

**DEVA MATHA COLLEGE KURAVILANGAD**

**SEMESTER 1**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010101 ANIMAL DIVERSITY: PHYLOGENETIC AND TAXONOMIC APPROACHES**

**Time: 3 Hours**

**Max. Marks: 170**

1. Comment on the phylogeny and adaptive radiation of Phylum Mollusca. (CO1) -10 MARKS
2. Write an essay on the phylogeny and adaptive radiation in reptiles. (CO1) -10 MARKS
3. Comment on the phylogeny of Sipunculus and Echiura. (CO1) -10 MARKS
4. Discuss the phylogeny of mammalian orders (CO1) -10 MARK
5. Comment on computer aided keys. (CO2) - 5 MARKS
6. Describe the modern trends in taxonomy(CO2) - 10 MARKS
7. Explain the different kinds and analysis of variation in Taxonomy. (CO2) - 20 MARKS
8. Write short notes on Integrated Operational Taxonomic Unit and Molecular Operational Taxonomic Unit. (CO3) - 10 MARKS
9. What are taxonomic publications? Explain any 5 types of taxonomic publications.(CO3) - 10 MARKS
10. Comment on the diversity, distribution and status of modern amphibians. (CO4) - 10 MARKS
11. Comment on affinities of vertebrates with cephalochordates.(CO4) - 5 MARKS
12. Write notes on paedomorphosis in vertebrate phylogeny. (CO4) - 10 MARKS
13. Discuss the structural adaptations of fishes (CO5) - 10 MARKS
14. Comment on the adaptive radiation in molluscs and Annelids.(CO5) - 10 MARKS
15. Comment on the phylogeny and adaptive radiation of Phylum Mollusca. (CO5) - 10 MARKS
16. Write an essay on the phylogeny and adaptive radiation in reptiles. (CO5) - 20 MARKS



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**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010102 EVOLUTIONARY BIOLOGY AND ETHOLOGY**

**Time: 3 Hours**

**Max. Marks: 160**

1. Write the role of nucleotide sequence analysis in Understanding phylogenetic relationships. (CO1) -10 MARKS
2. Write an essay on Co-evolution. (CO1) -10 MARKS
3. Comment on the phylogeny of Sipunculus and Echiura. (CO1) -10 MARKS
4. Discuss the phylogeny of mammalian orders (CO1) -10 MARKS
5. Comment on computer aided keys. (CO2)-10 MARKS
6. Describe the modern trends in taxonomy(CO2)-10 MARKS
7. Explain the different kinds and analysis of variation in Taxonomy. (CO2)-10 MARKS
8. Write short notes on Integrated Operational Taxonomic Unit and Molecular Operational Taxonomic Unit. (CO3)-10 MARKS
9. What are taxonomic publications? Explain any 5 types of taxonomic publications.(CO3)-10 MARKS
10. Comment on the diversity, distribution and status of modern amphibians. (CO4)-10 MARKS
11. Comment on affinities of vertebrates with cephalochordates.(CO4)-10 MARKS
12. Write notes on paedomorphosis in vertebrate phylogeny. (CO4)-10 MARKS
13. Discuss the structural adaptations of fishes (CO5)-10 MARKS
14. Comment on the adaptive radiation in molluscs and Annelids.(CO5)-10 MARKS
15. Comment on the phylogeny and adaptive radiation of Phylum Mollusca. (CO5)-10 MARKS
16. Write an essay on the phylogeny and adaptive radiation in reptiles. (CO5)-10 MARKS



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**ZL010103 BIOCHEMISTRY**

**Time: 3 Hours**

**Max. Marks: 240**

1. Give the importance of lipids in terms of structure and role. (CO1) - marks 10
2. Describe the regular repeating structure of protein. (CO1) - marks 10
3. Bring out the biological role of nucleotides and nucleic acids. (CO1) - marks 10
4. Describe the structure, classification and properties of amino acids. (CO1) - marks 20
5. Explain the relation between structure and chemical properties of aminoacids. (CO2) - marks 10
6. Discuss various structural polysaccharides and their role. (CO2) - marks 10
7. Explain the classification, nomenclature and biological importance of monosaccharides. (CO2) - marks 10
8. Write notes on key enzymes and enzyme engineering. (CO3) - marks 10
9. Describe the structure, significance and role of isoenzymes with suitable examples. (CO3) - marks 20
10. Write an essay about kinetics of enzyme inhibition. (CO4) - marks 20
11. Explain the regulation and significance of citric acid cycle. (CO4) - marks 10
12. Explain briefly catabolism of purines. (CO4) - marks 10
13. Write an essay about glycogen metabolism and its regulation? (CO4) - marks 20
14. Explain the role of Insulin and Glucagon on carbohydrate metabolism (CO5) - marks 20
15. Galactose is highly toxic if the transferase is missing. Explain.(CO5) - marks 10
16. Inborn errors of protein metabolism. (CO5) - marks 20
17. Give an account on disorders of lipid metabolism. (CO5) - marks 20



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**ZL010104 BIOSTATISTICS AND RESEARCH METHODOLOGY**

**Time: 3 Hours**

**Max. Marks: 165**

1. What is INFLIBNET? (CO1)- MARKS 5
2. Describe the relationship between mean, median and mode.(CO1)- MARKS 10
3. Comment on the significance of scientific temper.(CO1)- MARKS 5
4. Give an account on plagiarism.(CO1)- MARKS 5
5. Marks obtained by different students in a class are given below. Find Mean deviation and Coefficient of Mean deviation. (CO2)- MARKS 10

Marks	12	16	17	18	22	24	27	28	30
No. of students	6	8	3	7	5	10	9	11	4

6. Obtain the rank correlation coefficient between the variables X and Y from the following pairs of observed variables. (CO2)- MARKS 10

X	50	55	65	50	55	60	50	65	70	75
Y	110	110	115	125	140	115	130	120	115	160

7. Making use of data summarized below, calculate the correlation coefficient and comment on the nature of correlation. (CO2)- MARKS 20

Case	A	B	C	D	E	F	G	H
X	10	6	9	10	12	13	11	9
Y	9	4	6	9	11	13	8	4

8. The following data shows the number of poultry in 90 houses in a village. Calculate Mean deviation and Standard deviation. (CO3)- MARKS 20

Poultry	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69
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No. of houses	6	14	12	10	10	9	9	10	5	4	1
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9. What is the difference between Kruskal Wallis test and Mann Whitney test? (CO3)- MARKS 10

10. Calculate mode for the following data (CO3)- MARKS 10

Marks	10	15	20	25	30	35	40
Frequency	8	12	36	35	28	18	9

11. How to prepare research papers for seminars and conferences (CO4)- MARKS 10

12. Explain in detail the steps in development of research plan. How is it different from a research proposal. (CO4)- MARKS 10

13. Explain the basic concepts of research. Mention the motivation for research. (CO4)- MARKS 10

14. Describe in detail the importance of research designs. Mention the basic principles and features of a good research design. (CO5)- MARKS 10

15. Describe the development of a research plan in science projects. (CO5)- MARKS 10

16. How is mathematical modelling useful for drug discovery? (CO5)- MARKS 10



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**ZL010105 Animal Diversity: Evolutionary, Ethological and Biochemical methods & Approaches.**

**Time: 4 Hours**

**Max. Marks: 100**

1. Identify the given specimen (5 Nos) giving the scientific names indication at least five taxa upto the phylum. (CO1) **-10 MARKS**
2. Identify the 2 larval forms given. Comment on its phylogenetic/ morphological/ ecological/ pathological significance.(CO1) **-10 MARKS**
3. Prepare a taxonomic dichotomous key up to the family level using a minimum of two specimens provided. (CO2) **-10 MARKS**
4. Prepare a taxonomic dichotomous key up to the family level with illustrations of two specimens provided. (CO2) **-10 MARKS**
5. In a study of human blood groups in Kerala, it was found that among a population of 600 individuals, 430 were Rh<sup>+</sup>n and 170 were Rh<sup>-</sup>. Assuming that this trait (i.e., being Rh<sup>+</sup>) is controlled by a dominant allele (D),
  - a) Calculate the allele frequencies of D and d
  - b) How many of the Rh<sup>+</sup> individuals would be expected to be heterozygous.(CO3) **-10 MARKS**
6. In mice, there exists a single gene that controls coat thickness. Allele C which is dominant, confirms a thick coat while allele c a thin coat. In a certain population of 880 mice, 62 have a thin coat.
  - a. What are the allelic frequencies
  - b. How many of the mice are homozygous dominant for coat thickness.(CO3) **-10 MARKS**
7. Study behavioral pattern of any organism and prepare a report (CO4) **-10 MARKS**
8. Study activity pattern of any two organism and prepare a report (CO4) **-10 MARKS**
9. Setup an experimental system and assay the activity of the enzyme. ( Acid phosphatase/ alkaline phosphatase) (CO5) **-10 MARKS**
10. Estimate the concentration of glucose in the given unknown sample. (CO5) **-10 MARKS**
11. Marks obtained by different students in a class are given below. Find Mean.(CO6) **-10 MARKS**

Marks	12	16	17	18	22	24	27	28	30
No. of	6	8	3	7	5	10	9	11	4



students										
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12. The following data shows the number of poultry in 90 houses in a village. Calculate Standard deviation. (CO6) **-10 MARKS**

Poultry	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69
No. of houses	6	14	12	10	10	9	9	10	5	4	1



**DEVA MATHA COLLEGE KURAVILANGAD**

**SEMESTER 2**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010201 FIELD ECOLOGY**

**Time: 3 Hours**

**Max. Marks: 120**

1. State the Gaia Hypothesis(CO1) **-5 MARKS**
2. Explain energy flow with reference to Laws of Thermodynamics.(CO1) **-5 MARKS**
3. Theory of Island Biogeography. (CO1) **-10 MARKS**
4. What is green technology?(CO2) **-5 MARKS**
5. Comment on the importance of remote sensing in ecology.(CO2) **-15 MARKS**
6. Describe global warming and its impacts on the world. Discuss the various efforts and discussions being conducted to overcome this. (CO3) **-15 MARKS**
7. Explain ecological energetics based on the biomass and productivity.(CO3) **-5 MARKS**
8. Discuss the causes and effects of global warming. How much do human made greenhouse gases contribute to global warming and what measures need to be taken to control global warming? (CO4) **-10 MARKS**
9. Write notes on the different methods used in the disposal of radioactive waste. (CO4) **-10 MARKS**
10. Explain different Fresh water sources and its conservation measures.(CO5) **-10 MARKS**
11. Write on the principles of conservation.(CO5) **-10 MARKS**
12. Discuss any four population sampling methods.(CO6) **-10 MARKS**
13. Brief on the various terrestrial biomes.(CO6) **-10 MARKS**





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**SEMESTER 2**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010202 DEVELOPMENTAL BIOLOGY**

**Time: 3 Hours**

**Max. Marks: 100**

1. Explain Hox code hypothesis (CO1) **-5 MARKS**
2. Analyze the genetic aspects of axis specification in drosophila. (CO1) **-15 MARKS**
3. Explain how the three axes of tetrapod limb are formed. (CO2) **-10 MARKS**
4. Describe post translational control of gene expression.(CO2) **-10 MARK**
5. Write notes on In-Vitro fertilization and embryo transfer.(CO3) **-10 MARKS**
6. Write notes on embryonic stem cells and its application.(CO3) **-10 MARKS**
7. Briefly describe the localization and role of the 'Dorsal signal' in Amphibians.(CO4) **-10 MARKS**
8. Explain different paracrine factors in signal transduction pathway.(CO4) **-10 MARKS**
9. Describe the mechanism of lens regeneration in amphibians.(CO5) **-10 MARKS**
10. Discuss role of different genes in anterior-posterior patterning in Drosophila. (CO5) **-10 MARKS**



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**SEMESTER 2**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010203 GENETICS AND BIOINFORMATICS**

**Time: 3 Hours**

**Max. Marks: 100**

1. Write an essay on molecular mechanism of eukaryotic replication.(CO1) **-10 MARKS**
2. Explain incomplete dominance and co-dominance.(CO1) **-10 MARKS**
3. Write an account on DNA repair mechanisms.(CO2) **-10 MARKS**
4. Write an account on the XX and XY mechanism of sex determination (CO2) **-10 MARKS**
5. Write an account on DNA repair mechanisms. (CO3) **-10 MARKS**
6. Explain gene mutation and methods for the detection of mutagens. (CO3) **-10 MARKS**
7. Write an account on the role of recombinant DNA technology for the identification of human genes and diagnosis of human diseases. (CO4) **-10 MARKS**
8. What do you mean by epistasis? What are the different types of epistasis? (CO4) **-10 MARKS**
9. Write an account of various mapping techniques adopted for gene mapping.(CO5) **-10 MARKS**
10. Briefly describe the process of drug designing (CO5) **-10 MARKS**



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**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010204 MICROBIOLOGY AND BIOTECHNOLOGY**

**Time: 3 Hours**

**Max. Marks: 120**

1. Describe the ultra-structure of bacterium with suitable illustrations.(CO1) **-10 MARKS**
2. Describe Microbial population on the Human Body. (CO1) **-10 MARKS**
3. Discuss the factors affecting microbial growth.(CO2) **-10 MARKS**
4. Give an account of the classification of virus.(CO2) **-10 MARKS**
5. What are restriction enzymes and their role in rDNA technology?(CO3) **-10 MARKS**
6. What are the different steps involved in PCR reaction?(CO3) **-10 MARKS**
7. Explain the principle and methodology of DNA sequencing.(CO4) **-10 MARKS**
8. Explain the role of vectors in recombinant DNA technology. (CO4) **-10 MARKS**
9. Explain Stem cell culture.(CO5) **-10 MARKS**
10. Enzyme engineering and applications.(CO5) **-10 MARKS**
11. Biological weapons and bioterrorism.(CO6) **-10 MARKS**
12. Explain types of Patents and Ethics in Post Genomic Era.(CO6) **-10 MARKS**



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**SEMESTER 2**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010205 Diversity of life: Ecological, embryological, hereditary and microbial methods and approaches.**

**Time: 4 Hours**

**Max. Marks: 100**

1. Estimate pH of the two samples provided.(CO1) **-10 MARKS**
2. Estimate nitrate content of the given sample.(CO1) **-10 MARKS**
3. In poultry, the gene for rose comb ( R ) and pea comb (p) together produce walnut comb. The alternative alleles of both in a homozygous condition produces a single comb. Determine the phenotypes and proportions expected from the following crosses.
  - a.  $Rrpp \times rpp$
  - b.  $RrPp \times Rrpp$  **(CO2) -10 MARKS**
4. In corn, purple kernels are dominant over yellow kernels and full kernels are dominant over shrunken kernels. A corn plant having purple and full kernels is crossed with a plant having yellow and shrunken kernels, and the following progeny are obtained.

Purple, full- 112

Purple, shrunken- 103

Yellow, full- 91

Yellow, shrunken- 94

What are the most likely genotypes of the parents and progeny? **(CO2) -10 MARKS**
5. Download the protein sequence from NCBI and comment on its salient features. Take a print out on FASTA format. **(CO3) -10 MARKS**
6. Download the nucleotide sequence and BLAST it against the database. Take the printout and interpret the result. **(CO3) -10 MARKS**



7. Prepare a temporary whole mount of live chick embryo and stain it using a vital dye.  
Determine the approximate age of the chick embryo, sketch and label.(CO4) -10 MARKS
8. Make window preparation on the hen's egg using cover slip method.(CO4) -10 MARKS
9. Demonstrate the culturing of microorganism by streak plate technique(CO5) -10 MARKS
10. Enumerate the bacterial cells in the given sample using haemocytometer(CO5) -10 MARKS



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**SEMESTER 3**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010301 Animal Physiology**

**Time: 3 Hours**

**Max. Marks: 100**

1. Describe the physiology of digestion in Ruminants. Mention its significance.(CO1) **-10 MARKS**
2. Give an account on the comparative anatomy of heart structure in vertebrates. (CO1) **-10 MARKS**
3. Explain Structure of invertebrate and vertebrate eye. (CO2) **-10 MARKS**
4. Explain Energetics of muscle contraction. (CO2) **-10 MARKS**
5. Structure and functioning of respiratory pigments.(CO3) **-10 MARKS**
6. Reproductive cycles of mammals and their hormonal control.(CO3) **-10 MARKS**
7. Give a brief account on bioamines and their physiological effects.(CO4) **-10 MARKS**
8. Explain the stages of ovum and follicle development and add note on its hormonal control.(CO4) **-10 MARKS**
9. Osmoregulation in freshwater animals.(CO5) **-10 MARKS**
10. Write briefly the temperature compensation mechanisms in poikilotherms(CO5) **-10 MARKS**



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**SEMESTER 3**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010302 Cell and Molecular Biology**

**Time: 3 Hours**

**Max. Marks: 100**

1. RNA processing in prokaryotes and eukaryotes. (CO1) **-10 MARKS**
2. Transcription in eukaryotes. (CO1) **-10 MARKS**
3. Explain the mechanism of action of Insulin and signalling by an RTK (CO2) **-10 MARKS**
4. Describe the different apoptotic pathways and give a note on its significance (CO2) **-10 MARKS**
5. New strategies for combating cancer. (CO3) **-10 MARKS**
6. Write on the cell fusion experiments that led to the discovery of the factors controlling cell cycle.(CO3) **-10 MARKS**
7. Elaborate on the main events characteristic to each phase in cell cycle with emphasis on the change in amount of DNA (CO4) **-10 MARKS**
8. Basic properties, types, causes and genetics of cancer.(CO4) **-10 MARKS**
9. G-protein coupled receptors.(CO5) **-5 MARKS**
10. Control of cell division and cell growth.(CO5) **-15 MARKS**



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**SEMESTER 3**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010303 Biophysics, Instrumentation and Biological Techniques**

**Time: 3 Hours**

**Max. Marks: 120**

1. Explain electron transport chain and oxidative phosphorylation.(CO1) **-10 MARKS**
2. Describe the light and dark reactions of photosynthesis(CO1) **-10 MARKS**
3. What is the principle of chromatography? Discuss different chromatographic techniques highlighting their applications in biology. (CO2) **-10 MARKS**
4. Explain different types of electron microscopy. Briefly describe the methods of tissue preparation(CO2) **-10 MARKS**
5. Discuss in detail about the working of Gel permeation chromatography and High Performance Liquid Chromatography.(CO3) **-10 MARKS**
6. Write an essay on principle, instrumentation and applications of Mass spectroscopy.(CO3) **-10 MARKS**
7. Differentiate open, closed and isolated thermodynamics systems with suitable example (CO4) **-5 MARKS**
8. Discuss Gibbs-Donnan membrane equilibrium and its significant. (CO4) **-5 MARKS**
9. Comment on active transport with examples.(CO4) **-10 MARKS**
10. Write the uses of a) multifunctional materials, b) Electroactive polymer. (CO5) **-5 MARKS**
11. What is nanotechnology? Explain its role in the field of healthcare and environmental management (CO5) **-5 MARKS**
12. Explain the biological effects of radiations (CO5) **-10 MARKS**





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**SEMESTER 3**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010304 Immunology**

**Time: 3 Hours**

**Max. Marks: 80**

1. Explain the structural and functional aspects of different classes of antibodies(CO1) **-10 MARKS**
2. Explain the regulatory mechanisms preventing the assembly of different convertases in the complement system and their significance.(CO1) **-10 MARKS**
3. Explain the properties and therapeutic uses of cytokines.(CO2) **-10 MARK**
4. What is autoimmunity? Describe different types of autoimmune diseases.(CO2) **-10 MARK**
5. Explain why some organs are more amenable to clinical transplantation than others?.(CO3) **-10 MARK**
6. Describe Whole organism vaccines..(CO3) **-10 MARK**
7. Types of hypersensitivity(CO4) **-10 MARK**
8. MHC and disease susceptibility.(CO4) **-10 MARK**



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SEMESTER 3

ATTAINMENT MEASUREMENT EXAMINATION

**ZL010305 Molecular, Physiological and Immunological Methods and Approaches in Biosciences**

**Time: 4 Hours**

**Max. Marks: 100**

1. Make a neat preparation of human blood smear and find out the differential count of WBC (CO1) -10 MARKS
2. Make a neat squash preparation of grasshopper testis. Identify 3 stage, sketch and label.(CO1) -10 MARKS
3. Comment on the principle and use of the instrument - Kymograph (CO2) -10 MARKS
4. Demonstrate sectioning and spreading of the given tissue using microtome (CO2) -10 MARKS
5. Determine the activity of salivary amylase at different pH. Prepare a graph. (CO3) -10 MARKS
6. Determine the activity of salivary amylase at different temperature. Prepare a graph.(CO3) -10 MARKS
7. Demonstrate the effect of voltage on the latent period of muscle contraction using Physio Ex 9 and comment on the result (CO4) -10 MARKS
8. Demonstrate the effect of increase in stimulus on whole muscle contraction using Physio Ex 9. Complete the post test and save the result as pdf. (CO4) -10 MARKS
9. Identify and comment on the principle and use of the given test- Rocket Immunoelectrophoresis (CO5) -10 MARKS
10. Determine the blood group and Rh antigen and comment on its immunological aspects (CO5) -10 MARKS



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**SEMESTER 4**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL010401 Project**

**Time: 1 Hours**

**Max. Marks: 100**

1. Explain the methodology of the project (CO1) **-10 MARKS**
2. How did you collect the data (CO1) **-10 MARKS**
3. What are the scientific techniques adopted for the project? (CO2) **-20 MARKS**
4. What is the relevance of the topic? (CO3) **-20 MARKS**
5. Does your project creates social awareness? (CO4) **-20 MARKS**
6. Thesis submission(CO5) **-40 MARKS**



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SEMESTER 4

ATTAINMENT MEASUREMENT EXAMINATION

**ZL010402 Course Viva**

**Time: 1 Hours**

**Max. Marks: 100**

1. What is Taxonomy? (CO1) -5 MARKS
2. What is species?(CO1) -5 MARKS
3. What you mean by ecological footprint?(CO1) -5 MARKS
4. Differentiate between cladogram and phylogenetic trees.(CO1) -5 MARKS
5. What is Ramachandran plot(CO1) -5 MARKS
6. How to create a food web(CO2) -5 MARKS
7. How does paramecium feeds?(CO2) -5 MARKS
8. How can we calculate the mitotic index of onion root tips(CO2) -5 MARKS
9. How can we distinguish between male and female Drosophila.(CO2) -5 MARKS
10. What are the different culturing techniques used in microbiology.(CO2) -5 MARKS
11. What are the different conservation strategies. (CO3) -5 MARKS
12. Which are national parks in Kerala(CO3) -5 MARKS
13. Which are the bird sanctuaries in kerala(CO3) -5 MARKS
14. What is project tiger(CO3) -5 MARKS
15. What is EPA(CO3) -5 MARKS
16. Name endangered species(CO3) -5 MARKS
17. What is ISI(CO3) -5 MARKS
18. What is the significance of EIA(CO3) -5 MARKS
19. Scientific name of Nilgiri Tahr(CO3) -5 MARKS
20. Scientific name of Crow (CO3) -5 MARKS
21. What is a niche(CO4) -5 MARKS
22. What is a key stone species(CO4) -5 MARKS
23. Explain red queen hypothesis(CO4) -5 MARKS
24. What are the types of interactions(CO4) -5 MARKS



25. R and K selection(CO4) -5 MARKS
26. Explain social organization of honey bees(CO5) -5 MARKS
27. What is royal jelly(CO5) -5 MARKS
28. Which are the common species used for apiculture(CO5) -5 MARKS
29. What is cuniculture(CO5) -5 MARKS
30. What is gene therapy(CO5) -5 MARKS



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**SEMESTER 4**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL810401 Environmental Science: Concepts and Approaches**

**Time: 3 Hours**

**Max. Marks: 80**

1. Explain the effect of climate change on ecosystem and human welfare.(CO1) **-10 MARKS**
2. Biodiversity hotspots and their characteristics.(CO1) **-10 MARKS**
3. Explain the role of biocontrol programs in invasion management.(CO2) **-10 MARKS**
4. Explain Biocontrol programmes. (CO2) **-10 MARKS**
5. Strategies for biodiversity conservation.(CO3) **-10 MARKS**
6. Describe the role of modern zoos and aquaria in conservation.(CO3) **-10 MARKS**
7. Tools and techniques for biodiversity estimation.(CO4) **-10 MARKS**
8. Explain the effect of climate change on ecosystem and human welfare.(CO4) **-10 MARKS**



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**SEMESTER 4**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL810402 Environmental Pollution and Toxicology**

**Time: 3 Hours**

**Max. Marks: 100**

1. Comment on occupational toxicology-its causes, results and assessment of occupational hazards? (CO1) **-10 MARKS**
2. Write an essay on the local, regional and global aspects of air, water and soil pollution. (CO1) **-10 MARKS**
3. Describe the causes and consequences of thermal pollution.(CO2) **-10 MARKS**
4. Explain bio accumulation and bio magnification citing suitable examples.(CO2) **-10 MARKS**
5. Explain in detail, the advanced waste water treatment methods.(CO3) **-10 MARKS**
6. Explain the sources, classification and effects of air pollution. Add a note on air pollution monitoring methods.(CO3) **-10 MARKS**
7. Write a short note on the toxic chemicals in the environment, with the help of examples?(CO4) **-10 MARKS**
8. How radioactive decay and buildup contribute to atmospheric pollution?(CO4) **-10 MARKS**
9. Environmental Auditing and Standards.(CO5) **-10 MARKS**
10. Environmental concerns in traditional societies.(CO5) **-10 MARKS**



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**SEMESTER 4**

**ATTAINMENT MEASUREMENT EXAMINATION**

**ZL810403 Environmental Management and Development**

**Time: 3 Hours**

**Max. Marks: 100**

1. Write a short account for Gandhian environmentalism.(CO1) **-10 MARKS**
2. Briefly describe the tool box for Environmental Management.(CO1) **-10 MARKS**
3. Discuss the management of human settlements.(CO2) **-10 MARKS**
4. Discuss briefly about the common property resources and their management.(CO2) **-10 MARKS**
5. Briefly explain the environmental clearance process in India.(CO3) **-10 MARKS**
6. Explain the physical, social and economic environment management.(CO3) **-10 MARKS**
7. Give an account on environmental auditing and standards.(CO4) **-10 MARKS**
8. Define EIA. Explain the aim and principles of EIA.(CO4) **-10 MARKS**
9. Briefly describe the tool box for Environmental Management.(CO4) **-10 MARKS**
10. Give a brief account on ecological economics. (CO4) **-10 MARKS**





**DEVA MATHA COLLEGE KURAVILANGAD**

SEMESTER 4

ATTAINMENT MEASUREMENT EXAMINATION

**ZL810404 P Environmental science**

**Time: 4 Hours**

**Max. Marks: 80**

1. Estimate the amount of phosphate present in the soil sample provided. Comment on the relevance of this parameter. (CO1) **-10 MARKS**
2. Estimate the amount of copper present in the water sample provided. Comment on its toxic effect (CO1) **-10 MARKS**
3. Comment on the given instrument (simple/ handy/ high volume air samplers) (CO2) **-10 MARKS**
4. Comment on the monitoring procedure of the pollutant (sulphur dioxide/ ammonia) (CO2) **-10 MARKS**
5. Study the histo-pathological changes in any of the tissues (liver/ kidney) using ammonia (submit 5 stained permanent slides)(CO3) **-20 MARKS**
6. Submit field study report (CO4) **-20 MARKS**

