(BIT20111)

M.Sc. DEGREE EXAMINATION, APRIL 2018.

Second Semester

Biotechnology

Paper I — MOLECULAR BIOLOGY

(Regulation - 2011)

Time : Three hours Maximum : 70 marks

Answer ALL questions.

All questions carry equal marks.

1. Describe the mechanism of formation of oric open complex.

Or

2. Answer any TWO of the following.

(a) DNA replication in Eukaryotes

(b) Fidelity of DNA replication

(c) Okazaki fragments synthesis and processing.

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3. Explain mapping of transcription start point.

Or

4. Answer any TWO of the following:

(a) Eukaryotic RNA polymerase

(b) Processing of RNA.

(c) Monocistronic and polycistronic mRMA.

5. Explain Genetic code and its elucidation.

Or

6. Answer any TWO of the following:

(a) Structure and composition of Eukaryotic Ribosomes

(b) Structure and functions of RNA polymerase II.

(c) Events of protein synthesis.

7. Describe the Regulation of nif gene expression in Klebsiella pneumonia and bacteriophase.

Or

8. Answer any TWO of the following:

(a) Zinc finger motif

(b) OPeron concept

(c) Steroid hormone induced gene expression.

9. Describe the evaluation of mutagens by Ames test and micro nuclei test.

Or

10. Answer any TWO of the following:

(a) Photó reactivation

(b) Recombination and SOS repair mechanism

(c) Role of rec gene in DNA repair

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(BIT20211)

M.Sc. DEGREE EXAMINATION, APRIL 2018.

Second Semester

Biotechnology

Paper II : MOLECULAR VIROLOGY

(Regulation 2011)

Time : Three hours Maximum : 70 marks

Answer ONE question from each unit.

All questions carry equal marks.

UNIT I

1. Describe the structure and morphology of Plant Viruses

Or

2. Explain the principles of Biosafety, containment facilities and handling of laboratory animals.

UNIT II

3. Write an account on structure and replication strategies of plant Virus.

Or

4. Describe the structure and replication strategies of adeno Virus

UNIT III

5. Describe the induction of interferon.

Or

6. Write an account on antiviral agents and their mode of action.

UNIT IV

7. Describe the method of cultivation of Virus in tissue culture and laboratory animals.

Or

8. Write an account on modern Vaccines.

UNIT V

9. Describe the various diagonistic methods of Viruses.

Or

10. Describe the principle, techniques and applications of SEM.

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(BIT20311)

M.Sc. DEGREE EXAMINATION, APRIL 2018.

Second Semester

Biotechnology

Paper III — INTERMEDIARY METABOLISM

(Regulation 2011)

Time : Three hours Maximum : 70 marks

Answer ONE question from each Unit.

UNIT I

1. Write an account on HMP shunt and its significance. (14)

Or

2. Write notes on :

(a) TCA cycle function and regulation. (7)

(b) Gluconeogenesis and its regulation. (7)

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UNIT II

3. Describe the biosynthesis and regulation of branched chain amino acids. (14)

Or

4. Write note on :

(a) Formation of creatinine and ammonia. (7)

(b) Protein turn over-Role of ubiquitin. (7)

UNIT III

5. Describe the Oxidation of fatty acids. (14)

Or

6. Write notes on :

(a) Metabolism of sphingolipids. (7)

(b) Biosynthesis of Triglycerides. (7)

UNIT IV

7. Describe the degradation of Pyramidines and their regulation. (14)

Or

8. Write notes on the following :

(a) Structure and regulation of Ribonucleotide reductase. (7)

(b) Biosynthesis and degradation of Polynucleotides. (7)

UNIT V

9. Describe the in borne errors of nucleic acid metabolism. (14)

Or

10. Write notes on the following :

(a) Alkaptonuria. (7)

(b) Diabetis mellitus. (7)

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(BIT20411)

M.Sc. DEGREE EXAMINATION, APRIL 2018.

Second Semester

Biotechnology

Paper IV — BIOSTATISTICS AND BIOINFORMATICS

(Regulation 2011)

Time : Three hours Maximum : 70 marks

Answer ONE question from each unit

All question carry equal marks.

UNIT I

1. Explain the definition of probability and independent events with examples.

Or

2. Write notes on

(a) Measures of skewness and Kurtosis

(b) Addition and multiplication rules

UNIT II

3. Describe stratified sampling and its advantages.

Or

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4. Write notes on

(a) P-value of the statistics

(b) Regression co-efficient and co-efficient of determination.

UNIT III

5. Describe the importance of online and offline tools in Bioinformatics.

Or

6. Write notes on

(a) Types of Data Bases

(b) Data searching using BLAST and FASTA.

UNIT IV

7. Describe the use of Bioinformatics for genome maps and markers

Or

8. Write notes on the following

(a) Transcription factor binding sites

(b) Methods of Bioinformatics in support of Proteomic research.

UNIT V

9. Describe Bioinformatics for micro array designing and transcriptional profiling.

Or

10. Write notes on the following

(a) Bioinformatics for metabolic reconstruction

(b) Applications of Bioinformatics in Medical field.

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(BIT20511)

M.Sc. DEGREE EXAMINATION, APRIL 2018.

Second Semester

Biotechnology

Paper V : DEVELOPMENTAL BIOLOGY

(Regulation - 2011)

Time : Three hours Maximum : 70 marks

Answer ALL question.

All questions carry equal marks.

UNIT I

1. Explain the overview of the development of animals.

Or

2. Answer any TWO of the following:

(a) Fertilization and cleavage

(b) Cell fate and cell commitment

(c) Cell signaling.

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UNIT II

3. Describe the development of Embryo and embryogenesis in plants.

Or

4. Answer any TWO of the following:
   (a) Gamete production in plants
   (b) Megasporogenesis
   (c) Development of Root.

UNIT III

5. Describe the consequences of Molecular evolution.

Or

6. Answer any TWO of the following:
   (a) The cerebral cortex
   (b) Inductive events in Xenopus
   (c) Nieuwkoop centre and the organizer.

UNIT IV

7. Describe the developmental genetics in practice-I.

Or

8. Answer any TWO of the following:
   (a) Epistasis
   (b) Mosaic analysis to determine gene products
   (c) Introduction to C elegans.

UNIT V

9. Describe the early events in Drosophila development.

Or

10. Answer any TWO of the following:
    (a) Embryonic patterning
    (b) Limb development
    (c) Axis formation.

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