

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

PAPER ID : 2126

Roll No.

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B.Tech.

(SEM. V) ODD SEMESTER THEORY

EXAMINATION 2013-14

GENETIC ENGINEERING

Time : 3 Hours

Total Marks : 100

Note :—Attempt all questions.

1. Attempt any **four** parts of the following : **(5×4=20)**
 - (a) Differentiate between Plasmids and Phagemids.
 - (b) What are Cointegrate Vectors ? Explain with the help of suitable diagrams.
 - (c) How can Agrobacterium be used as vectors ? Explain with the help of suitable examples.
 - (d) Is it possible to use transposable elements as vector ? Explain with the help of suitable diagrams and example.
 - (e) What are special features for a DNA molecule to be able to act as vehicle for gene cloning ?
 - (f) Compare the features of YAC and BAC vectors.

2. Attempt any **four** parts of the following : **(5×4=20)**
 - (a) Describe one standard method of isolation of DNA from blood sample. Explain with the help of flow cart.
 - (b) What do you understand by blunt end cuts ? How can such blunt ends can be ligated ? What are their advantages ?

- (c) What do you understand by restriction endonucleases ? Describe their types and properties.
- (d) Explain the method of preparing competent bacterial cells. What are their advantages ?
- (e) Differentiate between nested PCR and hot start PCR.
- (f) Explain the role of Reverse Transcriptase. What are the sources ?
3. Attempt any **two** parts of the following : **(10×2=20)**
- (a) Explain Homopolymer tailing technique used in cDNA cloning.
- (b) What do you understand by Wound Inducible Promoters ? Explain with the help of suitable examples.
- (c) Explain briefly the Mammalian cell expression vectors and its advantages in recombinant DNA technology research.
4. Attempt any **two** parts of the following : **(10×2=20)**
- (a) Explain the term Mutagenesis. What are the advantages of directed mutagenesis ? Explain in detail.
- (b) What do you understand by In Vitro Gene Therapy ? Describe with the help of diagram and compare it with In Vivo Gene Therapy.
- (c) Differentiate between organ and organism cloning. Why human cloning is banned ?
5. Attempt any **two** parts of the following : **(10×2=20)**
- (a) Explain the structure and function of G-protein coupled receptor.
- (b) Explain the role of transducers, amplifiers and messengers by taking example of any cell signaling pathway.
- (c) What are Cytokine Receptors ? Explain with the help of suitable diagram.