IV: Medical microbiology** **10 hrs**

Symbiotic microbes: microbes with other microbes, microbes with animals. Microbe – human host interactions, normal human microbiota of various organs- mention any 3 examples, pathogenic microbes – mention any 3 examples, microbial toxins – mention any 2 examples. Microbial diseases in man (of skin, respiratory system etc.)- Viral – chicken pox, measles, cold, herpes, hepatitis, poliomyelitis; bacterial – diphtheria, pneumonia, leprosy, ornithosis; fungal – aspergillosis, candidiasis and others – malaria

**Module V: Control of microorganisms** **4 hrs**

Physical, chemical and chemotherapeutical agents; Antibiotic sensitivity assay.

**Immunology** **37 hrs**

**Module VI: Introduction** **2 hrs**

Introduction to Immunology, history, development and scope.

**Module VII: Immunity** **3 hrs**

Immunity: definition, classification of immunity. Innate (non-specific)– species, racial and individual IM with examples, acquired (specific)– active IM (natural and artificial) with examples, passive IM (natural and artificial) examples.

**Module VIII: Immune System** **6 hrs**

Immune system: organs and tissues of the immune system. Primary (central) - thymus, bone marrow, bursa of Fabricii; secondary (peripheral)- spleen, lymph nodes, MALT etc. Cells lymphocytes – T cells and B cells – formation, development and maturation; plasma cells and null cells – natural killer cells, killer cells, lymphokine - activated killer cells; phagocytes / macrophages; antigen presenting cells – macrophages, B-lymphocytes, dendrite cells, Langerhans cells; follicular dentrite cells, neutrophils, eosinophils, basophils, mast cells. Mitogens – mention only

**Module IX: Immunogens and Immunoglobulins** **14 hrs**

Antigens (immunogens) (Ag): definition, complete antigens, haptens, antigenic determinants or epitopes; antibodies

(Immunoglobulins)- definition, general structure of Ig, Ig determinants, physico-chemical properties of Ig, classes of Ig- G, M, A, D, E; mention abnormal Igs; antigen – antibody reactions- mechanism (mention zone phenomenon), precipitation reactions, agglutination reactions, complement fixation, neutralization, opsonisation (brief accounts only) Complement system: definition, general features, major histocompatibility complex (MHC) (brief account only). Immune response- definition, types of immune responses- humoral immune response (antigen mediated immunity - AMI) and cellular immune response (cell mediated immunity - CMI) in detail.

### **Module X: Immune Disorders**

**12 hrs**

Hyper sensitivity / allergy: definitions, classification- types I, II and III (Brief accounts only); immunodeficiency diseases (ID)- definition, primary IDs, disorders of immune mechanism (humoral, cellular and combined IDs), disorders of complements, disorders of phagocytosis, mention one example each, secondary IDs - mention example, an account of Acquired Immune Deficiency Syndrome (AIDS); Auto immunity-definition, mechanism, mention AI diseases; transplantation immunity-definition, classification of transplants, graft versus host reactions, graft rejection, mechanism of graft rejection, factors affecting graft survival; Immunisation and vaccination- definitions, vaccines; types of immunization- active immunization- killed and live attenuated vaccines, microbial extracts, vaccine conjugates, toxoids, recombinant vaccines, DNA vaccines; passive immunization- pooled normal human Igs, specific Igs (hyper antisera); combined immunization.

### **Suggested topics for Assignments / seminars**

1. Factors affecting innate immunity
2. Defence mechanisms of the body against infections
3. Factors affecting antibody productions
4. Organ transplantations
5. Immunization and vaccinations
6. Antiseptics and antibiotics
7. Theories of antibody production
8. Sterilization and disinfection
9. Inflammation and fever
10. Blood transfusion and safety
11. Timing of vaccination : National Immunization Schedule

### **References**

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4. Heritage, J. et. al. Introductory Microbiology. Cambridge University Press.
5. Hyda, R. M.: NMS Immunology. B. I. Waverly
6. Johnson, T. R. & Case, C. L.: Lab. Expts. In Microbiology. 2003. Addison Wesley.
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8. Krieg, N. R. & Holt, J. G. Bergey's Manual of Systematic Bacteriology. Vols 1 – 4. (1984-89). Williams & Wilkins, Baltimore
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16. Rao, A. S. Introduction to Microbiology, Prentice Hall of India.
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18. Schiegel, H. G. General Microbiology, Cambridge University Press.
19. Shetty & Nandini: Immunology. Wiley Eastern
20. Talwar, G. P.: A Handbook of Practical Immunology. Vikas, New Delhi
21. Todd. Lecture notes on Immunology. Iowa State Uty. Press. Ane Books India
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**MODEL QUESTION PAPER**  
**19UZO543: Microbiology and Immunology**

**Time 3 hrs**

**Max Marks 80**

**Section A**

**Answer all questions in one or two sentences.**

1. Define Microbial probiotics
2. Define immunity.
3. What is microbiology?
4. What are T<sub>H</sub> cells
5. Define plasma cells
6. Define Bioaugmentation.
7. What is organic farming?
8. What is Bursa of Fabricus
9. What are M-cells?
10. What are antibiotics.

(10X1=10)

**Section B**

**Answer any eight of the following in one paragraph each**

11. What are lymphocytes?
12. What are haptens?
13. What is bioleaching?
14. Write on nitrogen – fixing biofertilizers
15. What is Epidemiology
16. Write on microbiology and preventive medicine.
17. Define SCP.
18. Define mast cells.
19. Write on lymph nodes
20. Differentiate between B cell area and Tcell area
21. What are antigens .
22. Comment on antibiotic sensitivity assay.

(8X2=16)

**Section C**

**Answer any six of the following in a paragraph not exceeding 120 words.**

23. Write on inflammatory responses.
24. Briefly explain phagocytosis.
25. Elaborate on the disorders associated with puberty.
26. Explain on MALT
27. Explain innate and acquired immunity.
28. Write on the classification of fungi.
29. Discuss on graft rejection
30. Differentiate between aerobic and anaerobic fermentation
31. Write on the reproductive mechanism of fungi

(6X4=24)

**Section D**

**Write essay on any two of the following. Each question carries 15 marks.**

32. Write an essay on industrial microbiology
33. Discuss on different methods for controlling microorganisms.
34. Write on the structure of antibodies and its classes.
35. Give an account on B cell and Tcell differentiation and activation

(15X2=30)

## Core Course IX

### 19UZO544: Practical II - Cell Biology, Genetics, Bioinformatics, Biotechnology, Immunology and Microbiology

No. of credits: 4

No. of instructional hours per week: 2

#### Course outcome:

CO1: To expertise the student to carry out routine hematological and microbiological techniques

CO2: To prepare and observe chromosomal arrangements during cell division

CO3: To study chromosomal aberrations in man

CO4: To gain a broad knowledge of conventional biotechnological procedures

CO5: To perform routine blood analysis.

#### Cell Biology and Molecular Biology

1. Staining of prokaryotic cells: (a) *Lactobacillus* from curd (b) Nitrogen fixing bacteria (*Rhizobium*) from root nodules of legumes
2. Staining of eukaryotic cells: Buccal epithelial cells (observe Barr body)
3. Study of muscle cells - Insect
4. Study of cell organelles using models/slides
5. Mitosis: stages in onion (*Allium cepa*) root meristem (squash preparation)
6. Calculation of mitotic index and metaphase index in root meristem of *Allium cepa*
7. Meiosis: stages in testis of grass hopper (demonstration only)
8. Giant chromosomes in Diptera: (*Drosophila Chironomus* larvae) salivary gland cells (demonstration only)
9. Localization of mitochondria in yeast cells in Janus green

#### Genetics

1. Study of monohybrid cross using colored beads.
2. Study of normal chromosome complement and karyotype of man.
3. Study of genetic syndromes and abnormal karyotypes of man (Klinefelter's syndrome, Turner's syndrome, Down syndrome and Edward syndrome).
4. Study of Barr body and its significance (in stained buccal epithelial cells).
5. Construction of Pedigree chart.
6. Recording the dermatoglyphic pattern – Human fingerprints – Significance and comment
7. Study of phenotypic characters of male and female *Drosophila*.

#### Biotechnology

1. Extraction of DNA by diphenylamine method.
2. Polymerase Chain Reaction
3. Southern blotting and Northern blotting
4. Sequence comparison using software (BLAST/FASTA)  
(Demonstration in the Department / Visit to research institute / CD display)

#### Microbiology & Immunology

1. Gram staining
2. Collection of blood, and study of the effect of anticoagulant.
3. Preparation of blood smear and study of human blood cells
4. Microscopic observation and study of stained preparations of any two microbes
5. Study of ABO Blood groups and Rh Factor in humans

## OPEN COURSE

### 19UZO551.1: Human Health and Sex Education

No. of credits: 2

Total hours: 54

No. of instructional hours per week: 3

#### Course outcome

CO1: To redress problem associated with health and sex thereby promoting fitness and well-being.

CO2: To make the student understand the importance of good health.

CO3: To educate the student on clean sexual habits thereby warding off sexually transmitted diseases.

CO4: To sensitise the students with matters related to gender.

#### Module I: Introduction to Health

14 hrs

Introduction to health, health as a state of wellbeing, health awareness (**self-study**), Immunity, immunization and vaccination, factors affecting health- food, balanced diet, food supplements, pathogens, pollution, sleep, exercise and stress. Physical health, reproductive health, adolescence, adolescent stress management, senescence. Mental health- mental illness and disabilities, symptoms and prevention of mental illness; alcoholism, tobacco addiction, de-addiction, lifestyle diseases. Community health- health centres, role of health centres. Spiritual health, yoga and meditation. (**self-study**)

#### Module II: Human reproductive physiology

8 hrs

Human reproductive system: Male reproductive system- structural details of testis and accessory structures, functions of testis, semen, hormonal control. Female reproductive system- structure of ovary, accessory structures, puberty, reproductive cycles and hormonal control, menstrual cycle, gestation period, hysterectomy, menopause.

#### Module III: Events of human reproduction

7 hrs

Gametogenesis- spermatogenesis and oogenesis, ovulation, fertilization, embryonic development, parturition.

#### Module IV: Human intervention in reproduction

12 hrs

Contraception and birth control-barrier method, hormonal methods, natural methods, sterilization, termination of pregnancy. Infertility-male and female infertility, causes and treatment for infertility. Assisted Reproductive Techniques- IVF, GIFT, ZIFT,

Donor Insemination (DI). Artificial Insemination by Donor (AID), Artificial Insemination by Husband or partner (AIH). Surrogacy, SUZI (sub-zonal insemination), MIST (micro insemination sperm transfer).

#### Module V: Introduction to STDS

6 hrs

Sexually transmitted diseases: Syphilis, genital warts, chlamydia, chancroid, trichomoniasis, gonorrhea, genital herpes, AIDS

#### Module VI: Gender Sensitisation

7 hrs

Sex education: Adolescent sexual activity, teenage pregnancy, sexual harassment, sexual awareness and policies (legal aspects), lesbian and gay sex, bisexual, transgender youth.

#### References

1. Common sexual problems and solutions by Dr. Prakash Kothari, UBS Publishers and Distributors Ltd.
2. Guyton & Hall. Textbook of Medical Physiology.
3. Mac E. Hadley. Endocrinology. Pearson Education, Singapore.
4. Taylor, D.J., Green, N.P.O., Stout G. W. Biological Science. (Editor R. Soper) 3rd Edition, Cambridge University Press.
5. The Complete Manual of Fitness and Well-being. The Reader's Digest Association, Inc. Pleasantville, New York / Montreal.

**MODEL QUESTION PAPER**  
**19UZO551.1: HUMAN HEALTH AND SEX EDUCATION**

**Time: 3 hrs**

**Max.Marks: 80**

**Section A**

**Answer all questions. Each question carries one mark.**

1. Define Microbial probiotics
2. Write on BCG
3. What is semen?
4. Define parturition.
5. Define laparoscopy
6. Write on ART
7. What is meant by Vaccination
8. What is meant by Senescence
9. What is Prolactin?
10. What is puberty?

**(10 x1 =10)**

**Section B**

**Answer any EIGHT questions. Each question carries two marks.**

11. Draw a neatly labeled diagram of the ovum.
12. Explain phagocytosis
13. Explain the hormonal control of reproduction in males.
14. Explain inflammatory response
15. List out the functions of the placenta.
16. What is polyvalent vaccine?
17. Define lifestyle disease
18. Define prostate gland
19. Define Hysterosalpingography
20. What are Killed vaccines?
21. Identify the parts of the reproductive system where the following occur: (a) fertilization (b) Storage of sperms.
22. What is GIFT?

**(8x2 =16)**

**Section C**

**Answer any SIX questions. Each question carries 4 marks**

23. Briefly explain Oogenesis.
24. Elaborate on the disorders associated with puberty.
25. Explain various theories of aging
26. Explain innate and acquired immunity
27. Write a note on AIDS
28. Write a note on Mental disorders.
29. Write a note on Community health centres.
30. Describe effect of tobacco on human physiology.
31. Explain on ARTs.

**(6x4 =24)**

**Section D**

**Answer any TWO questions. Each question carries 15 marks**

32. With the help of suitable diagrams, briefly explain the parts of the male reproductive system.
33. Write an essay on any five STDs
34. Give an account on Alcoholism
35. Write an essay on yoga and meditation

**(2x15=30)**

## Open Course

### 19UZO551.2: Public Health and Hygiene

No. of credits: 2

Total hours 54

No. of instructional hours per week: 3

#### Course outcome

CO1: To make the student aware of the essentials of public health and sanitation thereby warding off diseases and uplifting the living standards of the community

CO2: To learn the principles of nutrition and dietetics

CO3: To understand the ill effects of modern lifestyle

CO4: To study the advantages of being hygienic

#### Module I

6hrs

Introduction: Scope and importance of the study; balanced diet, diet control for diabetics, cholesterol etc., concept of energy, calories, daily food intake as per occupation, pregnancy and lactation. Dietary requirements of infants, pre-school, children, school children, adults and geriatric care. Malnutrition and over nutrition – obesity and weight control; defects of modern food habits – fast food, soft drinks, ice-creams and broiler chicken.

#### Module II

4hrs

Adulteration of food: food hygiene – hygiene of milk, meat, fish, eggs, fruits and vegetables, common food adulterants – harmful effects and their detection, food additives, fortification of food; Food Adulteration Act and its stringent implementation

#### Module III

18hrs

Health Hazards: Health dynamicity – definition, factors influencing health, health as a medium of socio-economic development. Diseases – Common food borne and water borne diseases (gastroenteritis, jaundice, cholera, salmonellosis, travellers' diarrhoea and Escherichia coli infection, typhoid) – mode of transmission, causative agents, symptoms, prevention and control. Sexually transmitted infections– AIDS, genital herpes, hepatitis B, syphilis, gonorrhoea – causative agents, symptoms, modes of transmission and prevention. Dengue, chikunguniya, rat fever (general methods of mosquito control and the need to prevent mosquito breeding in and around our homes). Lifestyle habits – excessive usage of T.V., computer, mobile phones, two wheelers, and their impacts on health. Lack of physical exercise and its deleterious effects on the body and mind

#### Module IV

6hrs

Health Education: Definition, objectives, principles and methods of health education, illeffects of smoking, alcoholism and drug abuse (emphasis should be given to pan masala, amphetamines, hashish, opium, brown sugar, pethedine). Population control and family welfare, use of contraceptives. Blood donation –basics of ABO, blood grouping including Rh factor. Genetic incompatibility and consanguineous marriages.

#### Module V

12hrs

Mental Health: Definition by WHO and necessity of mental well being, major depressive disorders, substance abuse, schizophrenia, obsessive compulsive disorders, domestic violence, causes for lost years of healthy life, strategies for prevention and possible interventions, childhood mental disorders and illnesses, gulf widow syndrome, stress reduction and management (importance of yoga)

#### Module VI

8hrs

Hygiene: Definition, personal hygiene- body odour, oral hygiene, grooming, feminine hygiene, sleep hygiene, hand washing, toiletry. Social hygiene – clean living movements, occupational hygiene, food and cooking hygiene, medical hygiene, excessive hygiene.

#### References

1. Jatin V. Modi and Renjith S. Chawan. Essentials of Public Health and Sanitation – Part I- IV
2. Murray, C. J. L. and A.D. Lopez. (1996). The Global Burden Of Disease. World Health Organization.
3. Park, J.E. and Park, K. Textbook of Community Health for Nurses.
4. Swaminathan S. Principles of Nutrition and Dietetics.

## Open Course

### 19UZO551.3: Human diseases and their management

No. of credits: 2

Total hours 54

No. of instructional hours per week: 3

#### Course outcome

CO1: To instill in the students the need to manage communicable diseases thereby creating a healthy society

CO2: To learn the various modes and agents of disease transmission

CO3: To learn the causative factors of non-communicable diseases

#### Module I

5 hrs

Introduction- Health – WHO definition, important of individual health.

Lifestyle choice for healthier life: Diet and health, exercise and health, alcohol, tobacco and drugs, sex and health, computers and health, mobile phone and health, psychological health

#### Module II

4 hrs

Communicable diseases: Classification of communicable diseases. Defense mechanism – immunity (natural, acquired)

#### Module III

5 hrs

Viral Infections: Brief account of virus, chickenpox, poliomyelitis, rabies, yellow fever, dengue fever, mumps, influenza, measles, encephalitis, hepatitis, HIV infection and AIDS – causes, symptoms, prevention and cure.

#### Module IV

5 hrs

Bacterial Infections: Brief account of bacteria, dysentery, cholera, tuberculosis, tetanus, diphtheria, septicemia, scarlet fever, typhoid, plague; STD and leprosy – causes, symptoms, prevention and cure.

#### Module V

5 hrs

Protozoan Infections: Brief account of protozoans - amoebiasis, leishmaniasis, trichomoniasis, malaria - causes, symptoms, prevention and cure.

#### Module VI

5 hrs

Worm Infections: Brief account of Platyhelminthes and nematodes, cysticercosis, taeniasis, ascariasis, ancylostomiasis, encephalitis, enterobiasis and dracunculosis – causes, symptoms, prevention and cure.

#### Module VII

4 hrs

Vector borne diseases: Vector – identification of vectors – dengue, filaria, kala azar, Japanese encephalitis, chikungunya- causes, symptoms, prevention and cure.

#### Module VIII

5 hrs

Non-communicable diseases: Hereditary and congenital diseases – hemophilia, diabetes mellitus, hypertension, muscular dystrophia, some types of cancer. Immunological diseases – allergy, autoimmune diseases. Deficiency diseases – scurvy, pellagra, beriberi, xerophthalmia, rickets. Cardiovascular diseases-causes, symptoms, prevention and treatment.

#### Module IX

5 hrs

Mental health: Meaning, definition, history, characteristics of a mentally healthy person. Types of mental illness – causes, symptoms and prevention – major mental illness (schizophrenia, paranoia), minor mental illnesses (anxiety, phobia, obsessive compulsive neuroses)

#### Module X

9 hrs

Basic viewing techniques- endoscopy examination techniques: Blood-total count, differential count, ESR, immune function tests, blood clotting test, routine blood chemistry, blood cholesterol test, hormone tests; urine- routine urine chemistry; cell and tissue test- pap test, sputum test, biopsy, histopathology; genetic tests- amniocentesis, chorionic villi sampling; imaging techniques- X – ray, ultrasound scanning, CT scan, MRI scan, SPECT scanning, PET scanning.

#### Module XI

2 hrs

Role of yoga in management of common diseases.

## REFERENCES

1. Abraham Verghese. (1996). Introduction to Psychiatry. BI Publication Pvt. Ltd.
2. Anderson, G. M. Communicable Disease Control,. Macmillan, New York.
3. Bajjee. (1995). Textbook of Preventive and Social Medicine. Jaypee Brothers Medical publishers, New Delhi.
4. Chauhan, S. S. Mental Hygiene – A Science of Adjustment, Allied Publishers.
5. Carol.D.Tamparo. Diseases of Human body
6. Deepak Kumar. (2001). Diseases and Medicines in India: A historical Overview.
7. Mangal, S., K. (2004). Introduction to Abnormal Psychology. Sterling Publishers.
8. Mary L M, Mark Zelman, Paul Holdway; Human Diseases – A Systematic Approach.
9. Park, K. (2005). Textbook of Prevention and Social Medicine, Jebelpur, Banarids.
10. Park, J., E., and Park, K. Textbook of Preventive and Social Medicine.
11. Swami Styananda Saraswathi, Swami Karam: Yogic Management of Common Diseases.

## OPEN COURSE

### 19UZO551.4: SUSTAINABLE HEALTH AND NUTRITION

**No. of credits-2**

**No. of instructional hours per week: 3**

**Total hours: 54**

#### **Course outcome:**

CO1: To inculcate a general awareness among the students regarding the real sense of health.

CO2: To understand the role of balanced diet in maintaining health.

CO3: To motivate them to practice yoga and meditation in day-to-day life.

#### **Module I: Definition and Meaning of Health**

**15hrs**

Dimensions and Determination of Health Physical Activity and Health benefits Effect of exercise on body systems – Circulatory, Respiratory, Endocrine, Skeletal and Muscular Programmes on Community health promotion (Individual, Family and Society) Dangers of alcoholic and drug abuse, medico-legal implications

#### **Module II: Nutrition and Health**

**15hrs**

Concept of Food and Nutrition, Balanced diet Vitamins, Malnutrition, Deficiency Disease Determining Caloric intake and expenditure Obesity, causes and preventing measures Role of Diet and Exercise, BMI

#### **Module III: Safety Education in Health promotion**

**8hrs**

Principles of Accident prevention Health and Safety in daily life. Health and Safety at work. First aid and emergency care. Common injuries and their management. Modern life style and hypokinetic diseases. Diabetes, Cardiovascular disorders-Prevention and Management.

#### **Module IV: Life Skill Education**

**6hrs**

Life skills, emotional adjustment and well-being, Yoga, Meditation and Relaxation, Psychoneuroimmunology.

#### **REFERENCES**

1. Gladys Francis & Mini K.D., (Editors) (2012), Microbiology, Zoological Society of Kerala, Kottayam. 2. Greenberg, Jerol S and Dintiman George B (1997) Wellness Creating a life of Health and Fitness , London Allyn and Bacon Inc.
2. K Park, (2008) Park's Text Book of Preventive and Social Medicine 18th Edition. Banarasidass Bhenot Publication
3. Norman Bezzaant HELP First Aid for everyday emergencies. Jaico Publishing House, Bombay, Delhi
4. Tom Sanders and Peter Emery. (2004) Molecular basis of human nutrition: Taylor & Francis Publishers Ane Book
5. Pelczar M.J. Jr. E.C.S. Chane & N.R. Krieg, Microbiology (Concept & Applications). 5th edition. Tata McGraw Publishing Company Ltd.



## OPEN COURSE

### 19UZO551.5: SUSTAINABLE ECOTOURISM

**No. of credits: 2**

**No. of instructional hours per week: 3**

**Total hours 54**

#### **Course outcome:**

CO1: To introduce the concepts, principles and applications of tourism and its sustainability

CO2: To critically analyse the cost and benefits of ecotourism, including related laws and policies, community involvement and future trends

CO3: To develop an appreciation among students with respect to tourism development from the sustainability perspective

CO4: To equip the students with basic knowledge for the emerging ecotourism industry

#### **Module I: Fundamentals of Tourism**

**12hrs**

Introduction- Tourism, concepts and definitions History, types, Characteristics The facilitating sectors Attractions Geography, heritage Wildlife, nature Quality Control

#### **Module II: Major areas of eco-tourism**

**10hrs**

Concepts, practices and case studies for each: Marine tourism Wildlife tourism Adventure tourism

#### **Module III: Emerging trends in eco-tourism**

**10hrs**

Cultural tourism Pilgrimage tourism Farm tourism Backwater tourism Health tourism

#### **Module IV: Problems and prospects of eco-tourism**

**10hrs**

Economics and benefits of ecotourism Cultural issues and negative aspects of ecotourism Environmental Impacts of Tourism

#### **Module V: Sustainable tourism**

**12hrs**

Quality, Standards Systems of sustainable tourism: environmental, sociocultural, Economical Environment and conservation: basic principles Current practices of eco-conservation in tourism industry Sustainable tourism and society Community based ecotourism Eco-development committee (EDC) of Periyar Tiger Reserve People initiatives

#### **Module VI: Eco-tourism guides**

**12hrs**

Ecotourism guiding and case studies Activity Field visit to ecologically relevant places & report writing

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## Semester VI

### Core Course IX

#### 19UZO641: Physiology and Biological chemistry

No. of credits: 4

Total hours: 90

No. of instructional hours per week: 5

#### Course outcome

CO1: To equip the students with concepts of nutritional physiology and the inherent disorders/deficiencies involved therein.

CO2: To familiarizes students with the phenomenon of circulatory physiology with focus to cardio-vascular Disease.

CO3: To enrich the understanding of respiratory physiology and inherent disorders involved.

CO4: To educate students regarding renal physiology, renal disorders and treatment mechanism.

CO5: To introduce the students the concept of muscle physiology and nerve physiology focusing on nervous disorders.

CO6: Contextualize the knowledge into the realm of public health and broader social issues.

CO7: Learn the structure and functions of bio-molecules and their role in metabolism.

#### Physiology

60 hrs

##### Module I: Nutritional Physiology

8 hrs

Introduction, types of nutrition (self-study), mechanical and Chemical changes of food in the alimentary canal, Nervous and hormonal control of digestion

Balanced diet - Food groups and the concept of a balanced diet, nutritional disorders– PEM, Vitamins, and disorders due to deficiency(self-study), Diseases: Protein Energy Malnutrition; Life style related diseases- hypertension, diabetes mellitus, and obesity- their causes and prevention through dietary or lifestyle, Food hygiene

##### Module II: Circulation physiology

8 hrs

Blood-Composition and functions of blood plasma and formed elements, blood groups, mechanism of blood clotting, intrinsic and extrinsic pathways, disorders of blood clotting, anticoagulants, heartbeat, conducting system and pace maker, pulse and blood pressure, clinical significance, control of cardiac activity, common cardio vascular diseases–arteriosclerosis, atherosclerosis, Myocardial infarction, electrocardiogram, angiogram, angioplasty. Lymph and lymphatic system (brief account).

##### Module III: Respiratory Physiology

8 hrs

Gas exchange, respiratory pigments-structure of hemoglobin, transport of O<sub>2</sub>- Oxyhemoglobin curve, Bohr effect, transport of CO<sub>2</sub>-carbonic acid, carbamino- hemoglobin, bicarbonate and chloride shift, regulation of respiration–neural and chemical respiratory disturbance apnoea, dyspnoea, hypoxia, hypo and hypercapnia, asphyxia, carbon monoxide poisoning, bronchitis, asthma, Physiological effects of smoking.

##### Module IV: Renal Physiology

8hrs

Nephron – Structure, Urine formation, Role of hormone in urine formation and concentration, Countercurrent multiplier system, Role of kidney in osmoregulation, composition of urine, abnormal constituents of urine, regulation of kidney functions, renal disorders – nephritis, hematuria, renal calculi, acidosis and alkalosis – Dialysis and kidney transplantation.

##### Module V: Muscle Physiology

6 hrs

Brief account of types of muscles, fast and slow twitch muscles, red and white muscles. Ultrastructure of striated muscle fibre, muscle proteins, simple muscle twitch, summation, tetanus, tonus, all or none law, fatigue, oxygen debt, rigor mortis. Physiological and biochemical events in muscle contraction.

##### Module VI: Nerve Physiology

6 hrs

Neurons – structure, types of neuron (self-study). Synapse and types of synapse, nerve impulse propagation, synaptic transmission. Reflex action, refractory period, neuro transmitters, electroencephalogram (EEG). Neurological disorders–epilepsy, Alzheimer's disease, Parkinson's disease.

**Module VII: Sensory Physiology****5 hrs**

Structure of eye and ear (self-study). Physiology of vision, visual elements and pigments, photochemistry of vision. Eye defects- myopia, hyperopia, presbyopia, astigmatism, and cataract. Structure of ear and mechanism of hearing, hearing impairments—deafness, labyrinthine disease. Olfactory, gustatory and tactile sense organs.

**Module VIII: Reproductive physiology****3hrs**

Male and female reproductive organs (self-study). Reproductive Cycles (role of hormones), puberty, adolescence, pregnancy, parturition, lactation and birth control.

**Module IX: Endocrinology****8hrs**

Endocrine glands in man, hormones and disorders, feed- back mechanism, mechanism of hormonal activity.

**Biological chemistry****30 hrs****Module X: Biomolecules in animals****8 hrs**

Micromolecules and macromolecules, Carbohydrates-structure, classification- monosaccharides (trioses, tetroses, pentoses, hexoses, aldoses, ketoses), disaccharides and polysaccharides (homo and hetero polysaccharides); biological functions of carbohydrates. Lipids- classification- simple lipids, (neutral fats and waxes), conjugated lipids (phosphor lipids, sphingo lipids, glycolipids, lecithins, cephalins, cerebrosides, gangliosides), derived lipids (fatty acids, steroids, prostaglandins), biological functions of lipids. Amino acids: Structure, classification, and general properties of  $\alpha$ -amino acids; Physiological importance of essential and non-essential  $\alpha$ -amino acids. Proteins: Bonds stabilizing protein structure; Levels of organization in proteins; Denaturation; Introduction to simple and conjugate proteins.

**Module XI: Metabolism in animals****16 hrs**

Metabolism in animals: Carbohydrate metabolism—glycogenesis, glycogenolysis, hexose monophosphate shunt, metabolic pathway of glucose-glycolysis, Kreb's cycle, electron transport series, chemi-osmotic theory, energetic; hormonal control of carbohydrate metabolism. Lipid metabolism—hydrolysis of lipid, beta-oxidation, mention alpha and omega oxidation of fatty acids, hormonal control of lipid metabolism, hormonal control of lipid metabolism. Protein metabolism—deamination, transamination, formation of urea, hormonal control of protein metabolism.

**Module XII: Enzymes****6 hrs**

Enzymes: Chemical nature, mechanism of enzyme action, factors affecting enzyme activity, kinetics of enzyme action, Michaelis – Menten equation, iso enzymes, co-enzyme, co-factors, enzyme activation and inhibition.

**Topics for Assignments / Seminars**

1. Aminoacids
2. Nucleic acids
3. Enzymes and their classification
4. Nutrients
5. Vitamin deficiency diseases – symptoms and diagnosis
6. Hormone deficiency diseases – Symptoms and diagnosis
7. Body temperature, homeothermy and thermoregulation
8. Human brain
9. Instruments used for the diagnosis of circulatory disorders
10. Kidney related diseases and their diagnostic tools
11. Brain related diseases and their diagnostic tools
12. Description of endocrine glands of mammals (goat, cow, buffalo, pig)
13. Submission of models of diagnostic instruments with description

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**MODEL QUESTION PAPER**  
**19UZO641: PHYSIOLOGY AND BIOLOGICAL CHEMISTRY**

**Time: 3 Hrs**

**Max Marks: 80**

**SECTION A**

**Answer ALL questions. Each question carries 1mark (10×1 =10)**

1. Define the term Holoenzyme
2. What is Diabetes mellitus
3. What is  $Q_{10}$ ?
4. Causes of food spoilage
5. List out types of neuron
6. Comment on Alzheimer's disease
7. Comment on sphingo lipids
8. Comment on Rigor mortis
9. What is Bohr effect
10. What is 'Allor None law'

**SECTION B**

**Answer any EIGHT questions. Each question carries 2 marks (8×2=16)**

11. Give an account on carbohydrate classification?
12. What is the difference between Zymogen and Zymase with examples?
13. Write a note on Malnutrition and Obesity
14. What is the  $K_m$  and  $V_{max}$ ?
15. Explain the different types of nutrition?
16. What is chemi-osmotic theory?
17. Causes of Carbon monoxide poisoning
18. Explain the structure of synapse and types of synapse
19. List out major eye defects
20. Explain the role of hormones in reproductive cycles.
21. What is feed- back mechanism in hormone action?
22. Differentiate between red & white muscle.

**SECTION C**

**Answer any SIX questions. Each question carries 4 marks. (6×4= 24)**

23. Give an account on Enzyme Inhibition.
24. Explain the process of hormone action.
25. Explain structure of ear and mechanism of hearing
26. What are the glands found in the endocrine system and explain its role?
27. Explain the physiological importance of essential and non-essential  $\alpha$ -amino acids
28. Explain the factors affecting enzyme action and derive Michaels Menten equation?
29. What is HMP shunt
30. What are the various Levels of organization in proteins
31. Nervous and hormonal control of digestion.

**SECTION D**

**Answer any two questions. Each question carries 15 mark. (2X15=30 marks)**

32. Brief account of types of muscles and explain physiological and biochemical events in muscle contraction.
33. Draw Nephron structure and explain the role of kidney in osmoregulation
34. Explain major events in Kreb's cycle
35. Write an essay on Physiology of vision, visual elements and pigments, photochemistry of vision

**Core Course X**  
**19UZO642: Developmental Biology and Experimental Embryology**

**No. of credits: 4**

**Total hours: 72**

**No. of instructional hours per week: 4**

**Course outcome:**

CO1: To study the various stages involved in the developing embryo

CO2: To study the initial developmental procedures involved in Amphioxus, Frog and chick

CO3: To procure information on state-of-the-art experimental procedures in embryology.

CO4: Familiarize the student with the principle of developmental biology and provide him a bird's eye view of sophisticated embryological techniques

CO5: Introduced to the mechanisms used to produce different cell and tissue types and ensure these cells develop in the correct position and identity.

CO6: Developmental biology plays an important role in familiarizing students in stem cell therapy, tissue engineering and regenerative medicine.

**Developmental biology** **57 hrs**

**Module I: Introduction** **4 hrs**

Introduction, historical perspective (brief account), theories- Preformation, Epigenesis, Recapitulation and Germplasm. Subdivisions of Developmental biology. Spermatogenesis and oogenesis, structure of Graffian follicle, typical egg and sperm. Polarity of egg, egg envelopes; classification of eggs based on different criteria.

**Module II: Fertilization** **8 hrs**

Fertilization: Agglutination, sperm penetration, activation of egg, amphimixis; physiological and biochemical changes during and after fertilization. Parthenogenesis- introduction, natural and artificial parthenogenesis, arrhenotoky and thelytoky, obligatory and facultative, significance of parthenogenesis.

**Module III: Cleavage** **9 hrs**

Cleavage: types of cleavage - holoblastic and meroblastic; patterns of cleavage – radial, bilateral, spiral, rotational; cell lineage in Planocera (brief account only). Morula formation in microlecithal, mesolecithal, macrolecithal eggs; blastulation-introduction, different types of blastula stereo blastula, coeloblastula, discoblastula, periblastula, blastocyst. Presumptive organ forming areas and fate maps, eg. Amphioxus, frog, construction of fate maps.

**Module IV: Gastrulation** **3hrs**

Introduction, brief account of morpho genetic movements – epiboly and emboly (invagination, involution, infiltration, ingression, delamination, convergence, divergence) concept of germ layers, derivatives of germ layers.

**Module V: Cell differentiation** **5 hrs**

Totipotency, pluripotency and unipotency of embryonic cells. Determination and differentiation in embryonic development. Gene action, drosophila as a model organism (brief account only), Homeotic genes and Hox genes.

**Module VI: Development of vertebrates** **25 hrs**

Development: Amphioxus- cleavage, blastulation, gastrulation, neurogenesis, notogenesis, mesoderm and coelom formation. Frog-cleavage, blastulation, gastrulation, organogeny–development of brain, eye, heart; metamorphosis - ecological, morphological and physiological changes and hormonal control. Chick-cleavage, blastulation, gastrulation, study of 24 hrs chick embryo; development of extra-embryonic membranes in chick. Man -implantation, pregnancy, parturition. Placentation in mammals – different types of placenta, functions.

**Module VII: Teratology** **3 hrs**

Definition, causes, infections, drugs and chemicals, metabolic imbalance, ionizing radiation, malnutrition, autoimmunization.

## **Experimental embryology**

### **Module VIII: Experimental embryology**

**15 hrs**

Spemann's constriction experiments, organizers and embryonic induction, transplantation experiments involving optic cup, nuclear transplantation experiments in amphibians. In vitro fertilization and embryo transfer experiments in farm animals, In vitro fertilization and embryo transfer experiments in man and test tube babies; cloning experiments in animals mammals; prenatal diagnosis and sex determination methods- amniocentesis chorionic villus sampling, ultrasound scanning. Embryonic and adult stem cell research and stem cell therapy.

#### **Suggested topics for Assignments / Seminars**

1. Human male and female reproductive organ
2. Larval forms of invertebrates
3. Metamorphosis in insects
4. Regeneration in animals
5. Cloning experiments in animals
6. Transgenic animals
7. Stem cell research
8. Comparative account on cleavage, blastulation, gastrulation in different animals
9. Embryonic development of an invertebrate

#### **References**

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## MODEL QUESTION PAPER

### 19UZO642: DEVELOPMENTAL BIOLOGY AND EXPERIMENTAL EMBRYOLOGY

Time: 3 Hrs

Max Marks: 80

#### SECTION A

Answer ALL questions. Each question carries 1mark (10×1 =10)

1. Who postulated Germplasm theory
2. What is Chemotaxis?
3. Polarity of egg
4. What is totipotency?
5. Comment on Gastrulation
6. Write notes on Zygotic genes
7. What is cortical reaction?
8. What is morula?
9. What is Amphimixis?
10. Explain Biogenetic law

#### SECTION B

Answer any EIGHT questions. Each question carries 2 marks (8×2=16)

11. What is fertilizin-ant fertilizin reaction?
12. Describe the structure of Graafian follicle.
13. Describe Spemann's constriction experiment.
14. How polyspermy is prevented?
15. Write an account on stem cells.
16. Draw structure of a typical egg and sperm.
17. Difference between Homeotic genes and Hox genes.
18. What do you understand by teratogenesis? Discuss the relationship between terata and teratogens.
19. Metamorphosis – morphological, physiological changes and hormonal control.
20. Explain the Gene action in drosophila
21. What is cell lineage? Explain with example
22. List out the functions of placenta.

#### SECTION C

Answer any SIX questions. Each question carries 4 marks. (6×4= 24)

23. What are Fate maps? Describe how natural and artificial marking constructs them.
24. Write a note on classification of eggs based on different criteria.
25. Write a short essay on nuclear transplantation experiments in amphibians.
26. Describe the Prenatal sex determination methods
27. What is Parthenogenesis and explain different types
28. Explain the process of cleavage and types with figure
29. Give an account of the chick at 24 hrs of development.
30. Difference between microlecithal and isolecithal eggs
31. Brief account of morphogenetic movements

#### SECTION D

Answer any two questions. Each question carries 15 mark. (2X15=30 marks)

32. Explain the events in Spermatogenesis and oogenesis
33. Write an essay on placentation of mammals.
34. Describe the development of extra embryonic membranes in chick.
35. Write an account on IVF technique in farm animals



## Core Course XI

### 19UZO643: Ethology, Evolution and Zoogeography

No. of credits: 3

Total hours: 72

No. of instructional hours per week: 4

#### Course outcome:

CO1: To study the physiological basis of behaviour

CO2: To understand the different types of communication system among animals

CO3: To get an exhaustive knowledge of organic evolution with special reference to man

CO4: To get a knowledge on the distribution of animals in the biosphere

CO5: Understand the various aspects about organic evolution and palaeontology

#### Ethology

32 hrs

##### Module I -

12 hrs

History and scope of ethology: Motivation- models of motivation (Lorenz's psychohydraulic model and Deutsch's model); learning- types of learning (imprinting, habituation, conditioned reflex, unconditioned reflex, latent learning). Neural mechanisms in behaviour role of hypothalamus and other brain centres, hormones and behaviour. Innate release mechanism and fixed action plan.

Social groups –merits and demerits, properties of organized societies, social groups in mammals, Insects' society with Honey bee as example; Foraging in honey bee and advantages of the wagging dance. Social stress. Pheromones and chemical communications, human pheromones.

##### Module II Sound as communication system in the animal world

6 hrs

Vibrations of insect wing, stridulations in insect, sound production in Cicada, Ultra sonic sound of animals, communication by infrasonic sounds, echolocation, evasion of insects to ultrasonic sounds, sounds of deep sea animals, Sounds of maintenance of territory, sounds and courtship behaviour

##### Module III Light as a device for animal communications

6 hrs

Light of visible spectrum, colour, black and white vision, UV Vision, Infra red vision, Phosphorescence, Fluorescence, Bioluminescence – in insects, in mollusc, deep sea fish.

Energy efficiency of bio-luminiscent organs. Physiology of bioluminescence and bio-electricity.

##### Module IV Transmission of Information through Chemicals

8 hrs

Pheromones, Signalling pheromones in rodents and population control, Scent markings of carnivores, civet, Musk, Musth in elephants, Urine markings of dogs, Jacobson's organ, Insect pheromones, Aggression Pheromones, Trail Pheromones, Sex attractants, Bombykol, Gypsilure, Pheromones for pest management, Pheromones for colony maintenance in honey bees, Dufour's gland secretion, Allomones, Kairomones

#### Evolution

30 hrs

##### Module V: Theories of organic Evolution

4 hrs

Theories of organic evolution: Lamarck's theory and its criticism (Weismann's germplasm theory) Darwin's theory of natural selection (mention the contributions of Wallace). Mutation theory (self-study).

##### Module VI: Paleontology

4 hrs

Geological timescale, fossils, fossilization, paleontological evidences of evolution, fossil dating and significance of fossils.

##### Module VII: Organic Evolution

12 hrs

Modern concept of organic evolution: (Neo Darwinism) - genetic basis of evolution- gene pool, gene frequency, mutation, role of mutation in evolution, neutral mutation (Kimura), genetic drift, genetic equilibrium; factors affecting genetic equilibrium and Hardy –Weinberg law. Natural selection: types of selection (brief account of the observation in *Biston betularia*), isolation and isolating mechanisms; speciation- sympatric speciation and allopatric speciation. Hybridization- adaptive radiation with special reference to Darwin's finches.

##### Module VIII

4 hrs

Evolution above species level : Adaptive Radiation, Micro-evolution, Macroevolution, Megaevolution, Co-evolution .

**Module IX Evolution of Man****6 hrs**

Organic and cultural, examples of trends in human evolution, fossil men. Brief accounts of Parapithecus, Propliopithecus, Dryopithecus, Ramapithecus, Australopithecus, Neanderthal, Cromagnon and Modern man.

**Zoogeography****10 hrs****Module X: Animal Distribution****4 hrs**

Geographic distribution of animals-cosmopolitan distribution, discontinuous distribution, bipolar distribution and isolated distribution, factors affecting animal distribution, barriers to animal distribution- physical and biological barriers.

**Module X1: Zoogeographical realms****6 hrs**

(Brief account of each realm mention the areas included, physical features and fauna). Palaearctic region, Australian region, Ethiopian region, Nearctic region, Oriental region and Neotropical region. Biogeographical classification of India- Western Ghats, Eastern Ghats and Himalayas. Insular Fauna: Brief account of oceanic islands and continental islands (with one example each).

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**MODEL QUESTION PAPER**  
**19UZO643:Ethology, Evolution and Zoogeography**

**Time: 3 Hrs**

**Max Marks: 80**

**Section A**

**Answer all questions. Each question carries one mark. (10× 1= 10)**

1. Define Altruism
2. What are fixed action plan?
3. What is wagging dance?
4. What is VNO?
5. Define promiscuity.
6. What is fossil dating?
7. What is gene frequency.
8. What is a living fossil? Give an example.
9. Comment on genetic drift.
10. Comment on Carbon dating

**Section B**

**Answer any eight questions. Each question carries 2 marks (8×2=16)**

11. What is Sex attractants?
12. What are promiscuity?
13. Give an account on Neanderthal man.
14. Write any two faunal characteristics of oriental region.
15. What is the significance of fossils.
16. Elaborate on Human pheromones.
17. Write a note on social conflicts.
18. Comment on Hardy-Weinberg Equilibrium.
19. Comment on Gene pool.
20. Write a note on mutation theory.
21. What is geological time scale
22. What is imprinting?

**Section C**

**Answer any six questions. Each question carries 4 marks. (6×4= 24)**

23. Write a note on models of motivation.
24. Elaborate on biological rhythm.
25. Explain on the hormonal control of reproductive behaviour.
26. Explain Industrial Melanism.
27. Explain Adaptive radiation with an example.
28. Write a note on barriers to animal distribution.
29. Comment on neural mechanism of learning.
30. Define innate release mechanism
31. Elaborate on foraging in honey bee

**Section D**

**Answer any TWO questions. Each question carries 15 marks.(2×15 = 30)**

32. Write an essay Neo Darwinism
33. Explain the different type of learning
34. Explain the isolating mechanisms involved in natural selection.
35. Write an essay on realm, its physical features and fauna.

## Core Course XII

### 19UZO644: Practical III - Physiology and Biological Chemistry, Molecular Biology and Biostatistics

**No. of credits: 3**

**No. of instructional hours per week: 2**

#### **Course outcome:**

CO1: To demonstrate basic principles in physiology

CO2: To learn clinical procedures for blood & urine analysis

CO3: To make the student skillful in simple biochemical laboratory procedures.

CO4: To get a experiential understanding of enzyme kinetics.

CO5: To assess normal and abnormal constituents with reference to body fluids.

#### **Physiology and Biological Chemistry Practicals: [Compulsory]**

1. Measurement of oxygen consumption of cockroach using Fen's respirometer. [Experiment set up]
2. Study of tonicity of blood cells
3. Paper chromatographic separation of amino acids
4. Estimation of haemoglobin of blood using Haemoglobinometer.
5. Effect of temperature / pH on human salivary amylase activity.
6. Qualitative tests of sugars.
7. Qualitative tests of proteins.
8. Detection of abnormal constituents (glucose and albumin) in urine [two test each].
9. Detection of excretory products – ammonia (Nessler's test), urea (Ammonia generation/ Biuret test) and uric acid (Phosphotungstic acid test)
10. Total and differential count of blood cells (Demo only)
11. Isolate and quantify casein content from milk.

#### **Biostatistics and Molecular Biology**

1. Graphical representation of data (histogram, Frequency Polygon, Pie Diagram)
2. Calculation of Mean, Median, Mode and Standard Deviation of given data by discrete series Direct Method
3. Molecular Biology : Spotters (Watson and Crick Model of DNA, Clover leaf model of tRNA and DNA Replication)

## Core Course XIII

### 19UZO645: Practical IV - Developmental Biology, Ecology, Ethology, Evolution and Zoogeography

**No. of credits: 3**

**No. of instructional hours per week: 2**

#### **Course outcome:**

CO1: To understand the different embryological stages in Vertebrates

CO2: To study placental types of mammals.

CO3: To get an experiential understanding of hydrobiological parameters.

CO4: To get an exposure to ecosystem dynamics.

#### **Developmental Biology and Experimental Embryology (Any 6 to be done)**

1. Study of different types of eggs-Amphioxus, frog, chick, man- based on models/charts [ Any three].
2. Study of blastula- Amphioxus, frog- slide / model [Any one]
3. Study of gastrula – Amphioxus/frog-yolk plug stage - slide / model. [Any one]
4. Mounting, sketch and label of 24hrs/48hrs chick blastoderm. [Any one]
5. Study of placenta (model/ specimen) – any two types.
6. Sperm motility in a fish /zebra fish
7. Mount of few eggs of Aedes/ Culex / Anopheles from the egg raft and record the life cycle of mosquito
8. Mount the eggs of any two species of Ant. Describe the type of egg.

#### **Ecology**

1. Estimation of dissolved oxygen
2. Estimation of CO<sub>2</sub>
3. Estimation of hardness of three different water samples.
4. Study of pond of an ecosystem.
5. Extraction of soil organisms- Berlese funnel, Baerman's funnel [Any one]
6. Construction of food web
7. Study of ecological adaptations – any three
8. Collection and observation of marine/Fresh water plankton .
9. Measurement of pH of different water samples using pH meter, pH paper and indicator solution.
10. Primary productivity
11. Transparency using Seechi Disc
12. Environment Movements : Photo of eminent environmentalist : Medha Patkar , Rachel Carlson : Identify and comment on their contribution.

#### **Conservation Biology**

13. Report on local biodiversity conservation and its efforts - Sacred groves/Medicinal gardens/Mangroves (Report should be submitted by the students)

#### **Ethology**

14. Alarm pheromones in ants.
15. Model of Motivation- Lorenz's psychohydraulic model, Deutch's model ( Any one)

#### **Evolution**

16. Photo of Darwin and Lamarck - Identify the scientist and mention the contribution.

#### **Zoogeography**

17. Study different zoogeographical realms with fauna.

## Core Course XIV

### 19UZO646: Project and Field study

**No. of credits: 4**

**No. of instructional hours per week: 3**

#### **Course outcome:**

CO1: To develop an aptitude for research in Zoology

CO2: To inculcate proficiency to identify appropriate research topic and presentation specifications

Topics of biological interest can be selected for the project.

Project is to be done by a group not exceeding 10 students.

Every student should submit typed (A4 paper, 12 Font, 1.5 Space), spirally bind project report in duplicate to the department on the day of the examination of Practical II.

A copy duly attested by the supervising teacher and the Head of the Department must be placed for ESE before a board of two Examiners.

The viva-voce based on the Project is conducted individually.

Project topic once chosen shall not be repeated by any later batches of students.

The project report may contain the following sections

1. Preliminary (Title page, declaration, Certificate of the supervising teacher, content etc.)
2. Introduction with relevant literature review and objective
3. Materials and Methods
4. Result
5. Discussion
6. Conclusion / Summary
7. References.

#### **Field study**

A total of eighteen hours (1hour/week) are allotted to field study in the fifth semester.

Field study of 4 days is compulsory.

Students are directed to visit one research institute and one wild life sanctuary / ecosystem / museum / zoo, preferably within the state of Kerala.

Scientifically prepared hand written study tour report must be submitted by each student for ESE on the day of the examination of Practical II.

## Elective Course

### 19UZO661.1: Ornamental Fish culture

No. of credits: 2

Total hours:54

No. of instructional hours per week: 3

#### Course outcome

CO1: To make the student aware of the entrepreneurial potentials involved in ornamental fish farming and trading

CO2: To know about the diversity of ornamental fishes and the scope of culture and trade.

CO3: To Learn setting up and maintenance of aquarium

CO4: To learn the culture breeding and marketing techniques of common indigenous ornamental fishes.

#### **Module I: Introduction to aquarium keeping** **7 hrs**

History and importance of aquarium fish keeping. Design ,construction and maintenance of aquaria: aquarium fabrication- shape, size, volume, type of glass tanks, preparation of glass tank, strengthening and supporting of tank, fitting of tanks into room settings; aquarium floor setting – type and size of pebbles, gravels, granites used for bed setting and its advantages. Filters- biological, chemical and mechanical. Aquarium accessories like aerators, decoratives, lighting, heating and feeding trays, Public aquarium.

#### **Module II: Water quality management** **4 hrs**

Aquarium system – sources of water, containers, storage, temperature, pH, dissolved carbon dioxide, ammonia, hardness and turbidity, Optimum water quality for tropical aquarium fish keeping.

#### **Module III: Aquarium plants** **6 hrs**

Uses of aquarium plants, different varieties of plants like Submerging plants (tubers, rooted plants,) and emergent plants , indoor plants and outdoor plants , selection of plants, planting techniques, propagation and maintenance of aquarium plants. Advantages of natural plants over artificial plants.

#### **Module IV: Common ornamental fishes** **13 hrs**

Indigenous and exotic species; Identification and biology of the common ornamental fishes. *Cyprinus carpio* (koi carp), *Poecilia reticulata* (guppy), *Carassius auratus* (Gold fish ) *Betta splendens* (Siamese fighting fish) *Trichogaster leeri* (pearl gourami). Live bearers and egg layers. Sexual dimorphism in ornamental fishes.

Indigenous ornamental fishes - Common indigenous ornamental fishes of Western ghats- Identification and biology of the common ornamental fishes. Cyprinid *Sahyadriadenisonii* (*Puntius denisonii* - red line torpedo fish), *Dawkinsia filamentosa* (*Puntius filamentosus* - Indian tiger barb), Loaches (*Nemacheilus triangularis* (Zodiac loach); Cichlids: *Etroplus maculatus* (yellow and orange chromides), *E. suratensis* (pearl spot), Anabantids: *Anabas testudineus* (climbing perch) and Cat fishes :*Horabagrus brachysoma* (Yellowish catfish).

#### **Module V: Breeding techniques and Management** **7 hrs**

Breeding and rearing of common ornamental fishes. Conditions for breeding- pH, temperature and sex ratio. Brood stock management- selection of brooders, maintenance and management of brood stocks. Selective breeding and hybridization techniques. Induced breeding. Colour enhancement techniques.

#### **Module VI: Food and Feeding** **7 hrs**

Food and feeding - live feed and formulated feed. Preparation and culture 121 of live feed (Artemia, Infusoria, Spirulina). Control of algal growth, snails and other predators. Common disease of ornamental aquarium fishes - their causative agents - virus, bacteria, fungi, protozoa and nematode; symptoms, treatment and prophylactic measures.

#### **Module VII: Transgenic fishes** **5 hrs**

Transgenic fishes: introduction, technique (Microinjection) two examples (salmon, Zebra fish), advantages and disadvantages.

#### **Module VIII: Ornamental fish trading** **5 hrs**

Ornamental fish trading: Marketing potential, convention on biological diversity, procedure for export of ornamental fish, entrepreneurship and funding agencies.

Assignment: Students are to visit ornamental fish Farm and submit a report with photos.

## REFERENCES

1. Arumugam. N. (2008). Aqua culture, Saras publications, Tamil Nadu, India.
2. Axelord, H.R. (1967). Breeding aquarium fishes, T F H Publications.
3. Dick Mills (1981). Aquarium Fishes, Arco publishing.
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5. Gahlawat, S.K., et.al. (2007). Manual of experimental Ichthyology, Daya publishing House, Delhi.
6. Gerhard Brunner, (1973). Aquarium plants, T F H Publications, Inc. Ltd., Hongkong.
7. Gupta. S. K. & P. C. Gupta, (2006). General and applied Ichthyology, S. Chand & Co. Ltd., New Delhi.
8. Harishankar J. A & A. Biju Kumar, (1997). Aquarium Fishes, B. R. publishing Corporation, Delhi.
9. Jorgen Hansen, (1979). Making your own aquarium, Bell and Hyman Ltd., London.122.
10. Ramachandran. A., (2002). Breeding, Farming and management of ornamental fishes. School of Industrial Fisheries, Cochin University of Science and Technology, Cochin.
11. Saroj. K. Swain, (2003). Aquarium care and maintenance, Publ. CIFA, ICAR, Orissa, India.
12. Stephen Spotte, (1970). Fish and invertebrate culture, Wiley Inter Science, John Wiley & Sons, Inc., New York.
13. Tom Lovell (1998). Nutrition and feeding of fish second Ed. Kluwer Academic publishers.
14. Talwar.P.K., and Jhingran.A.G.,(1991). Inland fishes Oxford and IBH Publishing Co. PVT LTD, New Delhi.



**MODEL QUESTION PAPER**  
**19UZO661.1: ORNAMENTAL FISH CULTURE**

**Time 3hrs**

**Max. Marks:80**

**Section A**

**Answer all questions in one or two sentences**

1. What are barbels?
2. What are releasing hormones?
3. What is meant by hypophysation?
4. What is meant by vivarium
5. What is brood stock management?
6. What is meant by larvophiles?
7. What are chromatophores?
8. Name the causative agent of Columnaris.
9. What is meant by MPEDA?
10. What is meant by decapsulation?

(10x1=10 marks)

**Section B**

**Answer any eight of the following in one paragraph each.**

11. Comment on the importance of pH in an aquatic system.
12. What are the symptoms of costia?
13. Write on the general characters of cat fishes.
14. What is the importance of using hoods in aquarium tanks?
15. What is ozonizer?
16. What are aerators?
17. What is de-ionized water?
18. Comment on the lateral line sense organs in fishes.
19. Write on the different categories of fishes based on type of breeding.
20. How can we determine the pituitary dosage in induced breeding?
21. Discuss on artificial sea water.
22. Define on canned fish food

(8X2=16marks)

**Section C**

**Answer any six of the following in a paragraph not exceeding 120 words.**

23. Discuss on the role funding agencies for supporting fish entrepreneurs.
24. Write on the importance and different lighting used in an aquarium.
25. Write on different types of fish feed.
26. Write a short note on infusoria culturing.
27. What are the advantages of natural plants over artificial plants in an aquarium.
28. Mention on exporting of ornamental fishes.
29. Write on biological filters.
30. Discuss on color enhancement techniques.
31. Comment on brood stock management.

(6X4=24 marks)

**Section D**

**Write essay on any two of the following. Each question carries 15 marks.**

32. Write an essay note on selective breeding and hybridization.
33. Elaborate on common fish diseases.
34. Write an essay on design and construction of aquaria.
35. Write an essay on transgenic fishes and its advantages and disadvantages.

(2X15=30 marks)

## Elective Course

### 19UZO661.2: Vermiculture and Apiculture

No. of credits: 2

Total hours 54

No. of instructional hours per week: 3

#### Course outcome:

CO1: To promote self-employment and self-reliance among educated youth

CO2: To learn the basic procedure and methodology of vermiculture

CO3: To learn the scope and methodology of apiculture.

#### Vermiculture

24hrs

##### Module I

6hrs

Introduction: definition and scope of vermiculture. Nature and species of earthworms: habit categories – epigeic, endogeic and anecic, indigenous and exotic species (*Eudrillus eugeniae/Eisenia foetidae/Perionyx excavatus/ Lampito mauritii*), identification of the above four species based on morphological characters.

##### Module II

10hrs

Methodology of vermicomposting: step by step methodology – containers for culturing, raw materials required, preparation of bed, environmental pre-requisites, feeding, harvesting, and storage of vermicompost. Advantages of composting, precautions to be taken to prevent attack by pests and pathogens.

##### Module III

8hrs

Vermicompost profile and applied aspects: physical, chemical and biological parameters of vermicast, vermin enrichment, economic uses of vermiculture (biofertilizer, waste disposal, vermiwash, poultry feed, vermi-remediation etc.

#### Apiculture

30hrs

##### Module IV

8hrs

Introduction and Scope: Definition and significance of the study. Caste system and Social behavior; common species of honeybees used, organization of bee colony, social life and adaptations of honeybees.

##### Module V

12hrs

Bee keeping methods and equipments: indigenous methods, extraction appliances, extraction of honey from the comb and processing, management and maintenance of an apiary, bee pastures

##### Module VI

10hrs

Diseases and economics: diseases (bacterial, fungal, protozoan, acarine, brood diseases), preventive and curative measures. Use of honey, bees wax, bee venom, nutrient profile of honey, marketing strategies.

#### Suggested topics for assignments / seminars Vermiculture

1. Report of field visits to commercial/professional units
2. Feasibility of maintaining a vermicomposting plant in the College maybe worked out
3. Awareness programmes on waste management through vermicomposting may be conducted for the local residence associations.

#### Apiculture

1. Report of field visits

#### REFERENCES

1. Cherian & Ramachandran Bee keeping in South Indian Govt. Press, Madras.
2. Gupta, K.C. Romance of bee keeping. Khadi Paristhan, Calicut.
3. Mary Appelhof. Worms eat my Garbage.
4. Mishra R.C. Perspectives in Indian Apiculture
5. Sathe, T.V. Vermiculture and Organic farming.

## Elective Course

### 19UZO661.3: Dairy farming and Broiler farming

No. of credits: 2

Total hours: 54

No. of instructional hours per week: 3

#### Course outcome:

CO1: To promote and encourage the students to take up animal husbandry instead of crawling for white collar jobs

CO2: To aid white revolution by improving the breeds of cattle

CO3: To learn the proper and scientific methodology behind poultry farming

#### Dairy farming

27hrs

##### Module I

7hrs

Breeds of livestock and dairy farm: Breeds of Taurus (exotic) dairy cattle, breeds of zebu (Indian) cattle, breeds of dairy buffaloes; present status of dairy farming; planning to establish dairy farm, location of farm, different housing systems, dairy buildings, space requirements, economically setting a small farm.

##### Module II

5hrs

Nutritive values of common feeds, commercial and mixed feeds: Feeding and providing feed - feeds rich in minerals, feeds rich in protein, livestock tonics - hormones, thyroprotein, stilbestrol, urea for dairy cattle, toxic feeds, food-poisoning - Balancing the dairy ration - general rule for feeding dairy herd.

##### Module III

4hrs

Mechanism of reproduction: Male reproductive organs, female reproductive organs, role of hormones in male reproduction, role of hormones in female reproduction; care and management of newborn animals.

##### Module IV

6hrs

Artificial insemination: Advantages of artificial insemination over natural breeding, limitation of A.I, problems under Indian conditions; collection of semen - electro ejaculation, dilution of semen and cryopreservation, insemination, cleaning and sterilization of apparatus. Common parasites in India and cure methods - External parasites and pest, reproductive Diseases, milk borne diseases.

##### Module V

5hrs

Preparation and marketing of dairy products: Determining quality of milk, choosing market outlet, assembling dairy products from farms, co- operative action among creameries, hauling milk to city markets; Marketing fluid milk (i) Specific gravity of milk (ii) determination of specific gravity with a lactometer (iii) pasteurization of milk (iv) advantages of pasteurization; determining cost of distribution.

#### Broiler farming

27hrs

##### Module VI

5hrs

History, contribution to remove protein deficiency, role of broiler farm in urban and rural areas, employment potential, export potential. Poultry breeds, broiler strains available in India, day old chicks and their maintenance, hatchery potential; parental stocks and their maintenance

##### Module VII

5hrs

Poultry house, site, space requirement, types of houses-cage and deep-litter system, equipment for feeding and watering, lighting for poultry houses, ventilation.

##### Module VIII

5hrs

Nutrition of poultry birds, nutritional requirements according to age, starter feed, finisher feed, feed formulation. Availability of raw material for feed; use of antibiotics, amino acids and minerals.

##### Module IX

5hrs

Brooding and rearing baby chicks, types of brooders, vaccination, summer management and monsoon management.

## **Module X**

**7hrs**

Diseases and health management, common diseases caused by viruses, bacteria and worms, ranikhet, fowl pox, worms and other parasites, toxicosis and account of aspergillus, aflatoxin, Salmonella; deworming and insecticide treatment; mechanized dressing methods; cold storage, avoiding aflatoxin.

### **Suggested topics for assignments / seminars**

#### **Dairy farming**

1. Breeds of Taurus (exotic) dairy cattle, Breeds of zebu (Indian) cattle, Breeds of dairy buffaloes.
2. Planning to establish dairy farm.
3. Setting a small farm.
4. Feeding and providing feed to dairy animals.
5. General rule for feeding dairy herd.
6. Role of hormones in male reproduction.
7. Role of hormones in female reproduction.
8. Care and management of newborn animals.
9. Advantages of Artificial insemination over natural breeding.
10. Common parasites in India and cure methods - External parasites and pest.
11. Reproductive diseases - Milk borne diseases.
12. Determining quality of milk.
13. Marketing fluid milk.

#### **Broiler farming**

1. Role of broiler farm to remove protein deficiency.
2. Role of broiler farm in employment potential and export potential.
3. Day old chicks and their maintenance.
4. Parental stocks and their maintenance.
5. Setting up of broiler farming.
6. Feed formulation. Availability of raw material for feed; Use of antibiotics, amino acids and minerals.
7. Brooding and rearing baby chicks.
8. Summer management and monsoon management.
9. Diseases and health management.

#### **REFERENCES**

1. Banerji, G.C. A text book of Animal husbandry, 1998. Oxford & IBH.
2. ICAR. Handbook of Animal Husbandry, 1990/97, ICAR, PUSA.
3. Gnanamani. Profitable Poultry Farming.
4. Banerji, G.C. Poultry. Oxford & IBH

**ELECTIVE COURSE**  
**19UZO661.4: ENTOMOLOGY**

**No of credits: 2**

**No of instructional hours per week: 3**

**Course outcome:**

CO1: To make the student aware of the beneficial insects which contributes the wellbeing of human animals and plants.

CO2: To enrich the students with the zoological categories of taxonomy, morphology and economical importance of insects

**Module I**

**8hrs**

Origin and evolution of insects. Taxonomy-, classification of insect, basis of insect classification; classification of insects up to sub orders and up to super families

**Module II**

**8hrs**

General morphology, structure and modifications of head. Antennae-structure, functions and types. Mouth parts-modification based on feeding mechanisms. Thorax, Abdomen, wings, Appendages-segmentation, structure and modifications.

**Module III**

**10hrs**

Insect Society: group of social insects and their social life. Insect Communication-Acoustic, visual, tactile and Chemical methods. Role of hormones in communication, pheromones, Kairomones, Allomonones. Aquatic insects-aquatic adaptations (respiratory), Adaptation of parasitic and predatory insects. Seasonal adaptations-Dormancy-Dipause

**Module IV**

**9hrs**

Growth, reproduction and Metamorphosis in insects, Different types of insect larvae and pupae.

**Module V.**

**10hrs**

Economically important insects and their products-silk, honey, lac, insect as human food and scavengers. Biological indicators of pollution, Kinds of insect pest-major, minor, endemic pest, seasonal pests, occasional pest, regular pests, persistent pest. Control of fleas, lice, bugs, mosquitoes, flies and parasitoids. ; Control of insect vector.

**Module VI**

**9hrs**

Classification of insecticides-based on mode of entry, mode of action. Synthetic, organic insecticides, organo phosphorous insecticides, botanical insecticides

**REFERENCE**

1. A general text book of entomology, Imms , A. D., Chapman & Hall, UK
2. C.L.Metcalf and V.P.Flint:Destructive and useful insects.
3. D.S.Gill.Economic importance of Insects.
4. H.E.Mammel.Techniques in pheromone research.
5. Host Selection by Phytophagous insects, Bernays, E. A., and Chapman, R. F., Chapman and Hall, New York, USA
6. Insect Plant Biology, Schoonhoven, L. M., van Loop, J. A., & Dicke. M. Pub. Oxford Univ. Press. USA
7. Introduction to the study of insects, Borror, D. J., Triplehorn, C. A., and Johnson, N. F., M Saunders College Publication, USA
8. John.R.Ruberson.Handbook of Pest Management.
9. Philip House .Insect Pheromones and their uses in pest management
10. Principles of Insect Morphology, Snodgrass, R. E., Cornell Univ. Press, USA 4. The Insect Societies, Wilson, E. O., Harward Univ. Press, UK.

## ELECTIVE COURSE

### 19UZ0661.5: ENVIRONMENTAL POLLUTION

No.of credits: 2

Total hours: 54

No.of instructions hours per week: 3

#### Course outcome:

CO1: To provide students with the basic knowledge of environment and various environmental issues.

CO2: To address the social issues in relation to development

CO3: To promote and encourage the students to follow ecofriendly life with our environment.

#### Module I

6hrs

Introduction: Concept and scope of Environmental Science; concept of Environmental Biology, ecosphere and biosphere; ecological factors and variables.

#### Module II

2hrs

Toxicants in the Environment: History of toxicants - Principles of toxicology – toxicants and toxicity, factors affecting toxic substances in the environment, their types – degradable and non degradable;source and entry routes.

#### Module III

8hrs

Man and Environmental Toxins: Routes of toxicants to human body – inhalation, skin absorption, oral, injection; ADME – adsorption, distribution, metabolism and excretion; Response to toxin exposures –dose-response relationship, frequency and cumulative response.

#### Module IV

8hrs

Non pesticide Toxic Organic Compounds of Environmental concern: Dioxins, Furans, Polychlorinated Biphenyls (PCBs), Polynuclear Aromatic Hydrocarbons (PAHs): Sources, Structure, Health impacts; Concept of green chemistry.

#### Module V

5hrs

Environmental Health: Concept and scope; global and regional perspectives; basic requirements for healthy environment; environmental quality, human exposure and health impact; Environmental diseases: Asbestosis, silicosis, synopsis, asthma, fluorosis and allergis, epidemiological issues –Malaria, Kala azar, and water borne diseases.

#### Module VI

10 hrs

Environmental Impact Assessment (EIA): Definition, purpose and characteristics of EIA; global evolution of EIA; participants in EIA process, stages of EIA, types of EIA. Environmental inventory. Baseline data on EIA- environmental data, project data and project alternative data. Measurement of impact– physical, social, economic, natural; Public participation in environmental decision making; Framework of Environmental Assessment; Description of environmental setting; environmental impact factors and area consideration. Environmental Impact Statement (EIS) and Environmental Management Plan (EMP).

#### Module VII

5hrs

Disaster Management: Definition of disaster management; components of disaster management cycle- crisis management & risk management. Crisis management- quick response & relief, recovery, development. Risk management- risk identification and risk assessment, risk reduction- preparedness, prevention and mitigation, risk transfer. Disaster management- act and policy.)

#### Module VIII

10 hrs

Man-made hazards: Hazards due to dams and reservoirs, nuclear power plants, industrial hazards, occupational hazards, mitigation measures

#### REFERENCES

1. Biswas,A.K. 2007. Water resources: Environmental Planning, Management and Development, McGraw-Hill, New Delhi.
2. Botkin, Daniel B. 2011. Environmental Science: Earth as a Living Planet, John Wiley and Sons, New Delhi.

3. Bregman, J.I. and Mackenthum, K.M. 1992. Environmental impact statements. Chelsea Michigan: Lewis
4. Calow, P. 1994. Handbook of Ecotoxicology. Blackwell Scientific Publications, London
5. Chapman, J.L. and Reiss, M. J. 2005. Ecology Principles and Applications, Cambridge University Press, London.
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10. Gunther, O. 1998 Environmental Information Systems. Berlin, New York, Springer.
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17. Miller G. Taylor and Scott Spoolman. 2011. Essentials of Ecology, Brooks/Cole Learning, USA.
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