

31CT11



VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST

(Autonomous & Residential)

[Affiliated to Madurai Kamaraj University]

M.Sc. Zoology Degree (Semester) Examinations, November 2015

Part – III : Core Subject : First Semester : Paper – I

BIOCHEMISTRY

Under CBCS – Credit 4

Time: 3 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions :

(10 × 2 = 20)

1. What is invert sugar?
2. What do you mean by isoenzymes?
3. Comment on glycogenesis.
4. Define gluconeogenesis.
5. Mention the pyruvate family of aminoacids.
6. Listout the glutamate family of aminoacids.
7. Comment on prostaglandin.
8. What are ketone bodies?
9. Bring out the various classes of DNA.
10. Mention any two significance of RNA.

SECTION – B

Answer ALL Questions :

(5 × 5 = 25)

11. a) Explain briefly the various classes of Enzymes.

(OR)

- b) Describe briefly the properties of lipids.

12. a) Give a brief account on Glycolysis.

(OR)

- b) Write a brief account on the HMP pathway.

13. a) Write a notes on the transamination aminoacids.

(OR)

- b) Explain briefly the metabolism of pyruvate family of aminoacids.

14. a) Explain briefly the metabolism of cholesterol.

(OR)

- b) Give a brief account on the metabolism of phospholipids.

15. a) Analyse briefly the biosynthesis of pyrimidine.

(OR)

- b) Discuss briefly the structure of DNA.

SECTION – C

Answer any THREE Questions :

(3 × 10 = 30)

16. Discuss in detail the mechanism of enzyme action.
17. Explain in detail the TCA cycle.
18. Give a detailed account on the ornithine cycle.
19. Describe in detail the oxidation of fatty acid.
20. Explain the biosynthesis of purine.



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M.Sc. Zoology Degree (Semester) Examinations, November 2015

Part – III : Core Subject : First Semester : Paper – II

CELL AND MOLECULAR BIOLOGY

Under CBCS – Credit 4

Time: 3 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions :

(10 × 2 = 20)

1. What is liposome?
2. Draw the diagram of ultra structure of Mitochondria.
3. Differentiate between rough and smooth endoplasmic reticulum.
4. List out the four enzymes of lysosomes.
5. Mention the parts of Inter phase nucleus.
6. Comment on two phases in cell cycle.
7. What is Griffith effect?
8. What is RFLP?
9. What is transcription?
10. Define gene amplification with an example.

SECTION – B

Answer ALL Questions :

(5 × 5 = 25)

11. a) Give an account on composition of cell membrane.

(OR)

- b) Explain the Krebs cycle with its bioenergetics.

12. a) Explain the signal hypothesis with suitable diagram.

(OR)

- b) Enumerate in detail the functions of lysosomes.

13. a) Write an account on structure and functions of nucleolus.

(OR)

- b) Explain the stages of mitosis with labeled sketch.

14. a) Describe Watson and Crick model of DNA.

(OR)

- b) What is genetic code? Add a note on properties of genetic code?

15. a) Explain operon hypothesis.

(OR)

- b) Give an account on gene regulation in Eukaryotes.

SECTION – C

Answer any THREE Questions :

(3 × 10 = 30)

16. Describe the fluid mosaic model of cell membrane. Add a note on Transport mechanism of Cell membrane.
17. Explain the structure, molecular constituents and functions of Golgi complex.
18. Write a detailed account on causes and characteristics of cancer cells.
19. Describe in detail the Meselson and Stahl's DNA replication experiment.
20. Explain in detail the translation in prokaryotes.



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M.Sc. Zoology Degree (Semester) Examinations, November 2015

Part – III : Core Subject : First Semester : Paper – III

MICROBIOLOGY

Under CBCS – Credit 4

Time: 3 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions :

(10 × 2 = 20)

1. Eukaryotic micro-organisms.
2. Distinctive Characters of Algae.
3. Heterotrophs.
4. Selective media.
5. Normal flora.
6. Antibiotics.
7. Candida albicans.
8. Aquatic micro-organisms.
9. Soil micro-organisms.
10. Fermentation.

SECTION – B

Answer ALL Questions :

(5 × 5 = 25)

11. a) Give a short account on the characteristic features of Bergey's Manual of systematic bacteriology.

(OR)

- b) List out the nutritional types of micro-organisms.

12. a) What do you understand by functional types of culture media?

(OR)

- b) Describe the ultrastructure of a typical bacterial cell.

13. a) List out the Beneficial effects of Normal flora.

(OR)

- b) Write the Principles of epidemiology.

14. a) Explore the role of micro-organisms in recycling carbon.

(OR)

- b) Discuss the microbial characteristics of waste water.

15. a) Give an account on microbial examination of foods.

(OR)

- b) Write a brief account on types of fermenters.

SECTION – C

Answer any THREE Questions :

(3 × 10 = 30)

16. Write about the ultra structure of a typical protozoan cell.
17. Analyse the various methods of culture Growth of bacteria.
18. Explain the role of micro-organisms in recycling Nitrogen.
19. Write about a Viral and Fungal disease caused in man.
20. What do you understand by 'food spoilage'?
Discuss the methods of food preservation.



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M.Sc. Zoology Degree (Semester) Examinations, November 2015

Part – III : Elective Subject : First Semester : Paper – I

BIOINFORMATICS

Under CBCS – Credit 5

Time: 3 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions :

(10 × 2 = 20)

1. Third generation computers.
2. Analog computer.
3. Search engine.
4. HTML.
5. Entrez.
6. EMBL.
7. Sequence alignment.
8. CLADE.
9. Homology modelling.
10. Ramachandran plot.

SECTION – B

Answer ALL Questions :

(5 × 5 = 25)

11. a) List the components of Microsoft Office.

(OR)

- b) Write a note on computer peripherals.

12. a) Comment on computer Virus and Antivirus.

(OR)

- b) Discuss the role of internet in education.

13. a) Write a note on DDBJ.

(OR)

- b) Describe the method of retrieving information from NCBI.

14. a) Explain sequence alignment using PAM matrix.

(OR)

- b) Bring out the difficulties of predicting genes.

15. a) Write a note on Swiss Model.

(OR)

- b) Explain the steps involved in model refinement.

SECTION – C

Answer any THREE Questions :

(3 × 10 = 30)

16. Describe Windows Operating System.
17. Give an account on electronic mail.
18. Explain the types of bioinformatics databases.
19. Discuss the methods of phylogenetic analysis.
20. Explain the methods used in protein structure prediction.



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M.Sc. Zoology Degree (Semester) Examinations, November 2015

Part – III : Core Subject : Third Semester : Paper – I

GENETICS

Under CBCS – Credit 4

Time: 3 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions :

(10 × 2 = 20)

1. What is meant by gene?
2. Distinguish between intron and exon.
3. What do you mean by 'F-factor'?
4. Define the term 'genetic notation'.
5. What is meant by bacteriophage?
6. Distinguish between generalized transduction and specialised transduction.
7. What are mutagens?
8. What is meant by SOS response?
9. What do you mean by 'Philadelphia chromosome'?
10. Define the term genetic counselling.

SECTION – B

Answer ALL Questions :

(5 × 5 = 25)

11. a) Narrate the steps involved in gene isolation.

(OR)

- b) Write an account on classical concept of gene.

12. a) What are plasmids? Mention their types.

(OR)

- b) Briefly describe the steps involved in bacterial transformation.

13. a) Distinguish between lytic and lysogenic cycles of viruses.

(OR)

- b) What are transposable elements? Mention their significance.

14. a) Classify mutation according to size and quality.

(OR)

- b) Discuss the process of heteroduplex DNA formation by genetic recombination.

15. a) Analyse the cellular functions of Oncoproteins.

(OR)

- b) Write a critical account on pedigree analysis.

SECTION – C

Answer any THREE Questions :

(3 × 10 = 30)

16. Write a detailed account on fine structure of gene.
17. Analyse the sequential steps involved in bacterial conjugation.
18. Describe the process of DNA transfer during transduction.
19. Bring out various steps of DNA repair mechanisms.
20. Write an essay on Human genome project and its implications.



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M.Sc. Zoology Degree (Semester) Examinations, November 2015

Part – III : Core Subject : Third Semester : Paper – II

PHYSIOLOGY

Under CBCS – Credit 4

Time: 3 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions :

(10 × 2 = 20)

1. State Fick's law.
2. What is surface tension?
3. Define phototherapy.
4. What is Bioelectricity?
5. What is counter current mechanism in loop of Henle.
6. What is Hemodynamics?
7. State the first law of thermodynamics.
8. What is biological clock?
9. What is flame photometry?
10. What is NMR?

SECTION – B

Answer ALL Questions :

(5 × 5 = 25)

11. a) Write notes on Doppler Effect.

(OR)

b) Write a note on osmotic force.

12. a) Bring out the functions of various receptors.

(OR)

b) Describe the transmission of nerve impulse through nerve fibre.

13. a) Explain briefly about the cardiac muscle.

(OR)

b) Explain the mechanism of pulmonary ventilation.

14. a) Give a brief account on the regulatory mechanism of insulin in man.

(OR)

b) Describe the circadian rhythm.

15. a) Explain the principle, technique and applications of gel electrophoresis.

(OR)

b) Write the principle and applications of phase contrast microscope.

SECTION – C

Answer any THREE Questions :

(3 × 10 = 30)

16. Explain the principle, type and applications of dialysis.

17. Give a detailed account on bioluminescence.

18. Analyse the mechanism of muscle contraction.

19. Discuss in detail the thermoregulation in animals.

20. Explain the principle, structure and applications of electron microscope.



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M.Sc. Zoology Degree (Semester) Examinations, November 2015

Part – III : Core Subject : Third Semester : Paper – III

PRINCIPLES OF BIOTECHNOLOGY

Under CBCS – Credit 4

Time: 3 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions :

(10 × 2 = 20)

1. What are the conditions required for patenting?
2. What is bioethics?
3. Write about DNA ligases.
4. Mention the role of DNA modifying enzymes.
5. What is the advantage of shuttle vectors?
6. What is meant by YAC?
7. Point out the principle involved in PCR.
8. In what way dot blotting differs from other blotting techniques.
9. How is cDNA prepared?
10. How will you construct the genomic library?

SECTION – B

Answer ALL Questions :

(5 × 5 = 25)

11. a) Enlist the bio safety guidelines and regulations.

(OR)

- b) Write down the scope of biotechnology.

12. a) Write about DNAses and RNAses.

(OR)

- b) Compare and contrast DNA and RNA markers.

13. a) Discuss the general features of Ti and Ri plasmids.

(OR)

- b) Describe the viral vectors used in human gene therapy.

14. a) Brief about the method of microarray.

(OR)

- b) Comment on the DNA sequencing method.

15. a) Explain any two methods of gene transfer.

(OR)

- b) Outline the gene cloning strategies.

SECTION – C

Answer any THREE Questions :

(3 × 10 = 30)

16. Comment on the current scenario of Indian Biotechnology.
17. Illustrate the various types of restriction endonucleases and its mode of action.
18. Discuss the cloning vectors in detail.
19. Give an account of Northern blotting technique.
20. How will you screen the recombinants by DNA and colony hybridization methods?



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M.Sc. / M.Com. Degree (Semester) Examinations, November 2015

Part – III : NME Subject : Third Semester : Paper – I

APPLIED BIOLOGY

Under CBCS – Credit 5

Time: 3 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions : (10 × 2 = 20)

1. Comment on Conventional energy resources.
2. Mention the advantages of Biological control of pest.
3. Mention the uses of *Spirulina*.
4. What is callus?
5. List out any four disadvantages of Embryo transfer.
6. What is Somatotropin?
7. Define plasmid.
8. Write about invitro fertilization.
9. What are Bio-weapons?
10. Comment on containments.

SECTION – B

Answer ALL Questions : (5 × 5 = 25)

11. a) Write an account on non-conventional energy resources.

(OR)

- b) Write a brief account of human resource management.

12. a) Summarize the advantages of single cell protein.

(OR)

- b) Describe a fermenter tank with a diagram.

13. a) Write an account on Hybridization.

(OR)

- b) Describe the production of Human growth hormone.

14. a) Give a brief account on vaccines.

(OR)

- b) Write a brief account on gene therapy.

15. a) Discuss the biohazards of rDNA technology.

(OR)

- b) Explain the possible dangers of genetically engineered organisms.

SECTION – C

Answer any THREE Questions : (3 × 10 = 30)

16. What is soil profile? Discuss the various methods of soil conservations.
17. Write an account on the importance and methods of water conservation.
18. Explain the method of plant tissue culture and its significances.
19. Describe the methods of embryo transfer technique with neat diagram.
20. Write an essay on Human Genome Project.

