Printed Pages : 3

BT-406

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

PAPER ID : 154406

Roll No. | | | | | | | | | | |

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.