

Code No: R05222303

Set No. 1

II B.Tech II Semester Regular Examinations, Apr/May 2008

MOLECULAR BIOLOGY

(Bio-Technology)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. What is DNA made up of? Explain in detail about the components. [16]
2. Explain briefly how the filamentous shaped single stranded DNA bacteriophage M13 replicates its genome? [16]
3. With respect to DNA polymerase I explain the roles of the following in DNA replication. [2 × 8 = 16]
 - (a) 3'-5' exonuclease & 5'- 3' exonuclease
 - (b) 5' - 3' polymerization.
4. How are eukaryotic and prokaryotic RNA polymerases different from each other? [16]
5. What is meant by self-splicing introns? Explain citing suitable examples. [16]
6. With context to genetic code, explain what is meant by: [2 × 8 = 16]
 - (a) Non-overlapping & comma less triplet codon
 - (b) Redundancy of genetic code.
7. Write a note on plasmids. Write about the different types of plasmids occurring in nature. [16]
8. What is meant by "site directed mutagenesis" Explain along with a neat diagram. [16]

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Set No. 2

II B.Tech II Semester Regular Examinations, Apr/May 2008

MOLECULAR BIOLOGY

(Bio-Technology)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. What forms the backbone that holds the two strands of DNA together in a double helix? Explain the helix structure. [16]
2. How does the icosahedral symmetry single stranded DNA bacteriophage $\Phi\times 174$ replicate its DNA? [16]
3. How does DNA polymerase maintain the high rate of accuracy with respect to error making during DNA replication? [16]
4. Give a step-by-step description of the process of Transcription. [16]
5. How are eukaryotic ribosomal components 28s, 5.8s and 18s rRNA synthesized? Add a note on 5s rRNA synthesis. [16]
6. Using suitable examples explain the redundancy of the genetic code. [16]
7. Give suitable examples of antibiotics that inhibit protein synthesis. Describe their mode of action. [16]
8. What is the difference between Spontaneous and Induced mutations? [16]

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Set No. 3

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MOLECULAR BIOLOGY

(Bio-Technology)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. How are the different forms of DNA differentiated on the basis of their structures? [16]
2. What is meant by “bi-directional” DNA replication? Explain taking E. Coli chromosome as an example. [16]
3. Explain the role of telomerase in preventing shortening of chromosomes during DNA replication. [16]
4. Describe the different types of rRNA (s) found in the ribosome. [16]
5. Explain the processing of pre-rRNA transcript in detail. [16]
6. What is the process, which correlates the base sequence present in an mRNA and the amino acid sequence in the final protein molecule? Describe it. [16]
7. Write short notes on: [2 × 8 = 16]
 - (a) tRNA as an adaptor molecule
 - (b) Difference between prokaryotic and eukaryotic ribosomes.
8. Describe site directed mutagenesis as one of the most established techniques in in-vitro mutagenesis. [16]

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Set No. 4

II B.Tech II Semester Regular Examinations, Apr/May 2008

MOLECULAR BIOLOGY

(Bio-Technology)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. What are the main functions of DNA in a living cell? [16]
2. Taking mitochondria DNA as an example explain D-loop method of DNA replication. [16]
3. Give an overview of the DNA polymerases of Prokaryotes & Eukaryotes. [16]
4. Justify the statement “there are different types of rRNA found in ribosome” [16]
5. Explain the processing of pre-rRNA transcript in detail. [16]
6. What is the code in which the genetic message is imprinted in the form of m-RNA read as? Discuss the properties of the code. [16]
7. Describe what is meant by “generalized” and “specialized” type of transduction mechanisms. [16]
8. With reference to acting as mutagens, explain: [2 × 8 = 16]
 - (a) Uv irradiation
 - (b) Ionizing radiation.
