(BIT20111)

M.Sc. DEGREE EXAMINATION, APRIL 2017.

Second Semester

Biotechnology

Paper I — MOLECULAR BIOLOGY

(Regulation 2011)

Time : Three hours Maximum : 70 marks

Answer ALL questions.

All questions carry equal marks.

1. Give an account on DNA replication in eukaryotes.

Or

2. Answer any two of the following :
   (a) DNA polymerases
   (b) Rolling circle model of replication
   (c) Nucleosomes and histones.

3. Discuss the mechanism of transcription in prokaryotes.

Or

4. Answer any two of the following :
   (a) Intron splicing
   (b) Transcription factors
   (c) Eukaryotic RNA polymerases.

5. Write an essay on genetic code and its elucidation.

Or

6. Answer any two of the following :
   (a) tRNA
   (b) Protein trafficking
   (c) Inhibitors of protein synthesis.

7. Explain the regulation of gene expression in prokaryotes.

Or

8. Answer any two of the following :
   (a) Yeast gal genes
   (b) Leucire – Zipper and Zinc – Finger motif.
   (c) Influence of environmental factors of gene expression.

9. Give an account on DNA repair mechanisms.

Or

10. Answer any two of the following :
    (a) Transposons
    (b) Site – directed mutagenesis
    (c) Ames – test.

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(BIT20211)

M.Sc. DEGREE EXAMINATION, APRIL 2017.

Second Semester

Biotechnology

Paper II — MOLECULAR VIROLOGY

(Regulation 2011)

Time : Three hours Maximum : 70 marks

Answer ONE question from each Unit.

UNIT I

1. Give a detailed account on Nomenclature and classification of Viruses. (14)

Or

2. Explain the basic principles and requirements for maintanance of Virology Laboratory. (14)

UNIT II

3. Explain the structure and replication strategies of Bacteriophage λ and $\varphi \times 174$. (14)

Or

4. Discuss about the structure and replication strategies of influenza virus. (14)

UNIT III

5. Give a detailed note on nature, source, classification and induction of interferers. (14)

Or

6. Write a brief note on :

(a) γ interferon

(b) Antiviral agents.

UNIT IV

7. Describe the various methods of cultivation of viruses.

Or

8. Write brief note on :

(a) DNA Vaccines

(b) Subunit vaccines with suitable examples.

UNIT V

9. Describe the various methods for purification of viruses.

Or

10. Write short note on :

(a) Polymerase chain reaction. (7)

(b) Hearm agglutination. (7)

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M.Sc. DEGREE EXAMINATION, APRIL 2017.

Second Semester

Biotechnology

Paper III — INTERMEDIARY METABOLISM

(Regulation 2011)

Time : Three hours Maximum : 70 marks

Answer ALL questions.

All questions carries 14 marks.

UNIT I

1. Describe the unique reactions of Gluconeogenesis and its regulation. (14)

Or

2. (a) Explain the oxidative and Non oxidative steps of pentose phosphate pathway. (7)

(b) What is cori cycle. (7)

UNIT II

3. Discuss in detail biosynthesis and regulation of branched chain amino acids. (14)

Or

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4. (a) Discuss briefly non protein nitrogenous substances formation. (7)

(b) Write brief note on Glucogenic amino acids. (7)

UNIT III

5. Discuss in detail Biosynthesis of C_{16} Fatty acid and its regulation. (14)

Or

6. Write short note on

(a) Metabolism of springo Lipids. (7)

(b) Role of Liver and adipose tissue in Lipid Metabolism. (7)

UNIT IV

7. Give detailed account of Degradation of purine and pyrimidines and their regulation. (14)

Or

8. (a) Biosynthesis of Heme. (7)

(b) Explain the structure of ribonucleotide reductase. (7)

UNIT V

9. Give an account on Inborn errors of carbohydrate metabolism. (14)

Or

10. Write briefly on

(a) Neimann's pick disease. (7)

(b) Albinism. (7)

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(BIT20411)

M.Sc. DEGREE EXAMINATION, APRIL 2017.

Second Semester

Biotechnology

Paper IV — BIOSTATISTICS AND BIOINFORMATICS

(Regulation 2011)

Time : Three hours Maximum : 70 marks

Answer ALL questions.

UNIT I

1. Discuss the measures of dispersion in detail.

Or

2. Write short notes on :
   (a) Screening and representation of data.
   (b) Conditional probability.

UNIT II

3. Describe in detail about chi-square test.

Or

4. Write short notes on :
   (a) ANOVA.
   (b) Regression coefficient.

UNIT III

5. Give an account on biological databases.

Or

6. Write short notes on :
   (a) EMBL and Gen Bank.
   (b) BLAST.

UNIT IV

7. Explain the steps involved in finding genes in a eukaryotic genomes.

Or

8. Write short notes on :
   (a) Genome maps and markers.
   (b) Protein prediction.

UNIT V

9. Explain the applications of bioinformation for microarray designing and transcriptional profiling.

Or

10. Write short notes on :
    (a) Homology modelling.
    (b) Medical applications of bioinformatics.

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(BIT20511)

M.Sc. DEGREE EXAMINATION, APRIL 2017.

Second Semester

Biotechnology

Paper V — DEVELOPMENTAL BIOLOGY

(Regulation 2011)

Time : Three hours Maximum : 70 marks

Answer ALL questions.

All questions carry equal marks.

UNIT I

1. Explain in detail about developmental control of gene expression.

Or

2. Answer any TWO of the following :

(a) Gastrulation.

(b) Neurulation.

(c) Fertilization.

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UNIT II

3. Explain in detail about various steps involved in microsporogenesis and megasporogenesis.

Or

4. Answer any TWO of the following

(a) Embryogenesis.

(b) Senescence.

(c) Dormoncy.

UNIT III

5. Describe the early inductive events in xenopus axis formation.

Or

6. Answer any TWO

(a) Consequences of molecular evolution.

(b) Neyral fate.

(c) Formation of cerebral cortex.

UNIT IV

7. Discuss mosaic analysis to determine gene products.

Or

8. Answer any TWO of the following :

(a) Control of studying events by material transcripts.

(b) Epistatis.

(c) Significance of developmental geneters.'

UNIT V

9. Explain in detail about embryonic pattering in drosophila.

Or

10. Answer any TWO of the following :

(a) Limb development

(b) Axis formation in drosophila.

(c) Drosophila as model organism.

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