

D-1502**Sub. Code****35011****DISTANCE EDUCATION****M.Sc. (Zoology) DEGREE EXAMINATION, MAY 2019.****First Semester****ANIMAL DIVERSITY****(CBCS 2018–19 Academic Year onwards)****Time : Three hours****Maximum : 75 marks****PART A — (10 × 2 = 20 marks)****Answer ALL questions.****All questions carry equal marks.**

1. Biological species concept.
2. Bilateral symmetry.
3. Gemmule.
4. Scolex.
5. Megalopa larva.
6. Tube foot.
7. Placoid scale.
8. Pneumatic bone.
9. Kiwi.
10. Prototheria.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

All questions carry equal marks.

11. (a) Explain Molecular taxonomy.

Or

- (b) Write a brief note on *Entamoeba*.

12. (a) Enumerate parasitic adaptations in *Ascaris*.

Or

- (b) Describe the general characters of Polychaeta.

13. (a) Write a brief note on adaptive radiations in arthropods.

Or

- (b) Justify the statement “Cephalopod as an advanced mollusc”.

14. (a) Describe the structural adaptations of fishes.

Or

- (b) Write the classification of reptilia.

15. (a) Enumerate the general characters of Amphibia.

Or

- (b) Write a brief account on Aquatic mammals.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

All questions carry equal marks.

16. Write an essay on coelom in animals.
 17. Describe various types of canal system in sponges.
 18. Give an account of larval forms of crustaceae.
 19. Write an essay on Mesozoic reptiles.
 20. Explain adaptive radiation in mammals.
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D-1503**Sub. Code****35012****DISTANCE EDUCATION****M.Sc. (Zoology) DEGREE EXAMINATION, MAY 2019.****First Semester****BIOCHEMISTRY****(CBCS 2018-19 Academic Year onwards)****Time : Three hours****Maximum : 75 marks****PART A — (10 × 2 = 20 marks)****Answer ALL questions.**

1. Write a note on the purine and pyrimidine bases in DNA and RNA.
2. List the factors affecting enzyme activity.
3. What are recommended dietary allowances?
4. What is Gaucher's disease?
5. Explain the clinical significance of Iso-enzymes.
6. What is maple syrup urine disease?
7. What do you understand by hypervitaminosis?
8. Write a note on transamination.
9. What is hypervitaminosis?
10. What are the clinical features of gout?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) Write a note on HMP shunt.

Or

- (b) Write an account on glycogen storage diseases.

12. (a) What are the clinical presentations of diabetes?

Or

- (b) Write a note on urea cycle.

13. (a) Describe Niemann Pick's disease.

Or

- (b) Classify the enzymes – with a tabular column.

14. (a) Write the DNA-double helix and its structural features.

Or

- (b) Comment of fatty acid oxidation.

15. (a) List out the functioning steroids.

Or

- (b) Make a note on the structural aspects of di-saccharides.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write a detailed account on the primary, secondary and tertiary structure of proteins.

17. Describe the synthesis and degradation of purine ribonucleotides.
 18. Draw the glycolytic pathway and describe the salient features.
 19. Describe the mechanisms of enzyme action.
 20. Comment on the functions of pituitary and gonadal hormones.
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D-1504**Sub. Code****35013**

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, MAY 2019.

First Semester

CELL AND MOLECULAR BIOLOGY

(CBCS 2018–19 Academic Year onwards)

Time : Three hours

Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the following questions.

1. Microtubules.
2. Exonuclease.
3. Ligase.
4. Nuclear envelope.
5. Okazaki fragments.
6. Mitosis.
7. Ribosome.
8. Cajal bodies.
9. GPCR.
10. Cyclin dependent kinase.

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL the following questions.

11. (a) Explain the ultra structure of nucleus.
Or
(b) Illustrate the structure and functions of ribosome.
12. (a) Portray the structure of endoplasmic reticulum and explain its function.
Or
(b) How does allolactose induce an operon?
13. (a) Explain the mechanism of RNA splicing in eukaryotes.
Or
(b) Write a brief account on processing of mRNA.
14. (a) What are microfilaments? Add a note on microfilament-based structures.
Or
(b) Briefly explain the meiosis with clear depictions.
15. (a) Explain the labeling experiments and detection in autoradiography.
Or
(b) Describe fluorescent *in situ* somatic hybridization.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give a detailed account on biomembrane and its structural organization. Add a note on proposed models.
17. Explain in detail about nuclear receptors and its regulation.

18. Describe the DNA recombinant technology and its applications.
 19. Discuss in detail about the cell cycle.
 20. Write an elaborate account on protein synthesis.
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D-1505**Sub. Code****35021****DISTANCE EDUCATION****M.Sc. (Zoology) DEGREE EXAMINATION, MAY 2019.****Second Semester****DEVELOPMENTAL BIOLOGY AND EVOLUTION****(CBCS 2018–19 Academic Year onwards)****Time : Three hours****Maximum : 75 marks****PART A — (10 × 2 = 20 marks)****Answer ALL questions.****All questions carry equal marks.**

1. Deuterostomia.
2. Centrolecithal egg.
3. Spiral cleavage.
4. Fate map.
5. Neural plate.
6. Capacitation.
7. IVF.
8. Archaeopteryx.
9. Homoplastic.
10. Kin selection.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

All questions carry equal marks.

11. (a) Give an account on sperm maturation.

Or

- (b) Define: Oogenesis. Add note on oogenesis with neat diagram.

12. (a) Explain the factors affecting the cleavage.

Or

- (b) Describe the gastrulation of chick.

13. (a) Give account of development of neural crest with suitable example.

Or

- (b) Explain in detail of gene knock out and knock in; add note on its significance.

14. (a) Explain the types of foetal membrane of chick with neat diagram.

Or

- (b) Give account on anatomical and embryological evidence for evolution.

15. (a) What is adaptive radiation? Add note with example.

Or

- (b) Explain the gradual speciation with example.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

All questions carry equal marks.

16. Define fertilization. Enumerate the mechanism with suitable example.
 17. What is fate map? Explain the construction of fate map.
 18. Give detailed steps involving in IVF and add note on its limitations.
 19. Explain the steps involving the cryopreservation and its significance.
 20. Give detailed account on natural selection and its type with example.
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D-1506**Sub. Code****35022****DISTANCE EDUCATION****M.Sc. (Zoology) DEGREE EXAMINATION, MAY 2019.****Second Semester****GENETICS****(CBCS 2018–19 Academic Year onwards)****Time : Three hours****Maximum : 75 marks****PART A — (10 × 2 = 20 marks)****Answer ALL questions.****All questions carry equal marks.**

1. What are fraternal twins?
2. Explain how Down syndrome is caused.
3. A person of blood group A is injured and must be given a blood transfusion. The attending physician is provided with blood from all four groups: O, A, B and AB. Which should be accepted and which rejected, and why?
4. Describe test cross.
5. What is gene map? How is it formed?
6. What is pseudo dominance? How is it caused?
7. If 98 out of 200 individuals in a population express the recessive phenotype, what percent of the population are heterozygotes?

8. What is meant by outbreeding?
9. What do you mean by epistasis?
10. Define Lac operon.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

All questions carry equal marks.

11. (a) Discuss tetrad analysis in short.

Or

- (b) Explain Mendel's law of independent assortment with suitable example.
12. (a) Briefly explain 'Eugenics' and describe positive and negative eugenics.

Or

- (b) Explain Sex-linked inheritance in man with a suitable example.
13. (a) Describe and illustrate how (i) Deletions, (ii) Inversions and (iii) Reciprocal translocations arise in nature.

Or

- (b) A hypothetical population of 10,000 humans has 6840 individuals with the blood type AA, 2860 individuals with blood type AB and 300 individuals with the blood type BB. What is the frequency of each genotype and allele in this population? If the next generation contained 25,000 individuals, how many individuals would have blood type BB, assuming the population is in Hardy-Weinberg equilibrium?

14. (a) What do you mean by Dominant-Recessive Epistasis? Give an example.

Or

- (b) Explain how a barr body is formed. Add a note on its significance.
15. (a) Define the following terms:
- (i) operon
 - (ii) promoter
 - (iii) regulator
 - (iv) inducer
 - (v) repressor.

Or

- (b) What is the role of apoptosis in development?

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

All questions carry equal marks.

16. Give a detailed description of the processes involved in the regulation of gene expression in eukaryotes.
17. Define mutation and describe the various types of point mutations.
18. What is Hardy-Weinberg equilibrium? Discuss the factors influencing allele frequency or deviations from Hardy-Weinberg equilibrium.

19. Give different methods for detection of linkage map.
 20. What is Polygenic inheritance? Describe the inheritance of ABO blood groups including an example of the possible outcomes of a homozygous blood group A mother having a child with a blood group O father.
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D-1507**Sub. Code****35023****DISTANCE EDUCATION****M.Sc. (Zoology) DEGREE EXAMINATION, MAY 2019.****Second Semester****MICROBIOLOGY****(CBCS 2018–19 Academic Year onwards)****Time : Three hours****Maximum : 75 marks****PART A — (10 × 2 = 20 marks)****Answer ALL questions.****All questions carry equal marks.**

1. Conidiophore.
2. Rhizoids.
3. Positive sense RNA virus.
4. Critical point drying.
5. Negative staining.
6. Generation time.
7. S-layer.
8. *Botryococcus braunii*.
9. ITS regions.
10. Hepatitis B virus.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

All questions carry equal marks.

11. (a) Write a discussion on the spontaneous generation theory.

Or

- (b) Write an essay on the structural organization of lichens.

12. (a) Write about the principle and application of confocal microscopy.

Or

- (b) Write a brief essay on the types of growth media available for microbial growth.

13. (a) Distinguish the cell wall structures of gram positive and gram negative bacteria.

Or

- (b) Write a brief essay on the economic importance of algae.

14. (a) Describe the procedure for construction of a phylogenetic tree.

Or

- (b) Write a brief essay on the importance of *Entamoeba histolytica*.

15. (a) Write about the causal agent and symptomatology of tuberculosis disease.

Or

- (b) Write about the methods available for gene sequencing analysis.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

All questions carry equal marks.

16. Write a detailed essay on the system of fungal classification proposed by Alexopoulos.
17. Write an essay on the various staining techniques used for analysis and identification of microorganisms.
18. What are inclusion bodies? Write an essay on various inclusion bodies present in bacterial cell.
19. Write an elaborate essay on the general characteristics of macro and micro algae with a note on their economic implications.
20. Describe in detail about the procedure used for identification of bacteria using 16S rRNA gene sequencing.
