



(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 154409**

Roll No.

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## B. Tech.

### (SEM. IV) THEORY EXAMINATION, 2014-15 GENETICS AND MOLECULAR BIOLOGY

Time : 3 Hours]

[Total Marks : 100

**Attempt all questions as directed.**

**All questions carry equal marks.**

1. Attempt any two of the followings :
  - (a) What do you understand by incomplete dominance? Explain with the help of suitable example.
  - (b) What is pleiotropic trait? Explain with the help of suitable examples.
  - (c) Describe the phenomenon of independent assortment of genes. Explain the assortment of genes (alleles) with the help of suitable diagrams.
  
2. Attempt any two of the followings
  - (a) What are retro-transposons? Describe the type studied by you and mention the importance.

- (b) Write a note on DNA damage repair in cell. Describe photo-reactivation method of DNA repair with the help of suitable diagrams.
  - (c) What is cistron? Explain the experiment which led to this concept. Compare it with gene.
- 3 Attempt any two of the followings
- (a) What are the differences between the process of initiation of DNA replication in prokaryotes and eukaryotes? Mention their relative advantages and disadvantages.
  - (b) Describe the principle and advantages of semi conservative method of DNA replication.
  - (c) What do you understand by complementary DNA? How does it differ from genomic DNA of an eukaryotic cell? Mention its advantages.
- 4 Attempt any two of the followings
- (a) What do you understand by open-promoter complex? With the help of suitable diagrams describe the complex and mention its importance.
  - (b) What is post-translational modification? Discuss the importance of this modifications in higher eukaryotes.
  - (c) Describe the general structure of an eukaryotic mRNA. What are its components? Mention the advantages of ORF.

- 5 Attempt any two of the followings
- (a) What are anticodons? How do they contribute to expression of gene? Describe the properties of codons and mention the ambiguity there in.
  - (b) Describe the process of translation initiation in prokaryotes. How does it differ from that of eukaryotes?
  - (c) How do hormones control the expression of a set of genes? Write a note on hormonal control of gene expression. With the help of suitable example and diagram support your answer.
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