Exam.Code:1033
Sub. Code: 7571

2023

M.E. (Biotechnology), Second Semester

ME-BIO-204: Genetic Engineering

Time allowed: 3 Hours

Max. Marks: 50

***NOTE**: Attempt <u>five</u> questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) Suppose the recognition sequence of a restriction endonuclease is GAATTC but this enzyme also cleaves N/AATTN then how can this be explained?

b) What do you understand by purpose-built vectors, give example?

c) How relevant is gene shuffling in protein engineering?

d) How safe is the production of growth hormones or antibodies via transgenic microbes?

e) State if isolated nucleic acid sequences are patentable? (5x2)

UNIT - I

II. a) Explain the significance of alpha complementation in molecular genetics?

b) Explain the difference between isoschizomer and neoschizomer with appropriate example/diagram. (6,4)

III. a) Describe the parameters which determine the choice of vector for cloning large fragments of DNA?

b) DNA from higher animals is extensively methylated then how can this (recombinant DNA) escape from the restriction system of host *E.Coli* strains? (6,4)

IV. a) PCR has huge diagnostic value but it can also be used to generate libraries, explain how can this be achieved? Also compare it with alternate method.

b) With the help of an example demonstrate how protein engineering helps in enhancing the properties of a protein? (2x5)

P.T.O.

UNIT - II

V. a) What are the advantages of PCR/OLA procedure as a diagnostic tool over other such procedures? Explain with the help of a diagram.

b) What is the working principle of TaqMan Assay? (6,4)

VI. a) Explain the utility of biopharming in present times?

b) Differentiate genetically engineered chimeric antibody from genetically engineered humanized antibody? Describe the advantages and disadvantages one has over the other? (2x5)

VII. a) Explain how a bacterial biosensor works to detect pollutant in water? Describe the functional working of biosensor.

b) What are the fundamental requirements for a product or process to be patentable? (6,4)

x-x-x