

31CT11



VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST

(Autonomous & Residential)

[Affiliated to Madurai Kamaraj University]

M.Sc. Zoology Degree (Semester) Examinations, November 2016

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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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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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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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.



**GENETICS**

Under CBCS – Credit 4

Time: 3 Hours

Max. Marks: 75

**SECTION – A****Answer ALL Questions :****(10 × 2 = 20)**

1. What is recon?
2. What do you mean by chromosomal map?
3. Comment on Hfr gene transfer.
4. Define Plasmid.
5. Write a note on bacteriophage.
6. Transposable elements – comment.
7. Comment on frame shift mutation.
8. Define deletion.
9. Bring out the importance of genetic counselling.
10. Mention any two significance of pedigree analysis.

**SECTION – B****Answer ALL Questions :****(5 × 5 = 25)**

11. a) Explain briefly the fine structure of gene.

**(OR)**

- b) Briefly describe the Mendelian concept of gene.

12. a) Give a brief account on the mechanism of transformation in bacteria.

**(OR)**

- b) Write a brief account on bacterial conjugation.

13. a) Write a note on viral mediated transduction.

**(OR)**

- b) Explain briefly the transposable elements.

14. a) Explain briefly the DNA repair mechanism.

**(OR)**

- b) Give a brief account on the genetic recombination.

15. a) Analyze briefly any one method of oncogene detection.

**(OR)**

- b) Discuss briefly any one pedigree chart of human.

**SECTION – C****Answer any THREE Questions :****(3 × 10 = 30)**

16. Discuss in detail the restriction gene mapping.
17. Explain in detail the recombination of F – plasmids.
18. Give a detailed account on the structure of lambda DNA phage.
19. Describe in detail the various types of mutation.
20. Write an essay on the HGP and its importance in modern genetics.



**PHYSIOLOGY**

Under CBCS – Credit 4

Time: **3 Hours**Max. Marks: **75****SECTION – A****Answer ALL Questions :****(10 × 2 = 20)**

1. What is Doppler Effect?
2. State Hook's Law.
3. Mention the applications of magnetotherapy.
4. What is meant by Neurobiophysics?
5. Define haemodynamics.
6. Explain the counter current mechanism.
7. What is black and white box concept?
8. Write about biological clock.
9. Compare and contrast UV and VIS spectroscopies.
10. Write down the principle of gel electrophoresis.

**SECTION – B****Answer ALL Questions :****(5 × 5 = 25)**

11. a) Compare and contrast the inter and intra molecular forces.

**(OR)**

- b) Write brief notes on
  - a) Elasticity and
  - b) Viscosity

12. a) Write about the biochemistry of bioluminescence.

**(OR)**

- b) Explain the physiology of heat therapy and physiotherapy.

13. a) Describe the physicochemical changes occurring during muscular contraction.

**(OR)**

- b) Briefly explain the mechanism of pulmonary ventilation.

14. a) Write about various Biophysical rhythms.

**(OR)**

- b) Give an account of cryobiology and Thermobiology of suspended animation.

15. a) Discuss the principle, instrumentation and applications of AAS.

**(OR)**

- b) Brief about Immunoelectrophoresis.

**SECTION – C****Answer any THREE Questions :****(3 × 10 = 30)**

16. Discuss in detail the mechanical and electromagnetic forces.
17. Describe the physiology of photoreceptor.
18. Give an account of any one of the animal migrations.
19. Illustrate the thermodynamics of biological system.
20. Briefly explain the principle, instrumentation and applications of NMR.



**PRINCIPLES OF BIOTECHNOLOGY**

Under CBCS – Credit 4

Time: 3 Hours

Max. Marks: 75

**SECTION – A****Answer ALL Questions :****(10 × 2 = 20)**

1. Define 'Biosafety'.
2. What does Patent mean?
3. Name any four enzymes used as molecular tools.
4. Define 'Molecular marker'.
5. What should be the size of ideal plasmid vectors?
6. Why do we call plasmids as Ti & Ri plasmids?
7. What is the basis of blotting techniques?
8. What is DNA Sequencing?
9. Name the techniques used in transfer of genes into animals.
10. What is the role of Genomic DNA library?

**SECTION – B****Answer ALL Questions :****(5 × 5 = 25)**

11. a) Discuss the ways by which IPR is protected? Write about patents.

**(OR)**

- b) Discuss the social and ethical issues of Bioethics.

12. a) How do Type II Restriction endonuclease act?

**(OR)**

- b) Briefly explain about DNA modifying enzymes.

13. a) Discuss the mechanism of DNA transfer by Ti plasmids.

**(OR)**

- b) Explain the role of Nonviral Vectors in human gene therapy.

14. a) Write about microarray technique.

**(OR)**

- b) How does restriction mapping of DNA fragments done?

15. a) Discuss the importance of microinjection.

**(OR)**

- b) Elaborate the procedure of Electroporation.

**SECTION – C****Answer any THREE Questions :****(3 × 10 = 30)**

16. Comment on the current scenario of Indian Biotechnology.
17. Bring out the significance and role of DNA and RNA markers.
18. Discuss the role of gene cloning vectors in r-DNA Technology.
19. Give an account on Western blotting technique.
20. Discuss the gene cloning strategies.



**SECTION – A****Answer ALL Questions :****(10 × 2 = 20)**

1. What is Soil erosion?
2. Define Pest.
3. What is Risk modelling?
4. Comment on Genetic counseling.
5. Define Plasmid.
6. Write about Invitro fertilization.
7. What is Hybridization?
8. Define Biological weapon.
9. Comment on Containments.
10. What is Callus?

**SECTION – B****Answer ALL Questions :****(5 × 5 = 25)**

11. a) What are the methods of Soil management?

**(OR)**

- b) Write an account on Vaccines.

12. a) What is SCP? Mention the uses of Single Cell Protein.

**(OR)**

- b) Describe a Fermenter tank with a diagram.

13. a) Write an account on Gene therapy.

**(OR)**

- b) Describe the possible dangers of Genetically engineered organisms.

14. a) Describe the Biotechnology behind production of Human growth hormones.

**(OR)**

- b) Write a brief account of Live-stock management.

15. a) Discuss the biohazards of rDNA technology.

**(OR)**

- b) What is the ethical aspects of biotechnology?

**SECTION – C****Answer any THREE Questions :****(3 × 10 = 30)**

16. Give an account on the Renewable and non- renewable energy resources.
17. Write an account on the importance and methods of Water conservation.
18. Describe the method of Plant tissue culture and its significances.
19. Explain the methods of Embryo transfer technique with neat diagram.
20. Write an account on Human Genome Project.

