Code No: 07A42303 **R07** **Set No. 2**

II B.Tech II Semester Examinations,December 2010
MOLECULAR BIOLOGY
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Write a brief account on rolling circle, replication of DNA. [16]
2. Write on the properties of Transcription factors. [16]
3. Describe the process of amino acid activation and polypeptide function in the ribosomal complex? [16]
4. Describe the functions of signal sequences and stop transfer sequences in the export of proteins from the cytoplasm. [16]
5. PCNA and Gamma clamp loader are used in DNA syntheis. What are their functional differences? [16]
6. How many types of electrophoretic procedures are used to analyse the plasmid DNA or Chromosomal DNA? Discuss their principles and advantages. [16]
7. Explain how significant post-transcriptional processing that takes place of the mRNAs in eukaryotes affect the expression of rRNA genes? [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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Code No: 07A42303 **R07** **Set No. 4**

II B.Tech II Semester Examinations,December 2010
MOLECULAR BIOLOGY
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What are the methods used to remove the impurities of isolated nucleic acids?
   (b) Explain the methodology involved in the isolation of nucleic acids from S phages. [8+8]
2. DNA synthesis in all organisms is continuous and discontinuous. Discuss the confirmatory tests for this statement. [16]
3. Explain the important events in cell cycle. [16]
4. The bacterial RNAs differ in their size considerably. Explain. [16]
5. What idea does the near universality of the genetic code support? [16]
6. Explain the advantages of producing of all rRNAs and tRNAs from the same precursor molecule in an organism. [16]
7. A point mutation occurs in a particular gene. Describe the types of mutational events that can restore a functional protein, including intergenic events. Consider missense, nonsense, and frameshift mutation. [16]
8. Discuss the synthesis of r RNA in eukaryotes. Explain using TF attachment sites. [16]

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Code No: 07A42303 **R07** **Set No. 1**

II B.Tech II Semester Examinations,December 2010
MOLECULAR BIOLOGY
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain the process of protein segregation or sorting and the fate of the proteins synthesized. [16]
2. Explain briefly about DNA polymerase I and DNA polymerase II? [16]
3. Explain the role of P^{53} in cell cycle. [16]
4. Explain why the mutation rate in nature remains low? [16]
5. DNA is made with both single (SS) and double strands (DS) of bases. Which procedure will help to confirm that the DNA is having either ss or ds or both? Write the reasons. [16]
6. What are the essential co-factors and their role in the various stages in the biosynthesis of proteins? [16]
7. Discuss the production of 5S RNA in eukaryotes. Explain with mechanisms. [16]
8. Describe about the mechanism involved in the production of a typical transcript of a gene containing 10 exons, 9 introns and 3 UTR containing a poly adenylation consensus sequence. [16]

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Code No: 07A42303 **R07** **Set No. 3**

II B.Tech II Semester Examinations,December 2010
MOLECULAR BIOLOGY
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Describe and differentiate between miRNA and siRNA. [16]
2. "The genetic code is degenerate" Explain. [16]
3. Elucidate on the types of damage caused by ionizing radiation and the effect of the damage in bacteria. [16]
4. Explain the following:
   (a) Two-dimensional gel replicon model for analysis of DNA synthesis inhibitors.
   (b) What are the methods used to determine the distance between Go and S Phases? [8+8]
5. Why is the primer in DNA synthesis is RNA? How does it help in the fidelity of DNA synthesis? Add a note on RNA as the primer. [16]
6. Discuss the structural differences of OPC and RSC. [16]
7. What will determine whether regions of alpha-helical structure lie at the surface or in the interior of a water-soluble globular protein? [16]
8. Write an essay on the primary structure of DNA and its analysis. Add a note on the various forms of DNA beginning from 1953 to 2007. [16]

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