Fatima Mata National College
(Autonomous)
Kollam

Scheme & Syllabus of

First Degree Programme in Botany

2019 Admission Onwards

OBJECTIVES OF THE PROGRAMME

The programme is designed in such a way that ensures proper understanding of Science and especially botanical science. The curriculum and content are arranged systematically in order to provide a thorough understanding of various disciplines of botanical science, giving special emphasis on their traditional, fundamental, historical and social relevance.

The syllabi described hereafter are nicely planned to cater the needs of students at undergraduate level, and hope the contents will encourage the students to pursue their endeavors in botanical science and its applications. Sequencing of components in this syllabus will develop the scientific attitude among the students. Various course components may help the students to make a proper scientific vocabulary.

The curriculum has given more emphasis on the special theme 'Environment and Botanists', which itself is introduced in order to develop an environmental concern among the students, the real need of the hour. It has also given importance to knowledge on natural pheneomena, manipulation of nature for the benefit of human beings and his desired species.

The course offers Biotechnology as an open subject. It is introduced for familiarizing the students the basic, fundamental and applied aspects of the subject that in turn will make revolutionary changes in the field of agriculture, biodiversity conservation and characterization, medicine, industry, and environment management. The basic facts of Bioinformatics are included for making the students aware of the role of Information Technology on Biology.

The practical works mentioned in the syllabi are designed to develop skill in performing scientific experimentation, and also provide him a detailed awareness on the laboratory environment, laboratory materials and laboratory ethics. This will also provide the student a preliminary experience in collection and interpretation of scientific data.

Field works are prescribed in the curriculum wherever necessary for getting the live experience to the students on various botanical matters. A research work is also suggested to perform, which will equip the students to take up serious assignments in Botanical Science in future.

The curriculum offers language courses and complementary courses like Chemistry and Zoology, in addition to the core courses on Botany. This is simply for the all round development of the students in communication and understanding Science in a holistic perspective.

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

The studies in specific will train the students to attain practical and theoretical knowledge on different forms and diversity of plant life, and also will equip them to understand and identify each of them starting from microscopic algae to huge terrestrial tree forms. The papers will give him an idea regarding the ecological and environmental diversity and the field trips prescribed in the curricula will provide him the real pulse of the nature and natural beings. Advanced tools and techniques will be imparted to the students while administering the emerging topics like Cell and Molecular Biology, Biotechnology and Bioinfromatics. Professional training in Tissue Culture, Plant Breeding and Horticulture will give him a livelihood through self employment by means of start-ups.

Table 1. General Structure of the First Degree Programme in Botany

Sem No	Course Code	Course Title	Instructional Hours/ Week		Credits	ESE Duration	Evaluation		Total Credits
			T	P			Internal	ESE	
I	19UEN1111	English Language I	5	-	4	3	20%	80%	16
	19UML/HN/FR111.1	Additional Language I	4	-	3	3			
	19UEN1121	Foundation Course I	4	-	2	3			
	19UBO141	Core Course I	2	2	3	3			
	19UCH131.2	Comple. Course I Chemistry	2	2	2	3			
	19UZO131.2	Comple. Course II Zoology	2	2	2	3			
II	19UEN211.1	English Language II	5	-	4	3	20%	80%	17
	19UEN212.1	English Language III	4	-	3	3			
	19UML/HN/FR211.1	Additional Language II	4	-	3	3			
	19UBO221	Foundation Course II	2	2	3	3			
	19UCH231.2	Comple. Course III Chemistry	2	2	2	3			
	19UZO231.1	Comple. Course IV Zoology	2	2	2	3			
III	19UEN311.1	English Language IV	5	-	4	3	20%	80%	17
	19UML/HN/FR311.0	Additional Language III	5	-	4	3			
	19UBO341	Core Course II	3	2	3	3			
	19UCH331	Comple. Course V Chemistry	3	2	3	3			
	19UZO331.1	Comple. Course VI Zoology	3	2	3	3			
IV	19UEN411.1	English Language V	5	-	4	3	20%	80%	25
	19UML/HN/FR411.1	Additional Language IV	5	-	4	3			
	19UBO441	Core Course III	3	2	3	3			
	19UCH431	Comple. Course VII Chemistry	3	2	3	3			
	19UZO431.1	Comple. Course VIII Zoology	3	2	3	3			
	19UCH432	Comple IX Practical Chemistry	-	(8)*	4	3			
	19UZO432	Comple X Practical Zoology	-	(8)*	4	3			
V	19UBO541	Core Course IV	4	3	4	3	20%	80%	20
	19UBO542	Core Course V	5	2	4	3			
	19UBO543	Core Course VI	4	2	3	3			
	19UBO544	Core Practical-1 VII	-	(4)*	3	3			
	19UBO545	Core Practical-2 VIII	-	(4)*	4	3			
	19UBO551	Open Course I	3	-	2	3			

VI	19UBO641	Core Course IX	5	2	4	3	20%	80%	25
	19UBO642	Core Course X	4	2	4	3			
	19UBO643	Core Course XI	4	2	4	3			
	19UBO644	Core Practical-3 XII	-	(5)*	3	3			
	19UBO645	Core Practical-4 XIII	-	(8)*	4	3			
	19UBO651	Open Course II	3	-	2	3			
	19UBO646	Project	-	3	4	3			
									120

L= Lecture; P= Practical; ()* Practical hour already distributed in the semester concerned; ESE= End Semester Examination

Table 2. SEMESTER I

Course Code	Course Title	Instructional Hours/ Week		Credits	ESE Duration (Hrs.)	Evaluation		Total Credits
		T	P			Internal	ESE	
19UEN111.1	English Language I	5	-	4	3	20%	80%	16
19UML/HN/ FR111.1	Additional Language I	4	-	3	3			
19UEN121	Foundation Course I-Writing on contemporary issues	4	-	2	3			
19UBO141	Core Course I- Angiosperm Anatomy & Embryology	2	2	3	3			
19UCH131.2	Comple. Course I Chemistry	2	2	2	3			
19UZO131.1	Comple. Course II Zoology	2	2	2	3			

Table 3. SEMESTER II

Course Code	Course Title	Instructional Hours/ Week		Credits	ESE Duration (Hrs.)	Evaluation		Total Credits
		T	P			Internal	ESE	
19UEN211.1	English Language II	5	-	4	3	20%	80%	17
19UEN212.1	English Language III	4	-	3	3			
19UML/HN/ FR211.1	Additional Language II	4	-	3	3			
19UBO221	Foundation Course II- Methodology and Perspectives in Plant Science	2	2	3	3			
19UCH231.2	Comple. Course III Chemistry	2	2	2	3			
19UZO231.1	Comple. Course IV Zoology	2	2	2	3			

Table 4. SEMESTER III

Course Code	Course Title	Instructional Hours/Week		Credits	ESE Duration (Hrs.)	Evaluation		Total Credits
		T	P			Internal	ESE	
19UEN311.1	English Language IV	5	-	4	3			
19UML/HN/FR311.0	Additional Language III	5	-	4	3			
19UBO341	Core Course II- Microbiology, Phycology, Mycology & Plant Pathology	3	2	3	3	20%	80%	17
19UCH331	Comple. Course V Chemistry	3	2	3	3			
19UZO331.1	Comple. Course VI Zoology	3	2	3	3			

Table 5. SEMESTER IV

Course Code	Course Title	Instructional Hours/Week		Credits	ESE Duration (Hrs.)	Evaluation		Total Credits
		T	P			Internal	ESE	
19UEN411.1	English Language V	5	-	4	3			
19UML/HN/FR411.1	Additional Language IV	5	-	4	3			
19UBO441	Core Course III- Bryophytes, Pteridophytes, Gymnosperms & Paleobotany	3	2	3	3			
19UCH431	Comple. Course VII Chemistry	3	2	3	3	20%	80%	25
19UZO431.1	Comple. Course VIII Zoology	3	2	3	3			
19UCH432	Comple IX Practical Chemistry	-	(8)*	4	3			
19UZO432	Comple X Practical Zoology	-	(8)*	4	3			

Table 6. SEMESTER V

Course Code	Course Title	Instructional Hours/ Week		Credits	ESE Duration (Hrs.)	Evaluation		Total Credits
		T	P			Internal	ESE	
19UBO541	Core Course IV-Morphology, Systematic Botany, Economic Botany, Ethnobotany & Pharmacognosy	4	3	4	3	20%	80%	20
19UBO542	Core Course V- Environmental Studies & Phytogeography	5	2	4	3			
19UBO543	Core Course VI- Cytology, Genetics & Evolution	4	2	3	3			
19UBO544	Core Practical-1 VII (19UBO141 & 19UBO221)	-	(4)*	3	3			
19UBO545	Core Practical-2 VIII (19UBO341 & 19UBO441)	-	(4)*	4	3			
19UBO551	Open Course I- Horticulture	3	-	2	3			

Table 7. SEMESTER VI

Course Code	Course Title	Instructional Hours/ Week		Credits	ESE Duration (Hrs.)	Evaluation		Total Credits
		T	P			Internal	ESE	
19UBO641	Core Course IX- Plant Physiology & Biochemistry	5	2	4	3	20%	80%	25
19UBO642	Core Course X- Molecular Biology & Informatics	4	2	4	3			
19UBO643	Core Course XI- Crop Improvement & Research Methodology	4	2	4	3			
19UBO644	Core Practical-3 XII (19UBO541 & 19UBO542)	-	(5)*	3	3			
19UBO645	Core Practical-4 XIII (19UBO543, 19UBO641, 19UBO642 & 19UBO643)	-	(8)*	4	3			
19UBO651	Open Course II- Biotechnology & Nanobiotechnology	3	-	2	3			
19UBO646	Project	-	3	4	3			
								120

Table 8. Distribution of Contact Hours and Credits
(CORE, FOUNDATION & OPEN COURSES, PROJECT/DISSERTATION)

Course Code	Course Title	Semester I			Semester II			Semester III			Semester IV			Semester V			Semester VI			Total	
		Contact Hours		Credit	Contact Hours		Credit	Contact Hours		Credit	Contact Hours		Credit	Contact Hours		Credit	Contact Hours		Credit	Contact Hours	Credit
		T	P		T	P		T	P		T	P		T	P		T	P			
19UBO 141	Angiosperm Anatomy, & Embryology	2	2	3																4	3
19UBO 221	Methodology & Perspectives in Plant Science				2	2	3													4	3
19UBO 341	microbiology, Phycology, Mycology & Plant Pathology							3	2	3										5	3
19UBO 441	Bryophytes, Pteridophytes, Gymnosperms & Paleobotany										3	2	3							5	3
19UBO 541	Morphology, Systematic Botany, Economic Botany, Ethnobotany & Pharmacgosy													4	3	4				7	4
19UBO 542	Environmental Studies & Phytogeography													5	2	4				7	4
19UBO 543	Cytology, Genetics & Evolution													4	2	3				6	3
19UBO 544	Practical-I (19UBO141, 19UBO221)		2 *			2 *														4	3
19UBO 545	Practical-II (19UBO341, 19UBO441)								2 *			2 *								4	4
19UBO 551	Horticulture													3		2				3	2
19UBO 641	Plant Physiology & Biochemistry																5	2	4	7	4
19UBO 642	Molecular Biology & Informatics																4	2	4	6	4
19UBO 643	Crop Improvement & Research Methodology																4	2	4	6	4
19UBO 644	Practical-III (19UBO541, 19UBO542)														5 *					5	3
19UBO 645	Practical-IV (19UBO543, 19UBO641, 19UBO642, 19UBO643)																	8		8	4
19UBO 651	Biotechnology & Nanobiotechnology																3			3	2
19UBO 646	Project Report, Tour Diary, Viva-Voce														2			3		5	4

L = Lecture; P = Practical; *Practical hour already distributed in the semester concerned

Table 9. Scheme of Evaluation of Foundation Course II, Core Courses, Open Courses & Project

Semester	Course Code	Course Title	Marks		Duration of ESE
I	19UBO141	Angiosperm Anatomy & Embryology	**CE**	**ESE**	
II	19UBO221	Methodology & Perspectives in Plant Science	20	80	3 hrs
III	19UBO341	Microbiology, Phycology, Mycology & Plant Pathology	20	80	3 hrs
IV	19UBO441	Bryophytes, Pteridophytes, Gymnosperms & Paleobotany	20	80	3 hrs
V	19UBO541	Morphology, Systematic Botany, Economic Botany, Ethnobotany & Pharmacognosy	20	80	3 hrs
	19UBO542	Environmental Studies & Phytogeography	20	80	3 hrs
	19UBO543	Cytology, Genetics & Evolution	20	80	3 hrs
	19UBO544	Practical-I (19UBO141, 19UBO221)	20	80	3 hrs
	19UBO545	Practical-II (19UBO341, 19UBO441)	20	80	3 hrs
	19UBO551	Horticulture	20	80	3 hrs
VI	19UBO641	Plant Physiology & Biochemistry	20	80	3 hrs
	19UBO642	Molecular Biology & Informatics	20	80	3 hrs
	19UBO643	Crop Improvement & Research Methodology	20	80	3 hrs
	19UBO644	Practical-III (19UBO541, 19UBO542)	20	80	3 hrs
	19UBO645	Practical-IV (19UBO543, 19UBO641, 19UBO642, 19UBO643)	20	80	3 hrs
	19UBO651	Biotechnology & Nanobiotechnology	20	80	3 hrs
	19UBO646	Project Report, Tour Diary, Viva-Voce	20	80	3 hrs

END SEMESTER ASSESSMENT (ESA)

The college shall conduct the external examinations for all semesters. There will not be any supplementary exams. The practical examinations for Core courses shall be conducted after 4th, 5th and 6th semesters and Complementary courses at the end of 4th semester according to the common calendar and questions set up by the college. The Board of Examiners constituted by the college will have the right to make necessary changes in the pattern of practical examination as and when needed.

ELIGIBILITY TO APPEAR FOR PRACTICAL EXAMINATION

Submission of the following

- •Certified and bonafide practical record
- •Certified herbarium sheets
- •Certified field work
- •Certified tour report
- •Project report/Dissertation (certified and bonafide)

PROJECT

Project work/Dissertation is compulsory. It can be carried out either individually or by a group not exceeding 15 students. The topics shall either be allotted by the supervising teacher or be selected by the student in consultation with the supervising teacher. The project report/dissertation duly attested by the Supervising teacher and Certified by the Head of the Department, has to be submitted on the day of examination of Practical - III (Core). The project shall be evaluated by an external examiner. The project report/ Dissertation (not less than 40 pages) shall be prepared as per the format given below.

1. Title page /Front page (Certified by the HOD)
2. Declaration by the candidate
3. Certificate attested by the Supervising teacher
4. Acknowledgement, if any
5. Table of contents
6. Abbreviation, if any
7. Introduction & Review of Literature
8. Material and Methods
9. Results and Discussion (Not less than 10 pages)
10. Summary and Conclusion

11. References

Tables, Graphs, Photographs etc. can be used to present the data. Topics selected once should not be repeated.

ASSIGNMENTS

The entire processes related with assignments will be through online/offline. The allotment, submission, valuation and publication of results will be through an online/offline platform. It will be the discretion of the department each and every time to choose either online/ offline mode.

STUDY TOUR

- Field trip to a place of plant diversity within or outside Kerala with a minimum duration of 5 days is compulsory. (Field trips are to be conducted for three days either as continuous or one day trips).
- A brief report of the trip has to be submitted

CORE COURSES

Semester	Course Code	Course Title	Contact Hrs/week		Credits
			L	P	
I	19UBO141	Angiosperm Anatomy & Embryology	2	2	3
III	19UBO341	Microbiology, Phycology, Mycology & Plant Pathology	3	2	3
IV	19UBO441	Bryophytes, Pteridophytes, Gymnosperms & Paleobotany	3	2	3
V	19UBO541	Morphology, Systematic Botany, Economic Botany, Ethnobotany & Pharmacognosy	4	3	4
	19UBO542	Environmental Studies & Phytogeography	5	2	4
	19UBO543	Cytology, Genetics & Evolution	4	2	3
	19UBO544	Practical-I (19UBO141, 19UBO221)		4	3
	19UBO545	Practical-II (19UBO341, 19UBO441)		4	4
VI	19UBO641	Plant Physiology & Biochemistry	5	2	4
	19UBO642	Molecular Biology & Informatics	4	2	4
	19UBO643	Crop Improvement & Research Methodology	4	2	4
	19UBO644	Practical-III (19UBO541, 19UBO542)		5	3
	19UBO645	Practical-IV (19UBO543, 19UBO641, 19UBO642, 19UBO643)		8	4

Distribution of marks in Continuous Assessment	
Test	10
Assignments/ Seminars	5
Attendance	5
TOTAL	20

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 parties 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 :
    a. Marie parle français.
    b. Je parle italien.
    c. Vous comprenez l'italien ?
    d. Melissa connait Florent.
20. Ecrivez les numéros en lettres :
    a. 18
    b. 25
    c. 30
    d. 12
21. Quelle est leur nationalité ?
    a. Céline Dion
    b. 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 :
    a. Vous êtes français ?
    b. Vous parlez bien français ?
    c. Vous comprenez le mot « Bonjour » ?
    d. Vous habitez à Paris ?
24. Conjuguez les verbes :
    a. Ils (parler) français.
    b. Nous (connaitre) Marseille.
    c. Je (être) secrétaire du festival.
    d. Elles (comprendre) bien italien.
25. Complétez avec le masculin et le féminin :
    a. Un étudiant - ……..
    b. Un Brésilien - …….
    c. Une artiste - ……...
    d. Un acteur – une ……..
26. Accordez le group du nom :
    a. Les [bon] [restaurant]
    b. Les [grand] [voiture]
    c. Les [femme] [beau et célèbre]
    d. 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 **2questions 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 gouts. 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
   Rajkamal Prakashan
2. Hindi Ekanki - Siddhnath Kumar
   Radhakrishna Prakashan
3. Ekanki aur Ekankikar - Ramcharan Mahendra
   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 केलिए इसे छोड दो। तुम्हारे पैरों पडती हूँ।" यह किसने किससे किस अवसर पर कहा?
13. गोपाल ने अंडा खाने केलिए 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 अंग्रेज़ी 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 हज़ार 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 दीजए?
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 तत्वों 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 (18×4=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 – ഉണ്ണിയാർച്ചകൂത്ത് കാണാൻ പോയ കഥ(ആറ്റുംമണമ്മേലെ ..... വേഗത്തിൽ പോകുന്നു ഉണ്ണിയാർച്ച)
3. കുമാരനാശാൻ – ചണ്ഡാലഭിക്ഷുകി - (തൂമതേടും....തെല്ലിട സുന്ദരി 96 വരി)

മൊഡ്യൂൾ ര് (18 മണിക്കൂർ) കവിത്രയാനന്തര കവിത

4. ചങ്ങമ്പുഴ – മനസ്വിനി
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 മുലപ്പാൽ 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. കുമാരാനാശാന്റെ 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 ഉയർന്നശിര ുകൾ – 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 പിതാവിവറ്റെയുപേക്ഷിച്ചാൻ"-വിവക്ഷിതമെന്ത്?
12. "പെണ്ണായ ഞാനും വിറയ്ക്കുന്നില്ല-

    ആണായ നിങ്ങൾ വിറപ്പതെന്തേ?" - ആരുടേതാണീ വാക്കുകൾ?
13. "അല്ലല്ലെന്തു 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. “അന്യോന്യമൂന്നു വടികളായ് നിൽക്കാം” - വിവക്ഷിതമെന്ത്?

20. ‘പൂതനാമന്ത്രം 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 മനസ്വിനിയെ ആസ്പദമാക്കി വിശദീകരിക്കുക.

26. ജനങ്ങളിൽ പുതിയ കർമ്മവീര്യം ഉണർത്തുന്നതാണ് ഇടശ്ശേരി കവിതകൾ. പുത്തൻ കലവും അരിവാളും ആസ്പദമാക്കി വിചിന്തനം ചെയ്യുക.

27. സുഗതകുമാരി കവിതകളിലെ ബിംബകല്പന കാളിയമർദ്ദനത്തെ ആസ്പദമാക്കി വിശകലനം ചെയ്യുക.

28. കുഞ്ഞേ മുലപ്പാൽ കുടിക്കരുത് ഉണർത്തുന്ന സാമൂഹ്യമായ വെല്ലുവിളികൾ പരിശോധിക്കുക.

29. അമ്മയ്ക്കൊരു താരാട്ട് എന്ന കവിതയ്ക്ക് ഒരു ലഘു ആസ്വാദനം തയ്യാറാക്കുക.

30. റഫീക്ക് അഹമ്മദിന്റെ കവിതകളിലെ സമകാലീന ബിംബങ്ങൾ പരിശോധിക്കുക.

31. ചൂഷണം 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 Chulllikkad

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 and Adolescents	: Dr Ajeesh PR
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)

SEMESTER I

ANGIOSPERM ANATOMY AND EMBRYOLOGY	
19UBO141	**Number of Credits : 3**

Distribution of Hours	Theory	Practical
Angiospserm Anatomy	22 Hrs	27 Hrs
Embyology	14 Hrs	09 Hrs
TOTAL	**36 Hrs**	**36 Hrs**

Aim and Objectives of the Course

- To make the learners aware on the gross internal morphology of the angiosperms
- To develop the expertise and skill in identifying the angiosperm groups based on the internal morphology
- To create a concept on the total cellular and tissue level organization of the angiosperms
- To develop a concrete idea on angisperm reproduction

MODULE I ANGIOSPERM ANATOMY **22 hrs**

1. Objective and scope of plant anatomy
2. Cell wall organization - Gross structure - Primary and secondary wall pits – plasmodesmata-microscopic and sub microscopic structures – Extra cell wall material. Non living inclusions of the cell – Reserve food - secretary products, by products.
3. Tissues – Meristems, Definition, Classification based on origin, position, growth patterns, functions.
4. Apical meristems & theories on apical organization - Apical cell theory, Histogen theory, Tunica -Corpus theory. Organization of root apex in dicots & monocots.
5. Permanent tissues – Definition, classification - simple, complex and secretory.
6. Tissue systems – Epidermal tissue systems-stomata, structure and functions, Ground tissue systems & vascular tissue systems. Different types of vascular arrangements
7. Primary structure – Root, stem and leaf [Dicot & Monocot].

8. Secondary growth - 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

9. Anomalous secondary growth – Boerhaavia, Bignonia, Dracaena.

Practical **27 hrs**

1. Non living inclusions - Cystolith, Raphide, Sphaero-raphide, Aleurone grains.
2. Starch grains (Eccentric, concentric, compound)
3. Simple permanent tissue – Parenchyma, Chlorenchyma, Aerenchyma, Collenchyma and Sclerenchyma
4. Primary structure – Dicot stem: Hydrocotyle, Eupatorium.
5. Monocot stem: Grass and Asparagus.
6. Dicot root: Pea and Limnanthemum
7. Monocot root: Colocasia or any monocot root.
8. Secondary structure - Stem [Normal type]- Vernonia
9. Secondary structure - Root [Normal type]- Tinospora, Ficus, Carica papaya, or any normal type
10. Epidermal structures –Stomata.
11. Anomalous secondary thickening – Boerhaavia, Dracaena, Bignonia

MODULE II EMBRYOLOGY (REPRODUCTIVE BOTANY & PALYNOLOGY) 14 hrs

1. Introduction to angiosperm embryology with special reference to Indian embryologists.
2. Micro sporogenesis - structure and functions of wall layers.
3. Development of male gametophyte - Dehiscence of anther.
4. Megasporogenesis - Development of female gametophyte - Embryo sac - Development and types - Monosporic – Polygonum type, Bisporic - Allium type, Tetrasporic – Adoxa type.
5. Pollination - Fertilization - Barriers of fertilization - Germination of pollen grains – Double fertilization.
6. Structure of Embryo- Dicot [Capsella], Monocot [Sagittaria] & Endosperm types.
7. Palynology: Pollen structure, pollen morphology, pollen allergy, Economic and Taxonomic importance

Practical **09 hrs**

Students should be familiar with the structure of anther, pollen types and embryo (Permanent slides can be used)

REFERENCES

1. Bhattacharya, K. and Majumdar, M.R. 2011. A text book of palynology. New Central Book Agency, Calcutta
2. Bhojwani, S.S., Dantu, P.K. and Bhatnagar, S.P. 2014. The Embryology of Angiosperms. Vikas Publishing House, Delhi.
3. Coutler E.G. 1969. Plant Anatomy – Part I Cells and Tissues. Edward Arnold, London.
4. Esau K. 2006. Plant Anatomy (2nd Edition). Wiley Eastern, NewYork.
5. Fahn A. 1985. Plant Anatomy. Pergamon Press, Oxford.
6. Pandey, B.P. 1997. Plant Anatomy. S.Chand and co. New Delhi
7. Vashista .P.C.1984. Plant Anatomy. Pradeep Publications, Jalandhar
8. Maheswari, P. 2011. An Introduction to Embryology of Angiosperms. McGraw Hill Book Co., London.
9. Nair P.K.K. 1970. Pollen Morphology of Angiosperms, A Historical and Phylogenic Study. Scholar Publishing House, Lucknow, Vikas Publishing House, Delhi.

Course Outcome

- The students will develop a concise knowledge on the anatomical characterestics of angiosperms
- The students will aquire expertise and skill in identifying angiosperms based on the internal morphology
- The students will be familiarised with the concepts and mechanism of angiosperm reproduction

Model Question Paper

19UBO141: Angiosperm Anatomy & Embryology

Time: 3 Hrs. Max. Marks: 80

PART A (Answer all, 1 mark each)

1. What are aleurone grains?
2. Name the chemical componets of middle lamella?
3. Define chlorenchyma.
4. What is ring porous wood?
5. Draw the diagramatic sketch of amphicribal vascular bundle.
6. What are lenticels?
7. Define pollen embryosac.
8. What is chalazogamy?
9. What is sporopollenin?
10. Define the role of endothecium. (10x1=10 Marks)

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

11. Explain the structure of plsmodesmata.
12. Differentiate heart wood and sap wood.
13. What are tyloses?
14. Give a short note on endarch vascular bundle.
15. What are non-living inclusions?
16. State and explain Korpe-Kappe theory.
17. What is Xylem Tracheid?.
18. Distinguish porogamy from chalazogamy.
19. Describe double fertilization.
20. Explain dimorphic tapetum.
21. What is pollen tube?
22. Differentiate monothecous and dithecous anther.

(8x2=16 Marks)

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

23. Describe the stomatal types in angiosperms.
24. With the help of diagrams explain periderm formation.
25. Explain the structure and fuctions of vascular cambium.
26. Describe the structure and functions of wall layers in anther.
27. Explain the role of palynology in Plant Taxonomy.
28. Describe the different barriers of fertilization.
29. Explain the types of vascular tissue organization in angiosperms.
30. Explain the theories on shoot apex organization.
31. Explain the ultrastructure of plant cell wall.

(6x4=24 Marks)

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

32. Explain anomalous secondary thickening in *Bignonia*.
33. Describe the permanent tissues in angiosperms.
34. Write a detailed account on the types of meristems based on origin, structure, position and growth patterns.
35. Explain the female gametophyte development in angiosperms.

(2x15=30 Marks)

Complementary Course

19UCH131.3: 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, permagnometric 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, electrodialysis.-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
19UCH131.3: 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. 1. Give the electronic configuration of Copper (atomic umber 29)
2. 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 $kJmol^{-1}$. 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 II

19UZO131.1: Animal Diversity I

No. of credits: 2

No. of instructional hours per week: 4 **Total hours: 36**

Course outcome

CO1: To impart a concrete idea of the evolution, hierarchy and classification of invertebrate phyla among students.
CO2: To get an understanding of the basics of systematics.
CO3: To inculcate an overview of typical examples in each phyla.
CO4: To impart knowledge on the diverse parasitic forms in lower and higher vertebrates
CO5: To study the economic importance of invertebrates with the special reference to insect pests.

Module I: Introduction **5 hrs**

Classification of organisms- Two kingdom system, Three kingdom system, Four kingdom system, Five kingdom system. (self-study)

Kingdom Animalia: General features (self-study), Levels of Organisation (Cellular, tissue, organ and organ system), Elaborate studies on the branches (Mesozoa,Parazoa and Eumetazoa-radiata and bilateria- Protostomia and Deuterostomia), coelom (acoelomate, pseudocoelomata and eucoelomata- schizocoela and enterocoela.

Module II: Lower invertebrates **8hrs**

Kingdom Protista- General features (self-study) and classification.
Phylum Dinoflagellata eg. Noctiluca
Phylum Parabasalia eg. Trichonympha
Phylum Ciliophora eg. Paramecium
Phylum Rhizopoda eg. Entamoeba (Mention life history, pathogenicity, morphology and prophylaxis
Phylum Porifera-General characters (self- study) with classification up to classes.
Class Calcarea eg.Sycon
Class Hexactinellida eg.Euplectella
Class Desmospongiae eg.Spongilla
Phylum Cnidaria- General characters (self- study) with classification up to classes.
Class Hydrozoa eg.Obelia, Physalia,
Class Scyphozoaeg. Aurelia (mention larval stage),
ClassAnthozoa eg. Sea anemone
Phylum Platyhelminthes- General characters (self- study) with classification up to classes.
ClassTurbellaria eg.Bipalium
Class Cestoda eg.TaeniaSolium
Class Trematoda eg.Fasciola.
Phylum Nematoda- General characters (self- study) with classification up to classes.
Class Secernentea (Phasmida) eg.Ascaris,
Class Adenophorea (Aphasmida) eg.Trichinella.
Mention brief account on human nematode parasites

Module III: Higher vertebrate phyla **23hrs**

Phylum Annelida- General characters (self-study) with classification up to classes.
ClassPolychaeta eg.Neries
Class Oligochaeta eg.Earthworm(Emphasis vermiculture)
Class Hirudinea eg.Hirudinaria(parasitic adaptations)
Phylum Mollusca: General characters (self-study) with classification up to classes.
ClassAplacohophora eg.Neomenia
ClassMonoplacophora eg.Neopilina
Class Bivalvia eg.Pearloyster
Class Gastropoda eg.Pila
ClassCephalopoda eg. Sepia

Class Scaphopoda eg.Dentalium.
General Topic- Economic importance of molluscs, Pearl culture.
Phylum Onychophora- General characters
Peripatus-evolutionary significance.
Phylum Arthropoda- General characters (self-study) with classification up to classes.
SuphylumTrilobitomorpha- Class Merostomataeg. Limulus,
Class Arachnida eg.scorpion
ClassPycnogonida eg.Nymphon
Subphylum Mandibulata- Class Crustaceaeg.Prawn(detailed study), Sacculina
Class Chilopoda eg.Scolopendra
Class Symphyla e.g.Scutigeralla
Class Diplopoda eg.Spirostreptus
Class Pauropoda eg.Pauropus
Class Insecta eg.Mosquitoes (Anopheles, CulexandAedes) and its pathogenicity.
General Topic- Common Pests infecting paddy (LeptocorisaandSpodoptera), Coconut palm (Oryctesrhinoceros, Eriophid mite) and stored food grains (SitophylusoryzaeandTribolium).
Phylum Echinodermata- General characters (self-study) with classification up to classes.
Class Asteroidea eg.sea star
Class Ophiuroidea eg.brittle star
Class Echinoidea eg. Sea urchin
Class.Holothuroidea eg. Sea cucumber
Class Crinoidea eg.Sea lily
General Topic- Larval stages

REFERENCES

1. Brusca R.C. and Brusca G.J. (1990) Invertebrates.Sinauer Associates, Sunderland,MA
2. Chandler, A.C. and Read. Prasitology.
3. Hickman C.P. and Roberts L.S. (1994) Animal Diversity. Wm. C. Brown, Dubuque,IA
4. Pearse V and Pearse J, Buchsbaum M and Buchsbaum R. (1987) Living Invertebrates Blackwell scientific Publications, California.
5. Ruppert E.E., Fox R and Barnes R.D. (2004) Invertebrate Zoology. ThomsonBooks.Cole. USA>

MODEL QUESTION PAPER
19UZO131.1: ANIMAL DIVERSITY I

TIME 3 HOURS **MAX.MARKS 80**

SECTION A

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

1. What is Coelom?
2. Explain Protonephridia.
3. What is Parasitic castration?
4. Comment on Tegument.
5. Explain Book lungs.
6. What is Thelycum?
7. Name two pests infecting paddy.
8. Comment on Asconoid
9. What is Metamerism?
10. Give an account on the respiratory structures in Echinodermata.

SECTION B

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

11. Comment on Physalia.
12. Explain the structure of Bipalium.
13. Comment on Scolex.
14. Mention the characteristics of Phylum Nematoda.
15. Differentiate between Protostomia and Deuterostomia.
16. What is Evisceration?
17. Explain Regeneration.
18. Comment on Amphiblastula larva.
19. Explain the structure of Paramecium.
20. Comment on Bilateria.
21. Explain the features of Phylum Arthropoda.
22. Describe Pedicellaria.

SECTION C

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

23. Explain the sexual dimorphism in Ascaris.
24. Discuss the evolutionary significance of Peripatus.
25. Explain the structure of *Taenia solium*.
26. Comment on Cephalothorax.
27. Explain Vermiculture.
28. Explain Aristotle's Lantern with the help of diagram.
29. Describe the parasitic adaptations of Leech.
30. Discuss the symbiotic relationship of Triconympha.
31. Explain the zoological importance of Noctiluca.

SECTION D

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

32. With the help of labeled diagram, explain the life cycle, pathogenicity and preventive measures of *Fasciola hepatica.*
33. With the help of diagram, explain the larval forms of Echinoderms.
34. Explain the lifecycle of *Entamoeba histolytica* with the help of diagram.
35. Write an essay on economic importance of molluscs.

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

a. Forest resources: Importance, Functions,Use and over-exploitation, deforestation.
b. 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.
c. Mineral resources: Strategic Mining, Mining, Conservation of Mineral Resources, Use and exploitation
d. 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
e. 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, Resourec 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 WaterCycle, 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 Arundathi 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 UPM 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 <u>fluent way</u>. (Convert the underlined phrase into an adverb)
    2. He is known for his <u>honesty</u>. (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 <u>any six</u> 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 **<u>any two</u>** 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.

    Stray dog menace in your locality. **(15 marks)**

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 » :
    a. Flore fait du sport avec Pierre et Antoine ?
        - Oui, elle fait du tennis avec ……..
    b. Flore habite chez Marie ?
        - Oui, elle habite chez ……
    c. Elle travaille pour M. Dumont ?
        - Oui, elle travaille pour ……
    d. Elle vient en vacances avec nous ?
        - Oui, elle vient avec ……..
21. Complétez avec « pouvoir, vouloir, devoir » :
    a. Tu ……faire du ski ?
        - Je voudrais bien mais je ne …..pas skier.
    b. 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.
    a. 1992. Entrée a l'université.
    b. Juin 1995. Diplôme de professeur d'anglais.
    c. 25-08-1994. Rencontre avec William
    d. 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. Apres, je (rentrer) chez moi. »
24. Ecrivez l'heure :
    a. 09 :20
    b. 15 :30
    c. 16 :45
    d. 00 :15
25. Trouvez les questions:
    a. ……..? Non, Je n'ai pas compris.
    b. ……..? Non, Je n'ai pas lu le texte.
    c. ……..? Oui, J'ai travaillé bien.
    d. ……..? 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 :
    a. Est-ce que Tina est française ? Non, elle…….
    b. Est-ce qu'elle parle bien français ? Non, elle…….
    c. Est-ce qu'elle apprend le français ? Oui, elle ……
    d. 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'ile d'Oléron est magnifique. Laurent fait du gold. Moi, du vélo. On rencontre des gens sympas. Voulez-vous venir le week-end du24 ? 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 connait 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 visite la ville de Cannes. Vous écrivez une carte postale a 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
   Vani Prakashan
2. Hindi Kahani ka Ithihas 1, 2, 3
   - Gopal Rai
   Raj kamal Prakashan
3. Hindi Upanyas ka Ithihas - Gopal Rai
   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. मधू 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 बाढ 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 छोड दी?
14. बाबु महेशनाथ कौन थे? गाँव के जच्चेखानों के सुधार में क्या-क्या बाधाएँ थी?
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 लोमडी 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 केलिए 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-रिवाज़ों 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 അവ ത രി പ്പി ക്കാ നുള്ള കഴിവുാകുക.
3. ഭാഷാപരമായ പാകപ്പിഴകൾ പരിഹരിക്കുക, ഭാഷാശുദ്ധിനിലനിർത്തുക
4. വിവർത്തനത്തിൽ പ്രായോഗിക പരിശീലനം നൽകുക:
5. മാധ്യമ മലയാളത്തിൽ വിനിമയലോകം മന ിലാക്കുക.
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 ര് (27 മണിക്കൂർ)

ചെറുകഥ

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

1. എനിക്ക് ആത്മഹത്യ ചെയ്യാൻ മതിയായ കാരണമില്ലയോ? - സി.വി. കുഞ്ഞിരാമൻ
2. പൊതിച്ചോറ് - കാരൂർ
3. കടൽത്തീരത്ത് - ഒ. വി. വിജയൻ
4. പത്രം - സക്കറിയ
5. ഹിഗ്വിറ്റ - 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 ഉകുന്നതരത്തിലുള്ള ബോധനസമ്പ്രദായം സ്വീകരിക്കുക. (സന്ദർഭവും സ്വാരസ്യവും വ്യക്തമാക്കുകയെന്നതരത്തിലുള്ള ചോദ്യത്തിനു നാലുകെട്ടിന്റെ ആദ്യനാലധ്യായം മാത്രമേ ഉപയോഗിക്കാവൂ)

വിശദപഠനം:

നാലുകെട്ട്: എം.ടി വാസുദേവൻ നായർ

റഫറൻസ് ഗ്രന്ഥങ്ങൾ

1. സമ്പൂർണ്ണ മലയാള സാഹിത്യ ചരിത്രം – എഡിറ്റർ പന്മന 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.പന്മന രാമചന്ദ്രൻ നായർ
15. ചെറുകഥാ പഠനങ്ങൾ – ഡോ.പന്മന രാമചന്ദ്രൻ നായർ
16. കഥയും ഫാന്റസിയും – 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. പന്മന രാമചന്ദ്രൻ നായർ
25. തെറ്റുംശരിയും – പ്രൊഫ. പന്മന 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. 'കുടല്ലൂരിന്റെ കഥാകാരൻ' എന്നറിയപ്പെടുന്നതാര്?
6. അസുരവിത്ത് ആരുടെ നോവലാണ്?
7. 'വീഡിയോ ചിത്രങ്ങൾ' എന്ന കഥ എഴുതിയതാര്?
8 'കൂൾഡ്രിങ്ക്' 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 കാരശ്ശേരി കണ്ടെത്തുന്ന അഭിപ്രായങ്ങൾ എന്തെല്ലാം?

17. തെറ്റുണ്ടെങ്കിൽ തിരുത്തുക.

    1. പീഡനം 2. പ്രക്രിതി 3. അർത്ധം 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. ആഗോളവത്കരണത്തെക്കുറിച്ച് 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 മഹത്ത്വം മനസ്സിലാക്കാത്ത നിരൂപകരോട് അവർക്ക് വിദ്വേഷമാണ്, പുച്ഛവുമാണ്.

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)

SEMESTER II
FOUNDATION COURSE

METHODOLOGY AND PERSPECTIVES OF SCIENCE

19UBO221	Number of Credits : 3

Distribution of Hours	Theory	Practical
Scientific Studies	08 Hrs	00 Hrs
Data Handling in Science	12 Hrs	16 Hrs
Microtechnique	06 Hrs	08 Hrs
Biophysics	10 Hrs	12 Hrs
TOTAL	**36 Hrs**	**36 Hrs**

Aim and Objectives of the Course

- To make the students aware of the rules and regulations that have to be practiced while experimenting science
- To understand the human values and ethics, to strictly follow, while practicing science
- To equip the students for conducting valid scientific research
- To develop the skill and expertise for conducting scientific experiments
- To familiarise the basic equipments in botanical research
- To understand the basic concepts and ideas of data analysis

MODULE I SCIENTIFIC STUDIES **08 hrs**

1. Types of knowledge: practical, theoretical and scientific knowledge
2. Information: What is science; what is not science; laws of science; basis of scientific laws and factual truths.
3. Science as a human activity; scientific temper and empiricism, Science disciplines
4. Revolution in Science and Technology
5. Ethics in Science: Scientific information; depositories of scientific information, Primary, secondary and digital sources; sharing of knowledge; transparency and Honesty; danger of pre conceived ideas
6. Methods and tools in science: Steps in scientific method. Null hypothesis and alternative hypothesis. Inductive and deductive reasoning.

MODULE II DATA HANDLING IN SCIENCE **12 hrs**

1. Nature and types of data-typical examples, Data collection, Data presentation- Classification and tabulation, diagrammatic (bar, pie diagrams) and graphic presentation.
2. Samples and sampling techniques.
3. Statistical treatment of data: Statistical terms and symbols. Measures of central tendencies (mean, median, mode), Measures of dispersion (range, mean deviation, variance, standard deviation, coefficient of variation), Significance tests (chi-square test).
4. Data analysis – Normal frequency distribution and binomial distribution.

Practical **16 hrs**

1. Workout problems on frequency distribution, measures of central tendencies (Mean,

Median, Mode)

2. Workout problems on measures of dispersion. (range, mean deviation, variance, standard deviation, coefficient of variation)
3. Workout problems on chi-square test.

MODULE III MICROTECHNIQUE **06 hrs**

1. Sectioning - hand and microtome– rotary and sledge
2. Killing and fixation agents – Carnoy's formula, Farmers formula, F .A. A
3. Dehydration - reagents
4. Stains and staining techniques - double staining. General account; Stains: safranin, haematoxylin, acetocarmine and acetoorcein
5. Mounting media - D. P. X and Canada balsam
6. Whole mounts - cytological methods: maceration, smear and squash preparation.

Practical **08 hrs**

1. Familiarize stains, fixatives and mounting media
2. General awareness of Micro technique - maceration, smears & squash
3. Demonstration of microtome sectioning and hand sectioning
4. Measurement of specimens using micrometer (Demonstration only).
5. Photomicrography and Camera lucida drawings (Demonstration only).

MODULE IV BIOPHYSICS **10 hrs**

1. Introduction - microscopy - simple and compound – phase contrast; dark field illumination and electron microscopes (SEM and TEM).
2. Micrometry, Camera lucida

3. Principles and applications of Colorimeter, Spectrophotometer and Centrifuge.

4. Basic knowledge of the separation methods: - Chromatography, Electrophoresis.

5. Buffers -their functions in biological systems -Uses of buffers in biological research, pH meter.

6. Cryobiology – cryopreservation and its applications.

Practical **02 hrs**

1. Preparation of buffer
2. Measurement of pH
3. Separation of plant pigments by paper chromatography/TLC.
4. Construct the absorption spectrum of any sample.

REFERENCES

1. Bass, Joel, E. *et al.* 2009. Methods for teaching Science as Inquiry, Allyn& Bacon
2. Casey E. J. 1962. Biophysics – Concepts and Mechanics. Van Nostr and Reinhold Company
3. Collins H. and Punch T. 1993. The Golem. What everyone should know about Science. Cambridge University Press
4. Donald A. Johansen 1940. Plant Microtechnique. Mac Graw Hill Book Company
5. Elizabeth Allman 2004. Mathematical Methods in Biology. Cambridge University Press India Pvt. Ltd
6. Gieryn T.F.1999. Cultural Boundaries of Science. University of Chicago Press, Chicago.
7. Hewitt, Paul G., Lyons, S., John A., Suchocki and Yeh, J. 2007. Conceptual Integrated Science. Addison-Wesley
8. Jeffrey A. Lee 2010. The Scientific Endeavor. Pearson, Delhi
9. Pagano, M. and Gauvreau, K. 2018. Principles of Biostatistics 2 nd Edition CRC Press, Chapman & Hall Vikas Publishing
10. Prasad and Prasad 1972. Outlines of Botanical Micro technique. Emkay publishers, New Delhi
11. Richad Grey 1964. Hand book of microtechnique. Mac Graw Hill Book company
12. Stephen W. Looney 2009. Biostatistical Methods, Humana Press, Springer International Edn.
13. Veer Bala Rastogi 2008. Fundamentals of Biostatistics. Ane Books Pvt. Ltd

Course Outcome

- The students will develop expertise and skills in conducting scientific experiments
- The students will develop a refined mind set regarding the ethics, values and morals that have to be strictly followed while practicing science
- The students will be familiarised with the basic instrumental support for doing research in botanical science
- The students will get an idea regarding the various data analysing tools in science.

Model Question Paper

19UBO221: Methodology and Perspectives of Science

Time: 3 Hrs. Max. Marks: 80

PART A (Answer all, 1 mark each)

1. What is Empiricism?
2. Define Hypothesis?
3. What is the importance of Plagiarism?
4. What is Buffer?
5. Explain Fixative
6. Mention the importance of Serial sectioning
7. Define Chromatic aberration
8. What is Median?
9. What is Lyophilization?
10. ExplainMicrometry?

(10x1=10 Marks)

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

11. Write a note on Cryoprotectants
12. Define the principle of Electrophoresis
13. Explain Maceration
14. Give a note on Double staining
15. Explain Null hypothesis
16. Comment on Peer review
17. What are the importance of Rotary microtome
18. Define Test of significance
19. Give a note on Cuvette
20. Define Beer-Lamberts Law
21. Write a note on Ultracentrifuge
22. Define RCF

(8x2=16 Marks)

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

23. Explain the principle and operation of a pH meter.
24. Compare Light Microscope with Transmission Electron Microscope.
25. What is Chi-square test? Explain.
26. Briefly explain the sources of information available in science.
27. What are Intellectual Property Rights? Explain.
28. Comment on scientific revolution.
29. Differentiate Inductive and Deductive reasoning.
30. Describe the components and combination in FAA.
31. Explain the principle and applications of electrophoresis.

(6x4=24 Marks)

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

32. Explain the methods used for graphical representation of scientific data.
33. Discuss the principle and applications of the different types of chromatography used for separation of biomolecules.
34. What are measures of dispersion? Discuss their significance.
35. Describe the major steps in scientific method of inquiry.

(2x15=30 Marks)

Complementary Course

19UCH231.3: 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
19UCH231.3: 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 chlorophil 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 or 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 IV

19UZO231.1: Animal Diversity II

No. of credits: 2

No. of instructional hours per week: 4 **Total hours: 36**

Course outcome:

CO1: To learn the evolution, hierarchy and classification of different classes of chordates
CO2: To get an overview of the morphology and physiology of typical examples.
CO3: To study the adaptations exhibited by various vertebrates.
CO4: To enlighten the economic importance of specific vertebrates.
CO5: To acquire in depth knowledge of chordates and their systematic position

Module I: Chordata **10hrs**

Phylum Chordata: Salient features (self-study) with classification up to classes.Subphylum Urochordata: General characters eg. Ascidia- Mention general characters, external features and retrogressive metamorphosis. Subphylum Cephalochordate: General characters, eg. Amphioxus (detailed study)

Module II: Vertebrata **10hrs**

Class: Pisces General characters (self-study) and classification. Super class Agnatha eg. Petromyzon.
Super class Pisces eg. Scoliodon, Narcine, Echeneis, Hippocampus, Etroplus, Sardine.
Super class Tetrapoda
(Class: Amphibia-general characters eg.Ichthyophis, Rhacophorus, Amblystoma-axolotl larva.)

Module III: Class Reptilia **6 hrs**

General characters (self-study), eg. Draco, Chameleon, Chelone, Snakes- general features and categories Non-poisonoussnakes (eg.Lycodon, Ptyas) poisonous snakes(eg.Naja, viper, Bungarus,Enhydrina)
General Topic- Key to identify poisonous snakes from and non-poisonous snakes. Different types of venom and their mode of action.

Module IV: Class Aves **4hrs**

Class Aves: General characters (self-study), flightless birds- eg.ostrich and kiwi, flying birds eg. Pigeon.
General Topic- Mention different types of feathers and pea fowl, Flight adaptations of birds.

Module V Class Mammalia **6hrs**

General characters (self-study), eg. echidna, kangaroo, bat, loris, tiger and whale.
General Topic- Adaptations of aquatic mammals.

REFERENCES

1. Dhami, P.S. and Dhami, J.K. Vertebrate Zoology. R. Chand and Co.
2. EkambaranathaAyyar, M. and Ananthakrishnan, T.N. A Manual of Zoology.Vol II
3. Green N.P.O., et al (2000) Biological Science. Cambridge University Press.
4. Jordan, E.L and Verma, P.S. Vertebrate Zoology.S. Chand and Co.
5. Kotpal, R.L. (2002) Modern Text Book of Zoology: Vertebrates. Rastogi Publishers
6. Mayer E. (1980) Principles of Systematic Zoology. TatMcGraw Hill Publishing Co.New Delhi.
7. The New Encyclopedia Britannica, Macropedia, (1998). Encyclopedia Britannica

MODEL QUESTION PAPER
19UZO231.1: ANIMAL DIVERSITY II

Time 3 hrs **Max Marks 80**

Section A
Answer all questions in one or two sentences

1. What is notochord?
2. Explain blubber.
3. What is Syrinx?
4. Comment on monogamy.
5. Explain pterylosis.
6. What is ecdysis?
7. What is ductus botalli?
8. Comment on brood pouch
9. What is patagium?
10. Comment on solenocytes

(10X1=10)

Section B
Answer any eight of the following in one paragraph each

11. Comment on blowholes.
12. Explain echolocation.
13. Write notes on kiwi.
14. Mention Synsacrum.
15. Comment on casque.
16. What are placoid scales?
17. Explain Neoteny.
18. Comment on muller's organ.
19. Explain the characteristics of Petromyzon.
20. Comment on binocular vision.
21. Explain the features of ascidian larvae.
22. Describe Quill features.

(8X2=16)

Section C
Answer any six of the following in a paragraph not exceeding 120 words.

23. Explain the retrogressive metamorphosis.
24. Discuss the evolutionary significance of Archaeopteryx.
25. Explain the features of Rhacophorous.
26. Comment on snake venom.
27. Describe on the peculiarities of echidna.
28. Explain the features of Naja.
29. Differentiate between megachiropterans and microchiropterans.
30. Discuss on scoliodon.
31. Comment on axolotl larvae.

(6X4=24)

Section D
Write essay on any two of the following. Each question carries 15 marks.

32. Write on the classification of snakes and mode of action of snake venom.
33. Discuss on the feeding mechanism in amphioxus.
34. Explain the flight adaptions in birds.
35. Write an essay on general characters and classification of vertebrata.

(15X2=30)

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. Developan 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 : ***The Need for Religion***
Nirad C. Chaudhuri : ***Money and the English Man***
Arundhati Roy : ***The End of Imagination***

Module 3: Poetry

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

Module 4: Short Stories

Rabindranath Tagore : ***The Homecoming***
Mahasweta Devi : ***Arjun***
Abburi Chaya Devi : ***The Woodrose***
Anita Desai : ***Circus Cat, Alley Cat***

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 wordly 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 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 Stiriders" ?
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

- Lecon – 6 : Bon appetit ! (Pages : 54 – 61)
- Lecon – 7 : Quelle journee ! (Pages : 62 – 69)
- Lecon – 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. Noel - 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 préfère 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 :
    Apres 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
Javahar Pusthakalaya, 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.	Nirjjar	- Maidhilisharan Gupth	
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 Chathurvedi Lokbharati Prakashan
2.	Kabir, Soor, Thulsi	-	Yogendra Pratap Singh Lokbharati Prakashan
3.	Adhunik Hindi Kavitha	-	Viswanath Prasad Tivari Lokbharati Prakashan
4.	Lambi Kavithayen Vaicharik Sarokar	-	Dr. Bal dev Vanshi 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 नाहीं, 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

ദൃശ്യകലാസാഹിത്യം

പഠനലക്ഷ്യങ്ങൾ, ഫലങ്ങൾ:

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

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ ഒന്ന് (36 മണിക്കൂർ)

ആട്ടക്കഥാ, തുള്ളൽ, സാഹിത്യം

കഥകളിയുടെ ഉത്ഭവവികാസ പരിണാമങ്ങൾ, പ്രധാന ആട്ടക്കഥാകൃത്തുക്കൾ

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

മൊഡ്യൂൾ ര് (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 (Aditional 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 ഉപജ്ഞാതാവാര്?
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 വിശേഷിപ്പിച്ചതാര്?
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; കയ്യോ തുടിക്കുന്നിതു; കാര്യമെന്തോ?" സന്ദർഭമെന്ത്?
12. "ചെന്തളിരിനൊപ്പമധരം; ചെറുശാഖകളോടിട-

ഞ്ഞിടുന്നു ഭുജം;

പൂമലർപോലെ മനോജ്ഞം പൂമേനിയതിൽ

ത്തികഞ്ഞ താരുണ്യം" - 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 വെളിവായ്ത്തെളിയിച്ചുമില്ല;

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 തെളിമപൂണ്ടിതെൻ മനം" - ആരുടെ വാക്കുകൾ? കാരണമെന്ത്?

20. "വിരഹം മേ മർമ്മദാരണം; അതിലേറെനല്ലൂമാരണം" ഇങ്ങനെ ചിന്തിക്കാൻ കാരണമെന്ത്?

21. "മുറ്റുമതിന്നായി സംഗതി വന്നു
മറ്റൊരു കാര്യവുമേതുമില്ല" - സന്ദർഭം വിശദമാക്കുക.

22. "ക്ലേശവിനാശത്തിനുനൂനം 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 പരിദേവനത്തിനു പിന്നിലുള്ള മാനസികവ്യഥ അനാവരണം ചെയ്യുക.

30. 'നളചരിതം ആട്ടക്കഥയും' 'അഭിജ്ഞാനശാകുന്തളം' നാടകവും നാടകീയതയിൽ സമരസപ്പെട്ടുപോകുന്നതെങ്ങനെ?

31. ദുഷ്യന്തന്റെ രാജകൊട്ടാരത്തിൽ എത്തിയ ശാർങ്ഗരവ - ശാരദ്വതന്മാർക്ക് 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)

SEMESTER III

MICROBIOLOGY, PHYCOLOGY, MYCOLOGY AND PLANT PATHOLOGY	
19UBO221	**Number of Credits : 3**

Distribution of Hours	Theory	Practical
Microbiology	08 Hrs	07 Hrs
Phycology	20 Hrs	15 Hrs
Mycology	20 Hrs	10 Hrs
Plant Pathology	06 Hrs	04 Hrs
TOTAL	**54 Hrs**	**36 Hrs**

Aim and Objectives of the Course

- To familiarise the diversity and organization of lower plant forms
- To understand the mechanism of propagation of lower plant forms
- To develop the skill and expertise for identifying and characterizing the lower plant forms
- To get an idea on the important plant diseases caused by lower plant forms

MODULE I MICROBIOLOGY **08 hrs**

1. History & scope of microbiology.
2. Bacteria: Structure, Reproduction and Classification (based on staining and morphology)
3. Mycoplasma & Actinomycetes –General account.
4. Virus- General characteristics, nomenclature, classification, structure, chemical composition, properties and reproduction of bacteriophages and T. M. V. Significance of Viruses.
5. Soil microbiology – Soil microorganisms, the rhizosphere
6. Aquatic microbiology - Microbiology of sewage or waste water. Methods of waste water treatment (Brief account only)
7. Food microbiology - Food spoilage and preservation methods. [General account].
8. Agricultural microbiology - Role of microbes in soil fertility, Nitrogen fixation, Biofertilizers
9. Medical Microbiology
10. Industrial Microbiology

Practical **07 hrs**

1. Gram staining of bacteria.
2. Test for the Coli form bacteria in contaminated water.

3. Isolation of Rhizobium from root nodules of leguminous plants and its motility. (Demonstration)

4. Examination of different forms of bacteria.(Demonstration)

MODULE II PHYCOLOGY **20 hrs**

1. Introduction – Range of thallus structure – Phylogenic trends – Pigments – Reproduction

2. Life cycle – Classification proposed by F .E Fritsch

3. 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, Oscillatoria*

b) Chlorophyceae - *Chlorella, Volvox, Oedogonium and Chara*

c) Xanthophyceae – *Vaucheria*

d) Bacillariophyceae – *Pinnularia*

e) Phaeophyceae – *Sargassum*

f) Rhodophyceae – *Polysiphonia*

4. Economic importance of algae

a) Commercial products of algae – Agar, Alginates, Carrageenin, Diatomaceous earth

b) Algae - medicinal aspects, algal blooms and red tides

Practical **15 hrs**

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 III MYCOLOGY **20 hrs**

1. Introduction, structure, reproduction, life cycle, evolutionary trends, Classification based on Ainsworth.

2. Distinguishing characters of different classes of fungi representing the following genera (Excluding Developmental details)

a. Myxomycotina –Slime moulds

b. Zygomycotina - *Rhizopus*

c. Ascomycotina

- Hemiascomycetes - *Saccharomyces*
- Plectomycetes - *Penicillium*
- Pyrenomycetes - *Xylaria*
- Discomycetes – *Peziza*

d. Basidiomycotina

- Teliomycetes - *Puccinia*
- Hymenomycetes - *Agaricus*

e. Deuteromycotina - *Cercospora*.

3. Economic importance of Fungi

Lichenology: General account and economic importance; the structure, reproduction and life cycle of *Parmelia*

Practicals **10 hrs**

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

Rhizopus, Saccharomyces, Penicillium, Xylaria, Peziza. Puccinia. Agaricus, Cercospora and *Parmelia.*

MODULE IV PLANT PATHOLOGY **06 hrs**

1. Classification of plant diseases on the basis of causative organisms and symptoms – Host parasite interaction, phytoalexins.

2. Study of the following diseases with emphasis on symptoms, disease cycle and control measures - Leaf mosaic of Tapioca, Citrus Canker, Blast disease of Paddy, Root wilt of Coconut

3. Brief account of the following fungicides- Bordeaux mixture, Lime sulphur, Tobacco decoction, Neem cake & oil.

Practical **04 hrs**

1. Identify the Diseases mentioned with respect to causal organism and symptoms- Leaf mosaic of Tapioca, Citrus Canker, Blast disease of Paddy.

2. Students should be trained to prepare the fungicide Bordeaux mixture &Tobacco decoction.

REFERENCES

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13. Tortora G.J., Funke B.R. and Case C.L. 2019. Microbiology an Introduction 13th Edition. Pearson Education, Inc.
14. Vashishta B.R. 1990. Botany for Degree Students, Fungi. S.Chand & Co.
15. Webster J. 1970. Introduction to Fungi. Cambridge University Press

Course Outcome

- The students will have an idea on the diversity and organization of lower plant forms
- The students will develop skill and expertise in identifying the lower plant forms
- The students will understand the propagation methods of lower plant forms
- The students will be familiarised with the major plant diseases, their causative organisms and mode of control

Model Question Paper

19UBO341: Lower Plants I and Plant Pathology

Time: 3 Hrs. Max. Marks: 80

PART A (Answer all, 1 mark each)

1. Name the pigments in Cyanophyceae.
2. Which alga is commonly called 'Rolling Ball'?
3. What are pyrenoids?
4. Define Rhizosphere.
5. What are ectomycorrhiza?
6. What is microflora?
7. What are Hfr strains?
8. What is heterothallism?
9. Name the fungi known as 'bread mould'.
10. What are chlamydospores? (10x1=10 Marks)

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

11. What are amylum stars?
12. Explain the adaptation in the heterocysts of Nostoc to be considered as the centre of nitrogen fixation.
13. Differentiate isogamy from anisogamy.
14. What is soil microbiology?
15. Differentiate autochthonous and zymogenous species.
16. What are actinomycetes?
17. What are phytoalexins?
18. Distinguish between eucarpic and holocarpic mycelia.
19. Write about the economic importance of Zygomycotina.
20. Write a note on 'coprophilous fungi'.
21. Write a note on the asexual reproduction in fungi.
22. Differentiate globule and nucule. (8x2=16 Marks)

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

23. Describe the cyanophycean cell structure with the help of a labelled diagram.
24. Explain the thallus structure of Nostoc.
25. Describe the sexual reproduction in fungi.
26. Describe the asexual reproductive strategies in algae.
27. Explain a typical cyanophycean cell structure.
28. Describe the sex organs in Chara.
29. Illustrate the frustule of Diatoms
30. Write the symptoms, disease cycle and control measures of citrus canker
31. Give an account on fungal nutrition. (2x7=14 Marks)

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

32. Explain the thallus structure and reproduction in Vaucheria.
33. Describe the thallus structure and reproduction in Oedogonium
34. Write an illustrated account of bacterial reproduction
35. Explain the life cycle patterns in Saccharomyces with the help of diagrams.

(1x15=15 Marks)

Complementary Course

19UCH331.3: Physical Chemistry

No. of credits: 3 **No. of instructional hours per week: 5Total 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 radioactivity
CO4: To impart knowledge on different liquid systems and dilute solution
CO5: To study the theory and applications of UV-Visible and NMR spectroscopy
CO6: To learn the properties of colloidal and its applications

Module I- Chemical kinetics **9 Hrs**

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, Arrehinius equation, Calculation of Arrhenius parameters, Collision theory, catalysis, different types of catalysis, intermediate compound formation theory and adsorption theory.

Module II -Ionic equilibrium **9 Hrs**

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, pH of buffer, Henderson equation, Hydrolysis of salt, Degree of hydrolysis and hydrolysis constant .

Module III.-Solutions **9 Hrs**

Completely miscible liquid pairs, vapour pressure - composition curve, boiling point- composition curve- ideal and non ideal solutions, fractional distillations, azeotropes. Partially miscible liquids - CST, phenol- water, nicotine-water system, Effect of impurities on miscibility and CST, immiscible liquid pairs, steam distillation- Distribution law and its limitations, applications of solvent extractions.

Module IV- UV and NMR spectroscopy **9Hrs**

UV-Visible Spectroscopy- absorption, types of electronic transitions, effect of conjugation, concept of chromophore, auxochrome, bathochromic, hypochromic shifts, hyperchromic and hypochromic effects. UV-Visible spectra of enes. Calculation of λ_{max}. Applications of UV spectroscopy - conjugation, functional group and geometrical isomerism. Principle of NMR, nuclear spin, chemical shift, spin-spin coupling, τ and δ, PMR of simple organic molecules $CHBr_2CH_2Br$, CH_3CH_2Br and CH_3CH_2OH. Principle of MRI .

Module V- Dilute solutions: **9hrs**

Molarity, molality and molefraction - Colligative property – relative lowering of vapour pressure – elevation in boiling point – depression in freezing point – osmotic pressure – experimental determination of osmotic pressure – Isotonic solution – reverse osmosis - abnormal molecular mass - van't Hoff factor.

Module VI -Colloids **9hrs**

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.

References

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5. Principles of Physical Chemistry, B.R.Puri, R.L.Sharma & Pathania, Vishal Publishing
6. Essentials of Physical Chemistry, B.S. Bahl., G.D. Tuli & Arun Bahl , S.Chand & Co., New Delhi.
7. Simplified Course in Physical Chemistry, R.L. Madan, G.D. Tuli , S.Chand & Co.
8. Chromatography, .B.K .Sharma, GOEL Publishing house, Meerut

MODEL QUESTION PAPER
19UCH331.3: PHYSICAL CHEMISTRY

Time: 3hours **Maximum 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 lypophilic colloids and lypophobic 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. Define Van't Hoff factor.

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 Methy Silane (TMS) is chosen as a reference compound in NMR studies. Give reasons
17. What are the different types of electronic transitions?
18. Differentiate between molarity and molality.
19. A solution containing 7g of a non volatile solute in 250g of water boils at 373.26 K. Find the molecular mass of the solute.(K_b for water is 0.52 K/m)
20. Explain the terms Degree of hydrolysis and hydrolysis constant.
21. Explain reverse osmosis.
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 2.31×10^{-3} 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 electrodialysis 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. What is osmotic pressure? How will you determine the molecular mass of a substance with this method?
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 (5 marks)
    (b) Discuss the Kinetic, optical and electrical properties of colloids (5 marks)
    (c) Explain the protective action of colloids(5 marks)

33. (a) Which of the following has the highest osmotic pressure: 0.1M sucrose, 0.1M acetic acid, 0.1M KCl and 0.1M Na_2SO_4 all in water? Why?
    (b) Why do you get abnormal molecular masses of the substances by using colligative properties of the solution.
    (c) Discuss in detail about the determination of molecular mass of a non volatile compound from elevation in boiling point and depression in freezing point
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)

Complementary Course VI

19UZO331.1: Functional Zoology

No. of credits: 3

No. of instructional hours per week: 5 **Total hours: 54**

Course outcome

CO1: Study the metabolic process in the human body.
CO2: Study the common reasons of physiological disorders, syndromes and diseases.
CO3: Provide the students an in-depth knowledge of physiological process with special reference to human being.
CO4: Acquire profound understanding of hormones and its regulatory pathways.
CO5: Familiar with the role of immunity and need for vaccination.

Module I: Nutrition **4hrs**

Nutrition types (self-study), a brief account on the classification of food components with malnutrition disorders. Emphasis vitamins (self-study), physiological role and disorders.

Module II: Respiration **6hrs**

Respiration: Respiratory pigments and their functions with special emphasis on haemoglobin, transport of oxygen and carbon dioxide. Neural and hormonal control of respiration in man. Respiratory disturbances- brief mention of Apnoea, Dyspnoea, Hypoxia, Hypo and Hypercapnia, Asphyxia and Carbon monoxide poisoning. Physiological effects of smoking (self-study).

Module III: Circulation **8hrs**

Blood-composition, functions and blood groups. Detail mechanism of blood clotting the intrinsic and extrinsic pathway mechanism of blood clotting. Importance of anticoagulants and disorders of blood clotting (haemophilia and thrombosis).Brief account on Heart (neurogenic and myogenic), peculiarities of cardiac muscle, Heartbeat, pace maker, Blood pressure, ECG, cardiovascular disorders (arteriosclerosis, myocardial infarction, and hypertension), angiogram and angioplasty.

Module IV: Excretion and osmoregulation **6hrs**

Classification of animals based on excretory wastes and structure of Human nephron (self-study) Urine formation (ultrafiltration, selective reabsorption, tubular secretion and counter current mechanism), Composition of urine and hormonal control of renal function. Mention Kidney diseases (proteinuria, uremia, acidosis,alkalosis etc) and dialysis- Haemodialysis, Peritoneal dialysis.

Module V: Neurophysiology **6hrs**

Neuron-structure (self-study) nerve impulse -resting potential, action potential and latent period; synapse and synaptic transmission-All or none law, refractory period, neurotransmitters. Saltatory transmission and EEG.

Module VI: Muscle Physiology **6 hrs**

Ultra-structure of a striated muscle fibre (self-study), mechanism of muscle contraction. A brief mention of muscle twitch, summation, tetanus and tonus, all or none law, fatigue, oxygen debt and rigor mortis.

Module VII: Endocrinology **8 hrs**

Endocrinology: Enlist the endocrine glands and their corresponding hormones. A brief study of hormonal influence, action and hormonal disorders (goitre, cretinism exophthalmic goitre, diabetes mellitus, diabetes insipidus, dwarfism, gigantism and acromegaly). Role of Hormones in reproductive cycle.

Module VIII: Immunology **10 hrs**

Types of immunity-innate, acquired, active, passive, humoral and cell mediated. Cells, tissues and organs of immune system- lymphocytes, lymphoid tissue and organs (Lymph nodes, spleen, bone marrow, thymus and mucosa associated lymphoid tissue). Antigens and properties (brief) Antibodies- structure and function of typical immunoglobulin, classes of immunoglobulins. A very concise study on Hypersensitivity and allergy, immunization (passive and active) and vaccination. AIDS and its etiology.

References

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2. Ganong, W.F. (2002) Lange Review of Medical Physiology. Mc G H.
3. Ganong, W.F. (2003) Review of medical physiology, McGraw-Hill, New Delhi.
4. Goyal, K.A. &Sastry, K.V. Animal Physiology. 6e 2002, Rastogi Publishers.
5. Guyton A.C. (1998) Text book of Medical Physiology. W.B. Sanders Co.
6. Hoar W.S. (1975) General and Comparative Physiology. Prentice Hall.
7. Joshi, K.R. (2003) Immunology. Agro.
8. Kuby, J. (1994) Immunology. W.H. Freeman & Co.
9. Nagabhushanan R, Kobardar M.S. and Sarojini R (1983) A textbook of animal physiology. Oxford IBH publishing Co. New Delhi.
10. Roitt J (2000) Immunology. W. Freeman, Oxford.
11. Schimdt-Nielson K (2002) Animal Physiology. Prentice Hall India Ltd.
12. Sebastian M.M. (1990).Animal Physiology.Madona Books, Kottayam.
13. Withers P.X. (1992) Comparative animal physiology. Saunders College Publishing,New Delhi.

MODEL QUESTION PAPER
19UZO331.1: Functional Zoology

Time 3 hrs **Max Marks 80**

Section A
Answer all questions in one or two sentences

1. Define nutrition.
2. Define immunity.
3. What are vitamins?
4. What is meant by EEG?
5. Define plasma cells.
6. Define hormones.
7. What is meant by malnutrition?
8. What is Bursa of Fabricus
9. What are nephrons?
10. What are neurotransmitters?

(10X1=10)

Section B
Answer any eight of the following in one paragraph each

11. Comment on synaptic transmission?
12. What are haptens?
13. What is meant by blood pressure?
14. Write on uremia.
15. What is meant by hypersensitivity?
16. Write on rigor mortis.
17. Define latent peroid.
18. Define mast cells.
19. Write on lymph nodes
20. Comment on carbon monoxide poisoning
21. What are hormones? .
22. Comment on balanced diet.

(8X2=16)

Section C
Answer any six of the following in a paragraph not exceeding 120 words.

23. Write on different types of nutrition.
24. Briefly explain phagocytosis.
25. Elaborate on the disorders associated with kidney.
26. Explain on hormonal control on respiration.
27. Explain on cardiac muscles.
28. Write on the structure of neurons.
29. Discuss on dialysis.
30. Briefly explain on muscle contraction
31. Write on the role of hormones in reproductive cycle.

(6X4=24)

Section D
Write essay on any two of the following. Each question carries 15 marks.

32. Write an essay on the classification of vitamins.
33. Discuss on the mechanism of blood coagulation.
34. Write on the structure of antibodies and its classes.
35. Give an account on the physiological effects of smoking.

(15X2=30)

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
19UUEN411.1: 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 x4 = 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 a l'imparfait :
    « A Paris. J'(avoir) une chambre dans le Quartier Latin. J'(étudier) a l'Ecole de médecine. C'(être) une belle époque. Le soir, nous (danser) a 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 fatigues. »
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 chaine 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

Patravyavahar

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. Patravyavahar 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 केलिए 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. निम्नलिखिति 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'

निर्देशः 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 केलिए 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 കഴിവുകുക.

3. മലയാള ഭാഷ കൈകാര്യം ചെയ്യുമ്പോൾ ഉകാവുന്ന പാകപ്പിഴകൾ സ്വയം തിരുത്താൻ പ്രാപ്തരാക്കുക.

4. പദം, വാക്യം, ചിഹ്നം എന്നിവ തെറ്റുകൂടാതെ പ്രയോഗിക്കുന്നതിലൂടെ ഭാഷാശുദ്ധി നിലനിർത്തുക.

5. മലയാള ഭാഷ അനായാസം കൈകാര്യം ചെയ്യാനുള്ള കഴിവ് നേടിക്കൊടുക്കുക.

6. വിവർത്തനത്തിൽ പ്രായോഗിക പരിശീലനം നൽകുക.

പാഠ്യപദ്ധതി :

മൊഡ്യൂൾ - ഒന്ന് (18 മണിക്കൂർ)

പദശുദ്ധി - വാക്യശുദ്ധി, വാക്യ രചനയിൽ ശ്രദ്ധിക്കേ കാര്യങ്ങൾ, ഭാഷാ പ്രയോഗത്തിലെ ശരി തെറ്റുകൾ - നല്ല മലയാള ശൈലി - ശൈലീ ഭംഗം - വാക്കുകളും വാക്യങ്ങളും തെറ്റുകൂടാതെയെഴുതുവാനുള്ള പ്രായോഗിക പരിശീലനം.

മൊഡ്യൂൾ - ര് (18 മണിക്കൂർ)

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

വിശദപഠനം:

മൊഡ്യൂൾ മൂന്ന് (18 മണിക്കൂർ)

1. ആശയ വിപുലനം .... പ്രകൃഷ്ട കാവ്യ മാതൃകകളിലെ ഉദ്ധരണികൾ നല്കി, ആശയം വിപുലീകരിച്ച് എഴുതുവാനുള്ള ശേഷി വർദ്ധിപ്പിക്കും വിധം അഭ്യാസ പ്രവർത്തനങ്ങൾ നടത്തുക.

2. പരാവർത്തനം: തന്നിരിക്കുന്ന പാഠ്യഭാഗം എറ്റക്കുറച്ചിലുകൾ വരാതെ ഗദ്യരൂപത്തിലാക്കുവാനുള്ള പരിശീലനം

3. മൂന്നിലൊന്നായി സംഗ്രഹിക്കൽ: ആശയ ചോരണം വരാതെ സുദീർഘങ്ങളായ മാതൃകകൾ സംഗ്രഹിക്കാനുള്ള ശേഷി.

4. ഉത്തരം കത്തെൽ: ഗദ്യ-പദ്യ മാതൃകകളിൽ നിന്ന് ഉത്തരം കത്തിയെഴുതുവാനുള്ള ശേഷി വളർത്തുന്നു.

മൊഡ്യൂൾ നാല് (36 മണിക്കൂർ)

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

വിശദപഠനം

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

മൊഡ്യൂൾ മൂന്ന് (18 മണിക്കൂർ)

തിരക്കഥാപഠനം

ചലച്ചിത്രനിർമ്മിതിയിൽ തിരക്കഥയ്ക്കുള്ള പ്രാധാന്യത്തെക്കുറിച്ചുള്ള ജ്ഞാനം നേടണം

വിശദപഠനം

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 കത്തെൽ - എം.എഫ്.തോമസ്
18. മലയാള സിനിമ അരനൂറ്റ് - (എഡി) കെ.ജയകുമാർ
19. എം.ടി, കല, കാലം, വ്യക്തി - (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 നാടകൃത്താര്?
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 സാങ്കത്യം പരിശോധിക്കുക.

22. തിരുവിതാകൂർ 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. 'ബത്ഗേബ' എന്ന കഥാപാത്ര നിരൂപണം ചെയ്യുക.

27. നാഥാൻ 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. കടക്കെണിയിൽ അകപ്പെട്ടുപോയ ഒരാളുടെ മാനസിക വ്യഥകളെ രാവുണ്ണി എന്ന നാടകത്തിൽ എപ്രകാരം ചിത്രീകരിച്ചിരിക്കുന്നു?

35. നമ്പ്യാരുടെ കൃതികൾ ഉത്തമമായ സാമൂഹിക പരിഹാസങ്ങൾ ആണ്. കാർത്തവീര്യാർജ്ജുന വിജയത്തെ ആധാരമാക്കി വിലയിരുത്തുക.

SEMESTER IV

BRYOPHYTES, PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY	
19UBO441	**Number of Credits : 3**

Distribution of Hours	Theory	Practical
Bryology	18 Hrs	09 Hrs
Pteridology	18 Hrs	16 Hrs
Gymnosperms	14 Hrs	10 Hrs
Paleobotany	04 Hrs	01 Hrs
TOTAL	**54 Hrs**	**36 Hrs**

Aim and Objectives of the Course

- To familiarise the diversity and organization of lower land plant forms such as Bryophytes, Pteridophytes and Gymnosperms
- To understand the mechanism of propagation of Bryophytes, Pteridophytes and Gymnosperms
- To develop the skill and expertise for identifying and characterizing the Bryophytes, Pteridophytes and Gymnosperms
- To get an idea on the fossil plant forms

MODULE I BRYOPHYTES **18 hrs**

1. Introduction and classification- general account

2 Study of habit, thallus organization, vegetative and sexual reproduction and alternation of generation of the following types (Developmental details are not required)

Riccia, Marchantia, Anthoceros, Funaria

3 .Economic importance of Bryophytes

Practical **09 Hrs**

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

2. *Marchantia*-Habit- thallus with Archegonial receptacle, Malereceptacle V.S, Female receptacle V.S. T.S of thallus through gemma, Sporophyte V.S

3. *Anthoceros*-Habit

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

MODULE II PTERIDOPHYTES **18 hrs**

1. Introduction: General characters morphological and phylogenetic classification

2. Study of the habitat habit, internal structure, reproduction and life cycle of the following types (Developmental details not required).

Psilotum, Selaginella, Pteris and *Marselia*

3. General topics: Stelar evolution in Pteridophytes. Economic importance of Pteridophytes

Practical **16hrs**

1. *Psilotum* - External features, Stem T.S., Synangium T.S.
2. *Selaginella* -Habit, stem and rhizophore, T.S., V.S. of strobilus, Megasporophyll and Microsporophylls
3. *Pteris* -Habit, Rachis T.S. Sporophyll T.S., Prothallus
4. *Marselia* -Habit, Rhizome and Petiole T.S., Sporocarp T.S. ,V.S.

MODULE III GYMNOSPERMS **14 hrs**

1. Introduction –General characters and classification of Gymnosperms

2 Study of the habit, anatomy, reproduction and life cycle of the following types

(Developmental details are not required)

Cycas, Pinus and *Gnetum*

3. Evolutionary trends in gymnosperms, Economic importance of Gymnosperms

Practical **10 hrs**

1. *Cycas*- T.S of leaf, T.S. of coralloid root. Micro and megasporophyll, VS of ovule
2. *Pinus*- T.S. of stem, T.S. of needle, male and female cone, V.S.
3. *Gnetum*-Habit, stem T.S, (young and mature),leaf T.S, male and female strobilus ,V.S of male and female cone ,ovule V.S and seed.

MODULE IV PALAEOBOTANY **04 hrs**

1. Geological time scale, Fossil formation, types of fossils.
2. Fossil Pteridophytes- *Rhynia, Lepidodendron, Lepidocarpon*. Fossil gymnosperms- *Lygnopteris*.

Practical **01 hr**

1 .Fossil Pteridophytes- *Rhynia* stem, *Lepidodendron*, *Lepidocarpon*.
2. Gymnosperm- *Lygenopteris*

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13. Vashista B.R. 1993. Pteridophyta. S.Chand and co. New Delhi
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Course Outcome

- The students will have an idea on the diversity and organization of Bryophytes, Pteridophytes and Gymnosperms
- The students will develop skill and expertise in identifying Bryophytes, Pteridophytes and Gymnosperms
- The students will understand the propagation methods of Bryophytes, Pteridophytes and Gymnosperms
- The students will get an understanding on the fossil plant forms

Model Question Paper

19UBO441: Lower Plants II & Paleobotany

Time: 3 Hrs. Max. Marks: 80

PART A (Answer all, 1 mark each)

1. What are elaters?
2. What are botanical snakes?
3. Name an aquatic species of *Riccia*.
4. Define trabecular endodermis.
5. Define inducium.
6. What are coralloid roots?
7. Write the source of chaemotherapeutic drug "Taxol".
8. Name a vessel bearing gymnosperm.
9. What are Lepidodendron?
10. Define sporocarp. (10x1=10 Marks)

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

11. Differentiate simple and tuberculate rhizoids?
12. What are peristome teeth.
13. What are gemma cups?
14. Explain girdling traces.
15. Differentiate perichaetium from perigynium
16. What are nurse cells?
17. Explain cleavage polyembryony
18. What are dwarf shoots?
19. Differentiate bract scale from ovuliferous scale.
20. Define heterospory.
21. Explain *Lyginopteris*.
22. What are botanical snakes? (8x2=16 Marks)

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

23. Describe the thallus structure of *Anthoceros*
24. Explain the male and female sex organs of *Marchantia*.
25. Draw and explain the internal thallus structure of *Riccia*.
26. Give a short account on the rhizophores in *Selaginella*.
27. Describe the structure of Synangium.
28. Explain the sporocarp of *Marselia*.
29. Illustrate the internal structure of *Cycas* leaflet. Explain the xerophytic adaptations .
30. With a neat labelled diagram, explain the structure of female cone in *Pinus.*
31. Write a short note on Geological Time Scale. (6x4=24 Marks)

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

32. Explain the stelar evolution in Pteridophytes
33. With the help of neat and labelled diagrams, explain the structure and reproduction in *Marselia*.
34. Differentiate the sporophytes of *Riccia, Marhcnatia*, *Anthoceros* and *Funaria*.
35. Describe the structure and reproduction in *Gnetum* (2x15=30 Marks)

Complementary Course

19UCH431.3: Organic Chemistry

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

Total hours: 54

Course outcome

CO1: To impart an idea of the chromatographic techniques
CO2: To get an understanding of the structure and functions of amino acids, proteins and nucleic acids
CO3: To study the basics of stereochemistry
CO4: To impart knowledge on the structure and importance of Oils, Fats, Detergents, Alkaloids, Vitamins and Terpenes
CO5: To learn the classification and uses of dyes and drugs

Module I - Chromatography **(9 Hrs)**

Outline study of adsorption and partition chromatography, paper , thin layer, ion exchange, gas chromatography-principle-instrumentation and applications and HPLC - R_f and R_t value – Introduction to zone electrophoresis and capillary electrophoresis.

Module II Amino acids, Proteins **(9 hrs)**

Amino acids: - Classification, structure and stereochemistry of amino acids, essential and non essential amino acids, zwitter ion, isoelectric point, General methods of preparation of - glycine, alanine, tryptophan
Peptides: structure and synthesis (Carbobenzoxy method, Sheehan method only). Proteins:- Structure of proteins, denaturation and colour reactions.
Nucleic acids: - Classification and structure of DNA and RNA, functions of nucleic acids(brief idea only), Replication of DNA, Genetic Codes. Translation- Transcription

Module III Sterochemistry **(9 hrs)**

Optical Isomerism : Chirality and elements of symmetry – DL notation – Enantiomers – optical isomerism in glyceraldehydes, lactic acid and tartaric acid – Diastereoisomers – mesocompounds – Cahn-Ingold-Prelog rules – R-S notations for optical isomers with one and two asymmetric carbon atoms.- erythro and threo representations. Racemic mixture – resolution – methods of resolution

Module IV Oils, Fats, Detergents, Alkaloids, Vitamins and Terpenes **(9 hrs.)**

Oils and Fats: - Occurrence and extraction. Common fatty acids, soap, saponification value, iodine value, acid value, Alkaloids: - Extraction and structural elucidation of conine, nicotine and importance of quinine, morphine and codeine. Terpenes: - Essential oils, isolation of citral and geraniol (No structural elucidation) Isoprene and special isoprene rule. Vitamins: - Classification, structure functions and deficiency diseases (structures of vitamin A, B1 and C but no structural elucidation).

Module V Dyes **(9hrs)**

Theory of colour and constitution, classification of dyes, Natural dyes, indigo- Synthesis of methyl orange, congo red, malachite green, phenolphthalein, Schiffs reagent.

Module VI Drugs **(9Hrs)**

Classification of drugs- analgesic, antipyretic, antibiotic, hypnotics, suphadrugs, antacids, antimalarials, Synthesis of aspirin, sulphaguanidine, chloramphenicol, Drugs of plant origin anticancer compounds from plants.

References

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2. Principles of physical chemistry, Puri Shrama Pathania, Vishal
3. Chemistry of natural products, P.S. Kalsi, New Age International Private Ltd
4. Elementary organic spectroscopy, Y.R Sharma, S Chand & Company
5. Principles of Physical Chemistry, B.R.Puri, R.L.Sharma & Pathania, Vishal Publishing
6. Essentials of Physical Chemistry, B.S. Bahl., G.D. Tuli & Arun Bahl , S.Chand & Co., New Delhi.
7. Simplified Course in Physical Chemistry, R.L. Madan, G.D. Tuli , S.Chand & Co.
8. Chromatography, B.K .Sharma, GOEL Publishing House, Meerut
9. Text Book of Pharmaceutical Chemistry, Atherden L.M, Bentley and Driver, Oxford University Press.

MODEL QUESTION PAPER
19UCH431.3: 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. What is meant by Rf value?
2. Define Racemic mixture.
3. Represent the configurations of D and L glyceraldehyde.
4. Give two example of essential aminoacids.
5. Describe a colour test for proteins.
6. Define Iodine value.
7. What are antipyretics?
8. State Special isoprene rule?
9. What is mordant dye? Give one example.
10. Give the deficiency disease of Vitamin C.

(10 X 1 =10Marks)

SECTION - B

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

11. Give the principle of adsorption chromatography.
12. What is meant by denaturation of proteins.
13. Discuss the importance of Morphine.
14. Which of the following are optically active ? Why?
    (i) 2-chloropropane (ii) 2-chlorobutane (iii) 3-chloropentane
15. Give four differences between enantiomers and diastereoisomers.
16. Write a note on the different types of RNA and its functions.
17. How are alkaloids extracted from natural sources?
18. Give the classification of Vitamins.
19. What are antacids. Explain.
20. Give the structure of Vitamin A.
21. Name three anticancer compounds from plant.
22. Explain saponification.

(2 X 8 = 16 Marks)

SECTION - C

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

23. Discuss the optical isomerism of tartaric acid.
24. Write a note on DNA replication .
25. Give the synthesis of Tryptophan.
26. What is meant by Isoelectric point of aminoacids.
27. Determine the R & S notations of meso tartaric acid and L- glyceraldehyde.
28. Give a brief account on Thin Layer Chromatography.
29. Write a note on the methods of isolation of terpenoids.
30. Give the synthesis of Methyl Orange
31. Explain the cleansing action of soap.

(4x6 = 24marks)

SECTION – D

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

32. (a) Explain Ion exchange Chromatography. (5 marks)
    (b)Give the structure elucidation of Conine. (5 marks)
    (c) Describe the structure of DNA. (5 marks)
33. (a) Discuss briefly the structure of Protein.
    (b) Explain Sheehan's method.
    (c) Discuss the classification of dyes on the basis of application.

34. (a) What is resolution? Explain different methods of resolution.
    (b) What are meso compounds? Are they optical active? Explain with a suitable example.
    (c) Discuss the isolation, structure and uses of geraniol.
35. (a) Give the synthesis of the following drugs (i) Aspirin (ii) sulphaguanidine
    (b) Define oils and fats and discuss the different methods of extraction .
    (c) Write a note on detergents.

(15 X 2 = 30marks)

SYLLABUS FOR LABORATORY COURSES

19UCHCH432 .3

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 $KMnO_4$ 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. $K_2Cr_2O_7$ 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 Zn^{2+} ion solution.
b. Estimation of any one metallic ion from Ca^{2+}, Mg^{2+}, Zn^{2+} or 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 1st, 2nd, 3rd and 4th semesters

Complementary Course VIII

19UZO431.1: Applied Zoology

No. of credits: 3

No. of instructional hours per week: 5 **Total hours: 54**

Course outcome:
CO1: To equip students with the concepts of traditional methods of aquaculture.
CO2: To enrich students with reference to sericulture, poultry farming and management.
CO3: To understand the basic principles of genetics, disorders and genetic counseling.
CO4: To make students aware of basic concepts of early embryonic development.
CO5: Developmental biology plays an important role infamiliarizing students in the field of medicine in stem cell therapy, tissue engineering and regenerative medicine.

Module I: Aquaculture **17hrs**

Aquaculture: Traditional methods of aquaculture, fishing crafts and gears, common fishes used for culture in Kerala, Catla, Etroplus, Tilapia and Mugil; capture fishes- sardine, mackerel. Pond culture: Construction, maintenance and management; carp culture, shrimp culture, shellfish culture, composite fish culture and pearl culture Ornamental fish culture: Fresh water ornamental fishes – biology, breeding habits, spawning, hatching and rearing techniques. Construction and maintenance of aquarium: Construction of home aquarium, materials used, setting up of freshwater aquaria, aquarium plants, ornamental objects, cleaning the aquarium, maintenance of water quality, control of snail and algal growth.

Module II: Sericulture **10hrs**

Sericulture: Brief account of morphology and life history of silkworm, va rieties of silkworm, rearing technique, mulberry cultivation, diseases and pests of silkworm. Processing of cocoon, reeling and marketing of silk. Apiculture: Species of honey bees, social organization of honey bees, apiary management and maintenance,bee keeping equipments, bee pasturage, honey and bees wax and their uses.

Module III: Poultry farming and management **8hrs**

Live Stock Management: Poultry farming, poultry breeds: mention American, Asiatic, Mediterranean, English and indigenous breeds. Poultry breeding and poultry products; rearing of chicks, growers, layers, broilers, ducks, turkeys and quails; diseases of poultry. Dairy farming: Types, loose housing system and conventional barn system; advantages andlimitations of dairy farming; establishment of dairy farm and choosing suitable dairy animals,feed, diseases of dairy animals.

Module IV: Human genetics **7hrs**

Human Genetics: Normal chromosome complements; karyotype study, pedigree analysis. Syndromes- autosomal syndromes (Down's syndrome and Edwards syndromes), sex chromosomal syndromes (Turners syndrome and Klinefelter's syndrome), genetic disorders-single gene disorders (sickle cell anemia and phenyl ketonuria), multifactorial disorders (cleft lip, and cleft palate), genetic counseling.

Module V: Developmental Biology and Biotechnology **12hrs**

Types of egg; fertilization; types and pattern of cleavages, blastulation - different types of blastula, gastrulation-morphogenetic movements (epiboly and emboly); brief description of organizers and embryonic induction. Cloning experiments in animals and man. Embryonic stem cell research. Prenatal diagnostic techniques- amniocentesis, chorionic villus sampling, ultrasound scanning. Test tube babies, gene cloning, human genome project, human gene therapy.

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2. Gardner, E.J.(1983). Human heredity, John Wiley and Sons, New York
3. Hawkins, A.D. (1981). Aquarium Systems, Academic Press
4. Lewin, B. (1983). Genes, John Wiley and Sons, New York
5. Mishra, R.C. (2002). Perspectives in Indian Apiculture, Agro
6. Philips, E.F. (2003). Bee Keeping, Agro
7. Santhanam, R. A Manual of Aquaculture.
8. Shukla and Upadyay. (2002) .Economic Entomology.
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MODEL QUESTION PAPER
19UZO431.1: Applied Zoology

Time 3hrs **Max. Marks:80**

Section A
Answer all questions in one or two sentences

1. Define fertlization?
2. What is meant by aquaculture?
3. What is epiboly?
4. What is meant by embryology?
5. Comment on *Catlacatla*?
6. What is meant by moriculture?
7. What aremesolecithal egg?
8. Name any to poultry diseases.
9. What is meant by chorionic villus?
10. What is meant by blastulation?

(10x1=10 marks)

Section B
Answer any eight of the following in one paragraph each.

11. Explain advantages of ornamental fish culturing?
12. Explain the diseases of diary animals.
13. Add note on epiboly and emboly.
14. What are the aims and achievements of embryonic stem cell research?
15. Outline one example of inheritance involving multiple alleles.
16. Discuss the potential benefits of livestock management
17. Comment on catamarams.
18. What is stem cell research? Comment on its application
19. What is pedigree analysis?
20. Describe importance of liming in ponds.
21. Describe the process of fertilization.
22. Comment on single gene disorders.

(8X2=16marks)

Section C
Answer any six of the following in a paragraph not exceeding 120 words.

23. What is meant by invagination? Give an example?
24. What is Karyotype?
25. Explain the different types of traditional methods of aquaculture.
26. Discuss the different types of blastula.
27. Explain different types of egg.
28. Describe the social organizations of honey bees.
29. Explain sericulture techniques.
30. Describe poultry farming.
31. Elaborate the diseases and pests of silk worm.

(6X4=24 marks)

Section D
Write essay on any two of the following. Each question carries 15 marks.

32. Explain genetic disorders in man caused by chromosomal changes
33. Write an essay on Human genome project.
34. Describe the role of organizers and embryonic induction.
35. Elaborate onAquaculture, characters of aquaculture, types of aquaculture practices, and qualities of culturableaquatic species.

(2x15-30 marks)

Complementary Course X

19UZO432.1: Practical

No. of credits: 4

Course outcome:
CO1: To provide hands- on training experience in anatomy through simple dissections and mountings
CO2: To familiarize students with conventional organ system in common, easily available animals.
CO3: To emphasize the adage that 'seeing is believing' typical examples and economically important specimen (preserved) to be studied.
CO4: To study and carry out routine clinical analysis of blood and urine

Animal Diversity I &II
I. Study of specimens
1. Protista: *Noctiluca, Paramecium*, *Entamoeba*, Trichonympha [any 3]
2. Porifera: *Sycon*
3. Cnidaria: Obelia*, Aurelia*, Sea anemone (*Adamsia*)
4. Platyhelminthes:*Bipalium, Fasciola, Taeniasolium*
5. Nematoda:*Ascaris*, *Ancylostoma*
6. Annelida: Nereis, *Hirudinaria*
7. Arthropoda: Limulus*, Scorpion, Scolopendra, Sacculina, Leptocorisa, Oryctes*, Larval stages of prawn [any 5]
8. Mollusca: Freshwater mussel, Sepia, Pila
9. Echinodermata: Starfish, Sea urchin, Brittle star, Sea cucumber, sea lily[any 3]
10. Chordates: Branchiostoma (entire), Ascidia. Petromyzon Scoliodon, Narcine, Echeneis, Hippocampus, Anguilla [any 3]

Icthyophis, Amblystoma, Rhacophorus [any 2]
Chamaeleon, Bungarus, Naja, Vipera, Chelone [any 4]
Pigeon – different types of feathers Pteropus
II. Submission of common agricultural pest- paddy, coconut, stored food grains.
Submisiom-Animal Diversity I&II 5% of practical continuous assessment

Minor Practicals (Mounting) – any three
1. Earthworm: Setae in situ
2. Penaeus: Appendages
3. Cockroach: Mouth parts
4. Nereis: Parapodium
5. Shark: Placoid scales

Major Practicals (Dissection) – any two
1. Earthworm: Alimentary canal and associated glands
2. Penaeus: Nervous system
3. Cockroach: Alimentary canal

Osteology
1. Study of the skeleton of frog-Vertebrae (typical, 8th, 9th and urostyle)
2. Limb girdles: pectoral girdle with sternum, pelvic girdle, astragalus&calcaneum.

Functional and Applied Zoology
Functional Zoology
1. Preparation of human blood smear to study the different types of WBCs.
2. Human blood grouping: ABO and Rh Systems.
3. Urine analysis for abnormal constituents: albumin and glucose.
4. Study of slides/models of different types of eggs, blastula and gastrula of animals.

Applied Zoology

1. Study of beneficial insects Apis(worker, drone and queen), Bombyx(life cycle, silk)
2. Study of the following items of economic importance: Perna, Pinctada, Penaeus, Sardinella, Rastrelliger

Human Genetics

Study of the following using charts/photographs

1. Study of normal human karyotype.
2. Study of abnormal human karyotypes. [Klinefelter's, Turner's, Down's and Edward's syndrome]

REFERENCES

1. Brusca R.C. and Brusca G.J. (1990) Invertebrates.Sinauer Associates, Sunderland,MA
2. Chandler, A.C. and Read. Parasitology.
3. Hickman C.P. and Roberts L.S. (1994) Animal Diversity. Wm. C. Brown, Dubuque,IA Living Invertebrates Blackwell scientific Publications, California.
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SEMESTER V

MORPHOLOGY, SYSTEMATIC BOTANY, ECONOMIC BOTANY, ETHNOBOTANY & PHARMACOGNOSY	
15UBO541	**Number of Credits : 4**

Distribution of Hours	Theory	Practical
Morphology	16 Hrs	10 Hrs
Systematic Botany	38 Hrs	35 Hrs
Economic Botany	12 Hrs	06 Hrs
Ethnobotany & Pharmacognosy	06 Hrs	03 Hrs
TOTAL	**72 Hrs**	**54 Hrs**

Aim and Objectives of the Course

- To characterize the angiosperm diversity on a systematic perpective
- To develop skills and expertise to identify angiosperms upto the family level
- To identify economically significant angiosperms
- To get an understanding on the ethnobotanically significant angiopserms
- To have a preliminary knowledge on pharmacognosy

MODULE I MORPHOLOGY **16 hrs**

1. Vegetative characters for taxonomic characterization: Plant Habit- Herbs, Shrubs, Trees, Climbers, Lianas; Morphology of vegetative parts- Types of Leaves Morphological variation of leaf apex, leaf base and leaf lamina, Phyllotaxy, Venation patterns; Stem and Root types and modifications.
2. Brief account on the various types of inflorescence including special types (Cyathium, Verticillaster, Hypanthodium, Coenanthium and Thyrsus) with examples.
3. Floral morphology-Flower-as a modified shoot, Flower parts, their arrangements, relative position, numeric-plan, cohesion, adhesion, symmetry of flower, aestivation types, placentation types; floral diagram and floral formula
4. Fruit types: simple, aggregate and multiple.
5. Seeds: albuminous and exalbuminous.

MODULE II SYSTEMATIC BOTANY **38 hrs**

1. Definition, scope and significance of Taxonomy in academics and research; Role of Taxonomy in Conservation BiologyVegetative

2.Historical development of the systems of classification:

1. Artificial- Linnaeus sexual system (Brief account only)

2. Natural - Bentham and Hooker (Detailed account)
3. Phylogenetic- Englerian and Ranalean concept
4. APG System (Brief account only)

4. Basic rules of Binomial Nomenclature and International Code of Botanical Nomenclature (ICN).

5. Importance of Herbarium, Herbarium techniques and Botanical gardens.

7. A study of the following families with emphasis on the morphological peculiarities and economic importance of its members (based on Bentham & Hooker's system)

(1) Annonaceae
(2) Nymphaeaceae
(3) Malvaceae
(4) Rutaceae
(5) Anacardiaceae
(6) Fabaceae
(7) Myrtaceae
(8) Cucurbitaceae
(9) Apiaceae
(10) Rubiaceae
(11) Asteraceae
(12) Sapotaceae
(13) Apocynaceae
(14) Asclepiadaceae
(15) Solanaceae
(16) Scrophulariaceae
(17) Acanthaceae
(18) Verbenaceae
(19) Lamiaceae
(20) Amaranthaceae
(21) Euphorbiaceae
(22) Orchidaceae
(23) Zingiberaceae
(24) Liliaceae
(25) Arecaceae
(26) Poaceae

Practical **45 hrs**

1. Study on various types of leaves, inflorescences, flowers and fruits with vivid record of practical work.

2. Students must be able to identify the angiosperm members included in the syllabus up to the level of families. 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.

3. Students must submit practical records, Herbarium sheets (25 Nos:) and Field book at the time of practical examination.

4. Field trips are to be conducted for five days either as continuous or one day trips.

MODULE III ECONOMIC BOTANY **12 hrs**

1. Study of the major crops with special reference to their Botanical description, morphology of the useful part and economic importance-–

Cereals and millets	: Paddy and Ragi
Pulses	: Black gram and Bengal gram
Sugar yielding Plants	: Sugar cane
Spices	: Pepper and Cardamom
Beverages	: Coffee, Tea
Fibre yielding plant	: Cotton, Jute
Dye Yielding plants	: Henna, Indigo
Resins	: Asafoetida, White Dammar
Tuber crops	: Tapioca, Dioscorea
Oil yielding Plants	: Coconut, Sesame and Oil Palm
Latex yielding plant	: Rubber
Medicinal plants	:*Sida rhombifolia*, *Curcuma longa*, *Aloe vera* and *Catharanthus roseus*
Insect Repellent	:Neem, Tobacco

Practical **06 hrs**

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

MODULE IV ETHNOBOTANY **04 hrs**

1. Definition — importance, scope, categories and significance.
2. Study of various methods to collect Ethno botanical data.
3 . Study of common plants used by tribes.

Aegle marmelos, Ficus religiosa, Cynadon dactylon, Ocimum sanctum and *Trichopus zeylanicus*

MODULE V PHARMACOGNOSY **02 hrs**

1. Definition and scope of Pharmacognosy
2. Sources of crude drugs – roots, rhizome, bulb, corm, leaves, stems, flowers, fruits and seeds

Practical **03 hrs**

1. Documentation of ethnobotanically significant plants
2. Powder analyses of selected two raw drugs and its comparison with market samples

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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 taxonmic treatment
- The students will develop skill and expertise in identifying angiospermic plants belonging to different families
- The students will understand the role of traditional knowledge on the design of medicinal preparations
- The students will get a preliminary knowledge on Pharmacognosy

Model Question Paper

19UBO541: Angiosperm Systematics & Economic Botany

Time: 3 Hrs. Max. Marks: 80

PART A (Answer all, 1 mark each)

1. Name the largest herbaria in the world.
2. What are staminodes?
3. What is nomenclature?
4. Name the placentation in *Nyphaea*.
5. What is syncarpous condition?
6. Define epipetalous stamens.
7. What are monoecious plants?
8. Give an example of artificial system of plant classification.
9. What is monadelphous condition?
10. Name the family with swlollen axile placentum. (10x1=10 Marks)

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

11. Explain the androecium in Vernenaceae?
12. Describe the fruits of Apocyanaceae.
13. Define obdiplostemenous condition.
14. Describe the vegetative features of family Rubiaceae.
15. Define vexillary aestivation..
16. Distinguish between pedicel and peduncle.
17. What are petalloid sepals? Give an example.
18. Describe the androecium in Acanthaceae.
19. Explain the concept of floral symmetry.
20. Define pharmacognosy.
21. Name the botanical name and family of any two ethnobotanically significant medicinal plants.
22. Define ethnobotanical documentation. (8x2=16 Marks)

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

23. Describe floral features of family Sapotaceae.
24. Explain the herbarium techniques.
25. Describe the type concept.
26. Give a short note on different calyx types.
27. Explain the significance of ethnobotany. Explain the different methods of collecting ethnobotanical data.
28. Draw a neat lablelled diagram of the spikelet inflorescence.
29. Comment on the floral transition in the family Nymphaeaceae.
30. Give a short note on the gynostegium and gynostemium.
31. With neat labelled diagram explain the Cyathium inflorescence.

(6x4=24 Marks)

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

32. Explain Benthem & Hooker's system of plant classification. List out it's merits and demerits.
33. Compare the sub families of family Leguminosae
34. Explain in detail the different floral whorls of an angiosperm flower.
35. With neat labelled diagrams explain the vegetative and floral features of the family Apocyanaceae. (2x15=30 Marks)

SEMESTER V

ENVIRONMENTAL STUDIES AND PHYTOGEOGRAPHY	
19UBO542	**Number of Credits : 4**

Distribution of Hours	Theory	Practical
Environmental Studies	81 Hrs	36 Hrs
Phytogeography	09 Hrs	00 Hrs
TOTAL	**90 Hrs**	**36 Hrs**

Aim and Objectives of the Course

- To inculcate an insight on environmental conservation
- To develop the attitude of conserving nature and natural resources for a harmonious living
- To develop an understanding on different ecosystems existing at different parts of the world
- To get an idea on different negative parameters that are causing damage to the biodiversity in general and ecosystem diversity in particular
- To have a preliminary knowledge on different phytogeographical regions

MODULE I NATURAL RESOURCES **81 hrs**

1. Definition- Scope and relevance.

2.Natural Resources - Renewable and Non renewable - Land and Soil, Water, Energy, Minerals, Food and Agriculture , Forests.

3. Degradation of natural resources -Land degradation, degradation of water resources, Loss of flora and fauna. Causes – population explosion, over exploitation, deforestation, agriculture mismanagement, desertification, overgrazing, soil erosion, mining, urbanization and industrialization- change in land use, depletion of water resources

4. Conservation of Natural resources Land and soil- afforestation, regeneration of waste land; Water - Rain water harvesting, ground water dams; Energy - Promoting use of renewable resources-solar, hydel, tidal and wind; biofuels. Forests- Reforestation, Community forestry programmes

5. Role of an individual in conservation of natural resources, sustainable life styles.

MODULE II ECOSYSTEM

1. Ecosystems - Concept, definition, structure and function; components- biotic and abiotic; energy flow

2. Food chains -Food web & ecological Pyramids, biogeochemical cycles - Carbon and Phosphorous cycle

3. Ecological succession-Definition, primary and secondary succession, climax concept, hydrosere and xerosere.

4. Plant adaptations- morphological, anatomical& physiological adaptations of –Hydrophytes, Xerophytes, Halophytes, Epiphytes, Parasites

5. Introduction- types, characteristic features, structure and functions of the following ecosystems.

1. Forest ecosystem 2. Grassland ecosystem 3. Desert ecosystem 4. Aquatic ecosystems- Ponds, Streams, Rivers, Oceans, Estuaries (brief account only)

6. Biodiversity and its conservation; Bioversity International

7. Definition- genetic, species and ecosystem diversity.

8. Terrestrial (Tropical rain forest) and Aquatic Biomes (mangroves).

MODULE III BIODIVERSITY CONSERVATION

1. Hot-spots of biodiversity; India as mega-diversity nation.

2. Threats to biodiversity: land use changes & habitat destruction, poaching of wild life- hunting and export, overuse of pesticides, invasive species. 3. IUCN, Red data Book; Extinct, Threatened (Rauvolffia serpentina, Trichopus zeylanicus ssp. Travancoricus), endangered (Paphiopedilum druryii, Syzygium travancorica), and Endemic (Decalipis arayalpatra, Utleria salicifolia) species of Western Ghats.

4. Conservation of biodiversity: *In-situ* (National Parks and Wild Life Sanctuaries) and Ex-situ conservation (Botanic Gardens); Biosphere Reserves & World Heritage Sites in India-Ramsar sites.

5. Global initiatives in biodiversity conservation-Stockholm Conference, Montreal Protocol, Convention on Biological diversity; Regional initiatives- Chipko movement; A brief account on conservation efforts in Kerala- People Biodiversity Register.

6. Biodiversity issues of Kollam district.

MODULE IV POLLUTION

1. Environmental pollution - Definition causes, effects and control measures of – 1. Air pollution 2. Water pollution 3. Soil pollution 4. Marine pollution 5. Noise pollution 6.Thermal pollution 7. Nuclear hazards.

2. Solid Waste Management- waste minimization, recycling and reuse, Consuming environment friendly products, E-waste management. 3. Environmental Legislations - Environment protection Act (1986); Air [prevention and control of pollution] Act (1981; Amended 1987); Water [prevention and control of pollution] Act (1974; Amended 1988); Wildlife

Protection Act (1972); Forest conservation Act (1980). (Scope and relevance only)

4. Environmental Organisations–UNEP, IPCC, WWF, Central Pollution Control Board, Green Tribunal

MODULE V DISASTER MANAGEMENT

1. Disaster management: Introduction, Definition and terminologies; scope and concept of disaster management; Natural and Environmental disasters-a brief description of the following disasters- earth quake, flood, coastal disasters, landslides, tsunami (role of mangroves in controlling tsunami disaster), cyclone, dam collapse, nuclear disaster, chemical disaster, biological disaster; Environmental Issues - Global warming and sea level rise, Acid rain, Ozone layer depletion- causes and effects; Disaster management – four phases – mitigation, preparedness, responses, recovery; Emergency procedures and warning systems, application of GIS (brief account only).

MODULE VI PHYTOGEOGRAPHY 09 hrs

1. Concept & Definition

2. Vegetation in India – Forests- tropical, temperate, sholas, sub alpine, alpine, mangroves & Grasslands.

3. Phytogeographical regions of India - Western and eastern Himalayas, Desert, Western Ghats, Deccan Peninsula, Gangetic Plain, North East India, Coasts & Islands.

Practical 36 hrs

1. Visit a local polluted site and report major pollutants.

2. Study of ecological and anatomical modifications of Xerophytes, Hydrophytes, Halophytes, Epiphytes and Parasites.

3. Visit to different ecosystems mentioned in the syllabus.

4. Identification of phytogeographical regions of India using map

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Course Outcome

- The students will have an idea on the ecological and phytogeographical diversity
- The students will develop a positive attitude for conserving nature and natural resources

Model Question Paper

19UBO542: Environmental Studies & Phytogeography

Time: 3 Hrs. Max. Marks: 80

PART A (Answer all, 1 mark each)

1. What is agroforestry?
2. What is biomass energy?
3. What are Sholas?
4. What are endemic species?
5. Expand IUCN.
6. Define ecology
7. Write the binomial of biodiesel plant.
8. Write of WWF
9. What is red data book?
10. Write short note on invasive species.

(10x1=10 Marks)

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

11. Effect of deforestation.
12. What are conventional energy source?
13. What is acid rain?
14. What are the characteristics of tropical rain forest?
15. Write about terrestrial biomes?
16. Define Red Data Book.
17. Brief account on Threatened Species.
18. Write briefly about hydrosere.
19. Write on Montreal protocol.
20. Write on sustainable life styles.
21. Explain community forestry programmes.
22. Give an account on renewable energy sources

(8x2= 16 Marks)

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

23. What are the importances of forest resource?
24. Describe the role of individual in conservation of natural resource.
25. What is global warming? Explain its consequences.
26. Write notes on the Environment Protection Act.
27. Write an account on the types of biodiversity.
28. Comment on the causes that lead to the loss of flora and fauna.
29. Define genetic, species and ecosystem diversity.
30. Give an account on the biodiversity issues of Kollam district.
31. Explain in detail major legislations on the conservation of biodiversity.

(6x4= 24 Marks)

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

32. What is succession? What is climax community? How do succession taking place in water community?
33. Describe in detail the biodiversity conservation and add notes on the hot spots of biodiversity in India.
29. Explain the different phytogeographical regions of India.
30. Write an account of different types of pollutions.

(2x15= 30 Marks)

SEMESTER V

CYTOLOGY, GENETICS AND EVOLUTION	
19UBO543	**Number of Credits : 4**

Distribution of Hours	Theory	Practical
Cytology	25 Hrs	12 Hrs
Genetics	36 Hrs	24 Hrs
Evolution	11 Hrs	00 Hrs
TOTAL	**72 Hrs**	**36 Hrs**

Aim and Objectives of the Course

- To understand the fine details of living cells
- To understand the mechanism of inheritance, and the processes of heredity and variation
- To understand the basic evolutionary mechanism, and the different factors associated with the process of evolution

MODULE I CYTOLOGY **25 hrs**

1. Introduction

2. Ultra structure and functions of the cell components and organelles Cell wall; The cell membrane, Endoplasmic reticulum, Ribosomes, Golgi apparatus, Lysosomes, Peroxisomes, Vacuole, Mitochondria, Chloroplast & Nucleus.

3. The chromosomes- Chromosome morphology- Eukaryotic chromosomes and its organization. Chromatin - composition and structure; hetero chromatin and euchromatin; Chemical organization. Nucleoproteins – histones and non –histones. Nucleosome model of DNA organization.

4. Special types of chromosomes- Salivary gland, Lamp brush and B chromosomes

5. Mutations and Chromosomal Abberations: Types of mutations; effects of physical and chemical mutagens. Numerical chromosomal changes: Euploidy, Polyploidy and Aneuploidy; Structural chromosomal changes: deletion, duplication, inversion and translocation.

7. Mitosis: Cell cycle and Meiosis; Significance of mitosis and meiosis

Practical **12 hrs**

1. Make acetocarmine squash preparation of onion root tip and to identify different stages of mitosis.

2. Make squash preparation of the flower buds of any of the following plants. *Rhoeo, Chlorophytum* (To identify stages of Meiosis)

MODULE II GENETICS **36 hrs**

1. Mendelian Genetics- Mendel and his experiments, Reasons for Mendel's success, Mendelian principles, Mendelian ratios, monohybrid and dihybrid crosses, back cross and test cross

2. Genetics after Mendel- Modified Mendelian ratios; Incomplete dominance –Flower color in *Mirabilis* ; Interaction of genes- Comb pattern in poultry, 9:3:3:1. Epistasis – Recessive - Coat color in mice, 9:3:4; Dominant epistasis - Fruit colour in summer squash, 12:3:1; Complementary genes - Flower color in *Lathyrus,* 9:7; Duplicate dominant genes in shepherd's purse, 15:1; Inhibitory factor - Leaf color in Paddy, 13:3.

3. Multiple alleles-General account. ABO blood group in man. Rh factor.

4. Quantitative characters- General characters of quantitative inheritance, polygenic inheritance; Skin color in man, ear size in Maize.

5. Linkage and crossing over- Linkage and its importance, linkage and independent assortment. Complete and incomplete linkage. Crossing over – a general account, two point, three point cross. Determination of gene sequence. Interference and coincidence. Mapping of chromosomes.

6. Sex determination- Sex chromosomes, chromosomal basis of sex determination XX- XY, XX-XO mechanism. Sex determination in higher plants(*Melandrium album*) Sex chromosomal abnormalities in man. Klinefelter's syndrome, Turner's syndrome. Sex linked inheritance. Eye color in *Drosophila*, Hemophilia in man.

7. Extra nuclear inheritance General account, maternal influence. Plastid inheritance in *Mirabilis*. Shell coiling in snails, kappa particle in *Paramecium*.

Practical **24 hrs**

Work out problems (Three problems each from every groups) in

1. Monohybrid cross (Dominance and incomplete dominance)
2. Dihybrid cross (Dominance and incomplete dominance)
3. Gene interactions (All types of gene interactions mentioned in the syllabus)
    a. Recessive epistasis 9: 3: 4.
    b. Dominant epistasis 12: 3: 1
    c. Complementary genes 9: 7 .
    d. Inhibitory genes 13: 3
    e. Duplicate dominant gene 15: 1
    f. Comb pattern in poultry 9:3: 3:1

MODULE III EVOLUTION **11 hrs**

1. Progressive and Retrogressive evolution.
2. Parallel and Convergent evolution.
3. Micro and Macro evolution.
4. Theory of Lamarck, Wiesman and De Vries, Darwinism, Neo-Darwinism
5. Mechanism of Evolution: Mutation, Variation, Genetic drift, Isolation and Speciation
6. Polyploidy and evolution.

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Course Outcome

- The students will become aware of the fine details of living cells, and the different cellular processes
- The students will make an understanding on the basic mechanism of heredity and variation, and will able to decipher the processes associated with the inheritance of characters from generation to generation.
- The students will get an idea on the basic mechanism of evolution

Model Question Paper

19UBO543: Cytology, Genetics & Evolution

Time: 3 Hrs. Max. Marks: 80

PART A (Answer all, 1 mark each)

1. Who proposed cell theory?
2. Which cell organelle is considered as the suicidal bags?
3. Define nucleosome.
4. What is metaphasic plate?
5. Write the dihybrid F2 phenotypic ratio in Mendelian populations.
6. What is Rh factor?
7. Define two point test cross.
8. What you meant by standing over in non-mendelian populations?
9. What is phylogeny?
10. Define the concept of 'survival of the fittest'. (10x1=10 Marks)

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

11. Explain the structure of plsmodesmata.
12. Differentiate heterochromatin from euchromatin.
13. What are F_0-F_1 particles?
14. Give a short note on Chiasma.
15. What are metacentric chromosomes?
16. State and explain 'Law of Segregation'.
17. What is inhibitory gene inheritance?.
18. Explain the polygenic inheritance with an example.
19. Distinguish between coupling and repulsion.
20. Explain Turner's syndrome.
21. What is Seawell-Wright effect?
22. Differentiate parallel and convergent evolution.

(8x2=16 Marks)

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

23. Describe the structure of Lampbrush Chromosomes.
24. With the help of diagrams explain prophase-I of meiosis.
25. Explain the structure of mitochondria.
26. Describe Complementary gene interaction with an examle.
27. Give a note on XX-XY sex determination with the help of an example.
28. Explain the process of crossing over.
29. Explain ABO blood grouping system in human beings.
30. Explain the role of mutation in evolution.
31. Explain the ultrastructure of plant cell wall.

(6x4=24 Marks)

PART D (Answer any one, 15 mark)

32. Explain in detail the chromosomal aberrations.
33. Describe the phenomenon of extra-nuclear inheritance with two examples
34. Write a detailed account on the theories of evolution.
35. With the help of diagrams explain the phenomenon of mitosis.

(2x15=30 Marks)

OPEN COURSE I

HORTICUTURE	
19UBO551	**Number of Credits : 2**

Contact Hours: Lecture: 54 Hrs.

Aim and Objectives of the Course

- To understand the basic tools and techniques in horticulture and floriculture
- To inspire the students in doing horticultural and floricultural practices

MODULE I **10 hrs**

1. Introduction
2. Divisions of horticulture
3. Importance and scope of horticulture.
4. Principles of garden making
5. Types of pots and containers
6. Potting mixture and potting media – soil, sand, peat, sphagnum moss.
7. Vermiculite
8. Soil types, Soil preparation
9. Irrigation methods
10. Hydroponics

MODULE II **12 hrs**

1. Propagation methods
   i.Cuttings
   ii.Layering – Air layering, Ground layering (Tip, Trench and Compound)
   iii.Budding – T- budding, Patch Budding
   iv.Grafting – Approach grafting, Bridge grafting, whip and tongue grafting.
2. Garden tools and implements
3. Manures and fertilizers
4. Farmyard manure, compost, vermicompost and biofertilizers.
5. Chemical fertilizers – NPK.
6. Time and application of manures and fertilizers.
7. Foliar sprays

MODULE III **12 hrs**

1. Components of Garden

2. Lawns and landscaping Trees, shrubs and shrubberies, climbers and creepers

3. Flower beds and borders, ornamental hedges, edges Drives, roads, walks and paths , Carpet beds, topiary, trophy, rockery

4. Conservatory or green houses, Indoor garden, Roof garden

5. Bonsai

MODULE IV **10 hrs**

1. Flower Arrangement
2. Containers and requirements for flower arrangements
   Free style, Shallow and Mass arrangement
3. Japanese – Ikebana
4. Bouquet and garland making
5. Dry flower arrangement
6. Harvesting Methods, Storage
7. Marketing of Fruits, vegetables and flowers
8. Preservation and processing of fruits and vegetables

MODULE V **10 hrs**

1. Growth regulators in horticulture
2. Rooting hormones , Growth promoters , Flower induction , Parthenocarpy
3. Plant protection Common diseases of fruits and vegetable crops (Mango, Tomato)
4. Weedicides, Fungicides, Pesticides

Field Study: Visit to a Botanical garden under the guidance of the teacher is encouraged.

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8. Rajesh Kumar and Kaushal Kumar Misra 2014. Fundamentals of Horticulture, Biotech publishers
9. Singh J. 2017. Fundamentals of Horticulture, Kalyani publishers
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Course Outcome

- The students will develop an understanding on the tools and techniques in horticulture and floriculture
- The students will develop skills and expertise in experimenting horticulture and floriculture

Model Question Paper

19UBO551: Horticulture

Time: 3 Hrs. Max. Marks: 80

PART A (Answer all, 1 mark each)

1. What is Ikebana?
2. Define Flower arrangement?
3. What is the role of Gibberellic acid?
4. Define topiary.
5. What is Turf?
6. What is NPK?
7. Name the cultivation of plants for flowers
8. What is arboriculture?
9. What is pomology?.
10. What is olericulture?.

(10x1=10)

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

11. Mention about Indian style of flower arrangement
12. What are the differences between eastern and western style of flower arrangement?
13. How will you prepare dry flower arrangements?
14. Write about shrub and shrubberies.
15. Mention about organic mannures.
16. What is vermicompost?.
17. Explain Biofertrilizers..
18. What is fertilizer grade? Define compound fertilizers.
19. What is potting- on?
20. What is a community pot?
21. Explain Vermiculite.
22. What is Potting mixture?

(8x2= 16)

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

23. What are the basic reqirements for flower arrangement?
24. Explain the role of growth regulators in horiculture.
25. Explain different types of parthenocarpy.
26. Explain Lawn making.
27. Describe carpet beds and flower beds.
28. Write notes on green house/ conservatives.
29. What is peat moss? Mention about its uses.
30. What are the properties of a good potting mixture?
31. Write about the economic importance of horticulture.

(6x4=24)

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

32. Explain the basic principles of flower arrangement. Describe about different styles of flower arrangement?
33. Describe the Preservation of fruits and vegetables.
34. Describe about fungicides, weedicides and pesticides.
35. Describe about different divisions of horticulture.

(2x15=30)

SEMESTER VI

PLANT PHYSIOLOGY AND BIOCHEMISTRY	
19UBO641	**Number of Credits : 4**

Distribution of Hours	Theory	Practical
Plant Physiology	60 Hrs	20 Hrs
Biochemistry	30 Hrs	16 Hrs
TOTAL	**90 Hrs**	**36 Hrs**

Aim and Objectives of the Course

- To understand the concept and processes associated with the vital activities of plants
- To inspire the students for exploring the detailed physiological processes in plants
- To have an illustrated representation of the chemical processes behind the life processes in plants

MODULE I PLANT PHYSIOLOGY **60 hrs**

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 aspects of absorption-imbibition, diffusion and osmosis. Plant cell as an osmotic system; water potential and osmotic potential, DPD, TP, WP. Permeability and its importance. 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: Gross chemical analysis of the plant body, ash analysis, criteria for essentiality of elements, macro and micro elements, role of essential elements and their deficiency symptoms. Culture methods - sand culture, hydroponics and aeroponics. Mechanism of mineral absorption (a) passive absorption- ion exchange and Donnan equilibrium (b) active absorption- carrier concept, Lundegardh hypothesis.

4. Photosynthesis: Introduction, significance and general equation; Photosynthetic apparatus, structure and function of chloroplast, quantasomes - solar spectrum and its importance - Fluorescence and phosphorescence; Red drop, Emerson effect; Two pigment systems; raw material for photosynthesis; Mechanism of photosynthesis- Light reaction - cyclic and non cyclic photophosphorylation; Dark reaction: Calvin cycle; Comparative study of C3, C4, and CAM plants; Photorespiration, Bacterial photosynthesis and chemosynthesis (Brief account only). Factors affecting photosynthesis - Law of limiting factor.

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

6. Translocation of solutes: Pathway of movement, phloem transport, mechanism of transport - Munch hypothesis, protoplasmic streaming theory - activated diffusion hypothesis, electro osmotic theory.

7. Nitrogen metabolism: Source of nitrogen - Biological nitrogen fixation – symbiotic and asymbiotic. Nitrogen fixation by blue green algae -rotation of crops. Nif genes - Leghaemoglobin.

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

11. Physiology of flowering, Photoperiodism.

12. Vernalization - phytochrome and its significance. Physiology of bud and seed dormancy, germination.

13. Plant movements: Tropic and nastic movements. Circadian rhythm and biological clock.

14. Stress physiology: water stress, salt stress.

Practical **20hrs**

1. Water potential of onion peel / Rhoeo peel by plasmolytic method.
2. Imbibition of water by different types of seeds.
3. Effect of temperature on permeability.
4. Papaya petiole osmoscope.
5. Determination of stomatal index.
6. Determination of water absorption and transpiration ratio.
7. Measurement of rate of transpiration using Ganong's potometer or Farmer's potometer.

8. Evolution of oxygen during photosynthesis.
9. Measurement of photosynthesis by Wilmot's bubbler.
10. Ganong's respirometer and measurement of R .Q.
11. Simple respiroscope.
12. Alcoholic fermentation using Kuhn's fermentation vessel.
13. Geotropism using clinostat.
14. Measurement of growth using Arc auxanometer.

MODULE II BIOCHEMISTRY **30 hrs**

1. Molecules of life.
2. Carbohydrates - Classification, occurrence, structure and functions of monosaccharides (glucose and fructose), oligosaccharides (sucrose and maltose), polysaccharides (starch and cellulose), synthesis of glycosidic bonds – Enzymatic hydrolysis of glycosidic bonds – amylases and invertases.
3. Amino acids- classification based on polarity, structure; Amphoteric property of Amino acids; peptide formation; Amino acid metabolism – reductive amination and transamination
4. Proteins – Structure, classification, properties and function; Role of bonds in stabilizing protein structure - hydrolysis of proteins.
5. Lipids- classification – Simple lipids- fats & oils, waxes; Compound lipids- phospholipids, spingolipids and glycolipids; Derived lipids- Cholesterol and terpenes; Fatty acids – Alpha-oxidation and Beta-oxidation; Synthesis of ester bonds.
6. Enzymes - general account - structure, classification and nomenclature (recommended by Commission on Enzymes); Mechanism of enzyme action - inhibition of enzymes - regulation of enzymes - allosteric inhibition - Isoenzymes, coenzymes and cofactors
7. Secondary Plant Products – Introduction – classification and function [General account]

Practical **16 hrs**

1. Qualitative test for carbohydrates - Molisch's test, Benedict's test (for reducing sugar)
2. Iodine test for starch/Seliwanoff's test.
3. Test for proteins - Biuret test

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5. Jain J L., Sanjay Jain and Nithin Jain 2016. Fundamentals of Biochemistry. S Chand and Co
6. Keith Wilson and John Walker 2008. Principles and techniques of Biochemistry and Molecular Biology, 6th Edition. Cambridge University Press, India Pvt. Ltd.
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15. Salisbury F.B. and Ross C.W. 1992. Plant physiology. Wadsworth publishing company.
16. **S**undara Rajan S. 2000. College Botany Vol.IV. Himalaya publishing House.
17. Verma V. 2007. Text Book of Plant Physiology. Ane Books Pvt Ltd.
18. William G. Hopkins 2008. Introduction to Plant Physiology. John Wiley & Sons, New York.

- The students will develop an understanding on the different physiological processes in plants
- The students will develop skills and expertise in deciphering the chemical basis of life

Model Question Paper
19UBO641: Plant Physiology & Biochemistry

Time: 3 Hrs. Max. Marks: 75

PART A (Answer all, 1 mark each)

1. Name the first stable product of C_3 cycle.
2. Define fluorescence.
3. What are isozymes?
4. Give an example of an aldohexose.
5. What are the outputs of light reaction?
6. Define Turgor Pressure.
7. What are trace elements?
8. Expand DPD.
9. What are antitranspirants?
10. Name two nitrifying bacteria.

(10x1=10 Marks)

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

11. Differentiate homo and heteropolysaccharides?
12. What are triglycerides?
13. Explain co-factors.
14. List out the six major classes of enzymes.
15. Define glycosidic bonds.
16. Distinguish between quantum yield and quantum requirement.
17. Explain Emerson's enhancement effect.
18. Differentiate between endosmosis and exosmosis.
19. Explain the significance of transpiration.
20. Define symbiotic nitrogen fixation.
21. Explain action spectra.
22. Define carrier ions. (7x2=14 Marks)

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

23. Explain in detail the non-cyclic photophosphorylation.
24. Give an account on 'Molecules of Life'.
25. Describe the functions of monosaacharides.
26. Explain plant cell as an osmotic system.
27. Describe the mechanism of stomatal opening and closing.
28. Give a short note on Donnan Equilibrium.
29. Explain the sigmoid curve of plant growth.
30. Comment on Alkaloids.
31. Narrate on Phytochromes (3x7=21 Marks)

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

32. Compare C_3 and C_4 cycles in photosynthesis.
33. Explain the structure, mode of action and the factors affecting enzyme action.
34. Give an account on Nitrogen Cycle.
35. Explain the fat metabolism

(2x15=30 Marks)

SEMESTER VI

MOLECULAR BIOLOGY AND INFORMATICS	
19UBO642	**Number of Credits : 4**

Distribution of Hours	Theory	Practical
Molecular Biology	28 Hrs	12 Hrs
General Informatics	22 Hrs	12 Hrs
Bioinformatics	22 Hrs	12 Hrs
TOTAL	**72 Hrs**	**36 Hrs**

Aim and Objectives of the Course

- To understand the molecular mechanism of life
- To make the students aware of the role of information technology in Biological Science
- To develop expertise on different bioinformatic tools

MODULE I MOLECULAR BIOLOGY **28 hrs**

1.DNA as genetic material- experimental evidence- Griffith's experiment on Bacterial transformation, Avery's experiment, Hershey-Chase Experiment.

2.DNA- Chemical Composition, Chargaff's rules, molecularstructure of DNA-Watson & Crick's Double Helical Model of DNA, Salient features of double helix, Biological Significance of Double Helical Model of DNA; Forms of DNA - A, Band Z forms; Satellite and repetitive DNA

3.Replication of DNA- An overview, General principles and features, Semi conservative model- Meselson and Stahl experiment; Leading strand and lagging strand synthesis, okazaki fragments, replication fork and origin of replication; Unidirectional and Bidirectional replication; Enzymology of replication: topoisomerase, helicase, primase, polymerase and ligase; Gene mutation- molecular mechanism, DNA repairing mechanism-photoreactivation.

4. RNA- Structure, Properties and functions of tRNA, mRNA and rRNA; Genetic code.

5. Synthesis of protein: Transcription; RNA modifications- introns, exons,removal of introns, spliceosome; Translation -Central dogma-reverse transcription

6. Regulation of gene expression in prokaryotes and eukaryotes- lac operon; transcriptional gene regulation in eukaryotes-promoters, enhancers, transcription factors; RNA interference.

7. Concept of gene -Units of a gene, cistron, recon, muton; Types of genes- House keeping genes (constitutive genes), Luxury genes (non constitutive genes), overlapping genes.

8.Transposable genetic elements- General account, Characteristic, Transposons (jumping genes), Cellular oncogenes (general account only).

Practical **12 hrs**

1.Identification of semiconservative replication of DNA through micrographs/schematic representations.

2. Work out problems in molecular biology based on DNA structure and replication

MODULE II GENERAL INFORMATICS **22 hrs**

1. Information Technology: Defenition, brief history, Modern personal Computer (Hardware and Software) and peripherals, computer network and internet, overview of operating systems- Windows & Linux, and application softwares-Excel, Power point, MS word.

2. Knowledge skill for Higher Education: Data information and knowledge, knowledge management- Internet as a knowledge repository, academic search techniques, creating your cyber presence, open access initiatives, open access publishing models, basic concepts of IPR, copy rights and patents, plagiarism, introduction to use of IT in teaching and learning, case study of educational software, Academic services- INFLIBNET, NICNET and BRNET.

3. Social Informatics: IT and Society- issues and concerns- digital divide, IT and development, new opportunities and new threats, Cyber ethics, Cyber crime, Security, privacy issues, cyber addictions, Information overload, Health issues, guidelines for proper usage of computers, internet and mobile phones. Localization issues-IT and Regional languages-IT for the disabled, the free software debate.

Practical **12 hrs**

1. Create, Copy and Save a document with Header, Footer, Page Number, Date and Time using Word processing
2. Insert a table in the above Document
3. Prepare the mark list of students in a class using Excel
4. Prepare five slides each using power point with
different design templates

MODULE III BIOINFORMATICS **22 hrs**

1. Introduction: Definition, Origin of concept of Bioinformatics; Brief history, Scope and Importance of bioinformatics, Wet lab and Web lab.

2. Basics of Genomics, Proteomics & metabolomics
3. Databases-defenition, DBMS-brief account only.
   Biological databases:
   A. Biomolecular databases
      Nucleic acid databases (EMBL, Gen Bank, DDBJ)
      Protein sequence databases. (PDB, PIR, SWISS PROT, UNIPROT)
      Enzyme databases
   B. Model organism databases
   C. Biodiversity databases
4. Sequence analysis and alignment (brief account only), Global and local alignments, Pair wise sequence alignment, multiple sequence alignment, Sequence Alignment Tools: BLAST, CLUSTAL X. FASTA format
5. Molecular visualization- Bioinformatics in relation to Biomolecular structure, use of Ras mol
6. Molecular Phylogeny and Phylogenetic trees- Advantages of Molecular phylogeny and phylogenetic analysis- PHYLIP.

Practical **12 hrs**

1. Students are expected to work with at least any one of the commercial / scientific packages, to explore the WEB and able to find, recognize, download, install and use software in various areas useful to the research in Biology.
2. Blast Search (Demonstration only)
3. Molecular visualization using Rasmol (Demonstration only)

REFERENCES

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4. Durbin 2007. Biological Sequence Analysis. Cambridge University Press India Pvt. Ltd.
5. Ethan Cerami 2005. XML for Bioinformatics. Springer International Edition
6. Higgs 2005. Bioinformatics and Molecular evolution. Ane Books India Pvt. Ltd
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16. Selzer 2008. Applied Bioinformatics: An Introduction. Ane Books India Pvt. Ltd
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18. Veer Bala Rastogi 2008. Fundamentals of Molecular Biology. Ane Books Pvt. Ltd.
19. Venkatarajan S. Mathura and Pandjassarame Kangueane 2009. Bioinformatics- a concept based introduction. Springer-Verlag, Berlin Heidelberg, Germany.

WEB RESOURCES

- www.fgcu.edu/support/office2000
- www.openoffice.org Open office official website
- www.microsoft.com/office MS Office website
- www.lgta.org Office online lessons
- www.learntheneth.com Web Primer
- www.computer.org/history/timeline
- www.computerhistory.org
- http://computer.howstuffworks.com
- http://vmoc.museophile.org Computer history
- www.keralaitmission.org Kerala Govt. IT Dept.
- www.studentworkzone.com/question.php?ID=139

Course Outcome

- The students will develop an understanding on the molecular mechanism of life
- The students will develop skills and expertise in utilizing the tools of information technology in solving problems in Biological Science

Model Question Paper

19UBO642: Molecular Biology & Informatics

Time: 3 Hrs. Max. Marks: 80

PART A (Answer all, 1 mark each)

1. Define photoreactivation?
2. What is genetic code?
3. Distinguish between codon and anticodon.
4. What isLINUX?
5. What is meant by encryption and cryptography?
6. Mention about GENBANK
7. What are oncogenes?
8. Explain central Dogma reverse**.**
9. What is the use of RasMol?
10. What is a template?

(10x1=10 Marks)

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

11. What is hn RNA?.
12. Enumerate the function of m RNA.
13. What is cap? Write the functions of cap in m RNA**.**
14. Point out the warning signs of internet addiction.
15. What is meant by information overload?
16. What is a Phylogram?
17. What is molecular visualization?
18. What is molecular phylogeny?
19. What is a cap?Write the function of cap in mRNA?
20. What is the role of ligase enzyme in DNA replication?
21. Mention about NCBI.
22. What is splicing?

(8x2=16 Marks)

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

23. Give an account of the genetic code.
24. What is Chargaff's rule?
25. What is meant by free software?What are the different types?
26. What are search engines?
27. Describe about different types of Sequence alignments and their tools.
28. Explain the clover leaf model of t-RNA.
29. Describe photoreactivation
30. Comment on Messelson and Stahl experiment
31. Explain RNA interference

(6x4=24 Marks)

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

32. Explain the structure properties and functions of different types of RNA.
33. Describe the mechanism of DNA replication with illustration.
34. Define Bioinformatics. Describe briefly about the aims, uses and advantages of bioinformatics.
35. What is a database? Describe about different types of biological data bases.

(2x15=30 Marks)

SEMESTER VI

CROP IMPROVEMENT AND RESEARCH METHODOLOGY	
19UBO643	**Number of Credits : 4**

Distribution of Hours	Theory	Practical
Horticulture	35 Hrs	20 Hrs
Plant Breeding	20 Hrs	16 Hrs
Research Methodology	17Hrs	00 Hrs
TOTAL	**72 Hrs**	**36 Hrs**

Aim and Objectives of the Course

- To understand the basic tools and techniques in horticulture
- To inspire the students in doing horticulture practices
- To make the students to have an understanding on the basic concepts and techniques in breeding crop plants
- To develop skills and expertise in various plant breeding programmes
- To make the students familiar with the protocols for doing scientific research
- To inspire the students to do scientific research

MODULE I HORTICULTURE **35 hrs**

1. Introduction - Divisions of horticulture- Importance and scope of horticulture.

2. Principles of garden making- types of pots and containers- Potting mixture and potting media – soil, sand, cocopeat, sphagnum moss, vermiculite- Soil types, Soil preparation- Irrigation methods

3. Propagation methods- Conventional (Cuttings, True Seeds); Non-Conventional (Layering – Air layering, Ground layering (Tip, Trench and Compound), Budding – T- budding, Patch Budding, Grafting – Approach grafting, Bridge grafting, whip and tongue grafting), Micropropagation (brief account only).

4. Garden tools and implements- Lawn mower, nursery spade, secatures, pruning shears, budding knives, springlers, garden tiller, bush cutter, sprayers(knapsack and rotter)

5. Manures and fertilizers- organic manure, compost, vermicompost and biofertilizers- Azolla, VAM; Chemical fertilizers – NPK (direct and complex); Time and application of manures and fertilizers- Foliar sprays

6. Components of Garden- Landscaping principles; Lawns, Trees, shrubs and shrubberies, climbers and creepers, Flower beds and borders, and

ornamental hedges, Carpet beds, topiary, trophy, rockery, Conservatory or green houses

7.Indoor garden, Roof garden (Brief account only)

8. Bonsai

9. Flower Arrangement- Containers and requirements for flower arrangements- Free style, Shallow and Mass arrangement- Japanese-Ikebana. Dry flower arrangement, Indian styles of flower arrangement.

Practical **20 hrs**

1.Familiarise the garden tools and implements mentioned in the syllabus

2.Students must be trained to do Cutting/ layering/ grafting/ budding.

3.Visit to a Botanical garden under the guidance of the teacher is recommended

MODULE II PLANT BREEDING **20 hrs**

1. Introduction, objectives in plant breeding- - Important national and international plant breeding institutes

2. Plant introduction. Agencies of plant introduction in India, Procedure of introduction - Acclimatization - Achievements.

3. Selection- mass selection, pure line selection and clonal selection. Genetic basis of selection
and methods.

4.Hybridization: Procedure of hybridisation, inter generic, inter specific, inter varietal hybridisation with examples. Composite and synthetic varieties. Production of cybrids.

5.Heterosis and inbreeding depression- genetic basis; male sterility

6. Mutation breeding – method – achievements in India.

7. Polyploidy breeding

8. Breeding techniques and achievements with reference to the following crops in India: a. Rice b. Rubber c.Pepper d. Coconut

Practical **16 hrs**

1.Techniques of emasculation and hybridization of any bisexual flower.

MODULE III RESEARCH METHODOLOGY **17 hrs**

1. Introduction; Search and Research; Need for research; Stages of Research– Definition of problem, execution of the problem, interpretation of results

2. Characteristics of Research, Types of research-Qualitative & quantitative.

3. Experimental design, components of experimental designs-Randomized blocks, completely randomized designs.

4. Preparation of a project report : Data analysis and consolidation of photographs, illustrations, tables and graphs, Title, introduction, review

of literature, materials and methods, results, discussions, summary, references, acknowledgements; Bibliography – Method of citing and arrangement of references.

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13. Singh B.D. 2015. Plant Breeding. Kalyani Publishers.

Course Outcome

- The students will develop an understanding on the tools and techniques in horticulture
- The students will develop skills and expertise in experimenting horticulture
- The students will get an understanding on the art and science of plant breeding
- The students will be inspired by the achievements in crop breeding
- The students will have a thorough understanding on the concepts, tools and methodology in doing scientific research

Model Question Paper

19UBO643: Crop Improvement & Research Methodology

Time: 3 Hrs. Max. Marks: 80

PART A (Answer all, 1 mark each)

1. What is the word meaning of research?
2. What is fundamental research?
3. What is occidental style of flower arrangement?
4. What is arboriculture?
5. What are the main purposes of plant introduction?
6. Define inbreeding depression.
7. What are the merits of mass selection?
8. What are mutagens?
9. What is Pomology?
10. What is an abstract?

(10x1=10 Marks)

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

11. Differentiate between Qualitative and Quantitative research.
12. Write about Policy research.
13. What is the significance of exploratory research?
14. What are the merits of fiber pots?
15. What are the main achievements in Rice breeding in India?
16. Differentiate between composite and synthetic varities.
17. Write about intergeneric hybridization.
18. What is a biofertilizer? Write an example.
19. What is acclimatization?
20. What is Review of literature?
21. Write about Vermicompost.
22. What is Potting mixture?

(8x2= 16 Marks)

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

23. What are the main objectives of research?
24. Explain the Ikebana style of flower arrangement.
25. Which are the main plant Introduction agencies in India?
26. What is polyploidy Breeding?
27. Give an account on Bonsai.
28. What is Bibliography?
29. What is sphagnum moss? Mention its uses.
30. What is T- budding?
31. Write about Clonal selection.

(6x4=24 Marks)

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

32. Write an essay on different styles of flower arrangement?
33. What are the objectives of Plant Breeding?
34. How will you write a Project Report? Mention the different stages of a project.
35. Describe about different divisions of horticulture.

(2x15=30 Marks)

SEMESTER-VI
ELECTIVE COURSE

BIOTECHNOLOGY AND NANO BIOTECHNOLOGY	
19UBO661	**Number of Credits : 2**

Number of contact hours : Lecture: 54 hrs

Aim and Objectives of the Course

- To have an understanding on the impact of biotechnology in improving the standard of living of human society
- To inspire the students in deciphering the tools and techniques in Biotechnology
- To motivate the students for exploring the avenues in Biotechnology
- To expose the students to various sub-disciplines of Biotechnology
- To familiarise the students different sophisticated technologies in Biotechnology

MODULE- I **12 hrs**

1. Introduction – History- major achievements-Biotechnology in India.

2. Plant Tissue culture – Totipotency- definition and importance – dedifferentiation and redifferentiation. Cytodifferentiation.

3. Culture media, composition, preparation and sterilization.

4. Callus and suspension culture, meristem culture- Somaclonal variation- Somatic embryogenesis and organogenesis. Synthetic seeds – anther culture and production of haploids – protoplast culture – somatic hybrids – cybrids.

MODULE- II **12 hrs**

1. Recombinant DNA technology: General account of cloning vehicles – plasmid, bacteriophages, cosmids and phagemids. Cutting and joining of DNA molecules – restriction endonucleases, ligases – Gene library.

2. Brief accont of gene transfer techniques – Direct DNA uptake by protoplast –vector method Agrobacterium mediated, physical method-electroporation- shot gun method – microinjection.

MODULE III **12 hrs**

1. Methods in Biotechnology.

a. Isolation and purification of DNA from plant cells.

b. Agarose gel electrophoresis

c. PCR, RFLP, DNA sequencing-Sanger's method, Southern blotting, ELISA.

2. Application of biotechnology in

a. Medicine – edible vaccines from plants, gene therapy.

b. Agriculture – nif genes, GMO foods.

c. Industry and environment (brief account only)

3. Biosafety and ethical issues, Intellectual Property Rights (IPR)

MODULE IV **10 hrs**

1. Microbes in biotechnology.

2. Microbial culture methods of culturing, media and composition (LB and PDA)

3. Application of recombinant microbes.

4. Industrial microbiology: Production of alcohol, vinegar, bread, dairy products &single cell protein. (brief account only)

MODULE V **08 hrs**

1. Introduction-background and definition of nanotechnology

2. Nanosystems in nature

3. Nanoscaled biomolecules (nucleic acids and proteins)

4. Technologies for visualization of biological structures at the nano scale-atomic force microscope, SEM & TEM

5. Nanoparticles- Quantum dots, Paramagnetic iron Oxide Crystals, Dendrimers, Carbon nanotubes.

6. Application of nanobiotechnology in life sciences;

Field Study

• Visit to a well equipped biotechnology laboratoryto familiar with the use of equipments and glasswares.Petri dishes, conical flasks, culture tubes, Pasteur pipettes, forceps, scalpels, hot air oven, autoclave, platform shaker, pH meter and laminar air flow system.

• Preparation of media, sterilization, inoculation and callus induction (demonstration only).

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Course Outcome

- The students will develop an understanding on the concepts, tools and techniques in Biotechnology
- The students will develop skills and expertise in experimenting Biology
- The students will be motivated for continuing their studies in the field of Biotechnology

Model Question Paper

19UBO661: Biotechnology & Nanotechnology

Time: 3 Hrs. Max. Marks: 80

PART A (Answer all, 1 mark each)

1. What is callus?
2. What are cybrids?
3. Who is the father of tissue culture?
4. Define suspension culture.
5. What is meant by a vector?
6. What is ligase?
7. What are restriction endonucleases?
8. Mention the size of a nanoparticle.
9. Who is the father of nanobiotechnology?
10. What is MRFM?

(10x1=10 Marks)

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

11. What is cytodifferentiation?
12. What are GMO foods?
13. What is gene therapy?
14. Define totipotency.
15. What is polymerase chain reaction?
16. What is gene gun?
17. What is a selectable marker?
18. What is an expression vector?
19. What isRFLP?
20. Explain the physical properties of nanoparticles.
21. What are dendrimers?
22. What are carbon nanotubes?

(8x2=16 Marks)

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

23. What is somatic embryogenesis? Mention its applications.
24. Briefly describe the method of haploid plant production through tissue culture.
25. Explain somaclonal variation.
26. Describe the composition of tissue culture medium.
27. What is polymerase chain reaction? Describe its important steps.
28. Describe the method of southern blotting.
29. What is gen library? Comment on its uses.
30. Explain the commercial classification of nanoparticles.
31. Explain the principle of atomic force microscopy.

(6x4=24 Marks)

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

32. Write an essay on applications of plant tissue culture.
33. Discuss the applications recombinant DNA technology.
34. Describe the various transformation techniques used in prokaryotes and eukaryotes.
35. Discuss the biological applications of nanoparticles.

(2x15=30 Marks)