



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

PAPER ID : 154406

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 co-dominance? Explain with the help of suitable example.
 - (b) What are alleles? How do they influence the phenotype?
 - (c) Describe the phenomenon of complementary genes. Explain the term with the help of suitable diagrams and example.

- 2 Attempt any two of the followings
 - (a) What is Ac/Ds system? Describe the system and mention the importance.
 - (b) Write a note on quantitative traits. Describe the meaning and explain their importance with the help of suitable examples.

- (c) What is cis-trans experiment? Describe the experiment and relate it with the concept of gene.
- 3 Attempt any two of the followings
- (a) What are the differences between the transition and transversion mutation? Mention their relative advantages and disadvantages over INDEL mutations.
- (b) What are Okazaki fragments? How are they produced? Explain with help of suitable examples.
- (c) What do you understand recombination frequency? How does it indicate the relative distance between various genes? With the help of suitable diagrams mention the importance of recombination frequency.
- 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 is wobble hypothesis? What does it contribute to understand gene expression? Explain with the help of suitable example.
 - (b) Describe the process of transcription initiation in prokaryotes. Mention the role of sigma factor and explain with the help of suitable diagram.
 - (c) How do operon control the expression of a set of genes? With the help of suitable example and diagram illustrate the operational mechanism of *Lac* operon.