

Code No: RR222305

Set No. 1

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

MOLECULAR BIOLOGY

(Bio-Technology)

Time: 3 hours

Max Marks: 80

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

1. Describe the roles of different proteins in DNA replication. [16]
2. DNA replication is bi-directional. What would the replication bubble look like (using the same labeling regimen as discussed in class) if replication was unidirectional? [16]
3. How does the structure of a eukaryotic CoreRNAPol compare with the E. coli CoreRNAPol? [16]
4. Why would isoleucine be less likely to occur in a beta turn than in a beta strand? [16]
5. What is meant by Reverse Genetics? How is useful? [16]
6. Write a note on split genes. [16]
7. Describe the conjugation process in F^+ and F^- bacteria. [16]
8. What are Retroposons? [16]

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Set No. 2

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

MOLECULAR BIOLOGY

(Bio-Technology)

Time: 3 hours

Max Marks: 80

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

1. List and describe the function of the 10 subunits constituting DNA polymerase-III. Distinguish between the holoenzyme and the core enzyme. [16]
2. What is the start site for DNA replication? [16]
3. What are the differences between prokaryotic and eukaryotic *mRNA*_(s) ? [16]
4. Describe the following terms: Transcription, translation, promoter. [16]
5. Differentiate between point mutations that are transitions versus transversions. Using the DNA bases (A, T, G and C) list the four types of transition and the eight types of transversions. [16]
6. Write a note on split genes. [16]
7. Distinguish among the three modes of recombination in bacteria. [16]
8. What are the similarities between a lysogenic bacterial cell and an animal tumor cell which has been transformed by an oncogenic (tumor-producing) virus? [16]

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Set No. 3

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

MOLECULAR BIOLOGY

(Bio-Technology)

Time: 3 hours

Max Marks: 80

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

1. In what component parts do DNA and RNA differs? [16]
2. What is the start site for DNA replication? [16]
3. In yeast tRNA splicing, what is the importance of secondary structure? [16]
4. When a globular protein folds into its native conformation, there is an increase in order of the protein (i.e., a decrease in its entropy). Explain the types of energetic factors that overcome this unfavorable entropic effect to make protein folding possible. [16]
5. Briefly describe physical, chemical and biological methods of developing new mutations. [16]
6. Write a note on split genes. [16]
7. Describe the conjugation process in F^+ and F^- bacteria. [16]
8. How do transposons cause mutations? [16]

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Set No. 4

II B.Tech II Semester Supplementary 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 the relationship between nucleosomes, 30 nm fibers and the scaffold structure with respect to the organization of DNA in the nucleus? [16]
2. DNA replication is bi-directional. What would the replication bubble look like (using the same labeling regimen as discussed in class) if replication was unidirectional? [16]
3. How does the structure of a eukaryotic CoreRNAPol compare with the E. coli CoreRNAPol? [16]
4. Which feature of the Genetic code is responsible for redundancy of Genetic Code. [16]
5. What are mutagens? Classify the radiation, chemical mutagens that are affecting the organisms. [16]
6. Write a note of Benzer's fine structure analysis of the rII locus of T4 bacteriophage. [16]
7. With respect to F^+ and F^- bacterial mating, answer the followings:
 - (a) How was it established that physical contact was necessary?
 - (b) How was it established that chromosome transfer was unidirectional? [16]
8. Describe the Shapiro model of transposition. What are the roles of transposase, DNA polymerase I, Ligase and resolvase? [16]
