2016

BIOTECHNOLOGY

PAPER : BIT 203

GENETIC ENGINEERING

Full Mark : 80

Time : 3 Hrs

Figures in the right hand margin indicate full marks for the question

All questions are compulsory

1. Answer the following: 1x8=8

   (i) Write the recognition sequence of EcoRI

   (ii) Name a fluorescent dye

   (iii) What are insertion vectors?

   (iv) What is Flavr-Savr tomato?

   (v) What are DNA chips?

   (vi) How does alkaline phosphatase act as end –modification enzymes?

   (vii) What is GST tag?

   (viii) Name a naturally occurring Ribozyme?

2. Write short answers for the following : 2x6=12

   (i) Write properties of Restriction Enzyme.

   (ii) Define random priming

P.T.O.

(iii) Write the characteristics of a PUC 8 vector

(iv) What are ESTs?

(v) What is FISH?

(vi) Which DNA sequencing method was used to sequence the first Human Genome in Human Genome Project?

3. Describe briefly the P1 Artificial Chromosome .Mention the reporter genes present in it and how they aid in their selection of recombinants? 5

4. What is antisense RNA? Write briefly about its usage in molecular biology. Name the first antisense drug. 2+2+1=5

5. Write short notes on any two: 5x2=10

(a) Restriction Endonucleases

(b) Klenow Enzymes

(c) Southern Hybridization.

6. Answer any two from the following: 8x2=16

(i) What does DNA labeling refer to and what is their utility in research and clinical diagnostics? Write briefly on direct and indirect labeling techniques and the detection systems involved. 2+2+2+2=8

(ii) What are Ti and Ri vectors? Describe in brief how they are used as efficient systems for introducing foreign genes into plants. 4+4=8

(iii) Describe the process of isolating high molecular weight

DNA. Also describe how PFGE aids in separation of chromosomes. 5+3=8

7. Answer any two from the following: 12x2=24

a) What are expression vectors ? What are the important elements of an expression vextors? Describe briefly the pET expression vector with labeled diagram. 2+4+6=12

b) Describe briefly the Yeast-two-hybrid system. Support your answer with a neat labeled diagram. Mention its usage in proteomic studies. 8+2+2=12

c) Describe Maxam and Gilbert's Chemical degradation method of DNA sequencing. 12

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