

[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 1142

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Your Roll No.....

Unique Paper Code : 253605

Name of the Course : B.Sc. (Honours) Microbiology

Name of the Paper : Recombinant DNA Technology & Biotechnology [MIHT-613]

Semester : VI

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt ANY 5 questions.
3. All questions carry equal marks.
4. Attempt all the parts of any question together.

1. (a) Discuss the contributions of the following scientists in RDT :

(i) Arber & Smith

(ii) Craig Venter

(iii) Maxam & Gilbert

(iv) Temin & Baltimore

(v) Kary Mullis

(2×5=10)

- (b) Give a flow chart of *Agrobacterium*-mediated gene delivery method in plants. (5)

2. (a) Outline the differences between λ insertional vectors and λ replacement vectors. (3)

- (b) What are the advantages (any two) of using yeast expression vectors? (2)

- (c) Mention any one application of any 4 of the following enzymes :

(i) Taq DNA polymerase

P.T.O.

- (ii) Reverse Transcriptase
 - (iii) Polynucleotide Kinase
 - (iv) Klenow fragment
 - (v) Alkaline Phosphatase (1×4=4)
- (d) Outline the development of the M13 vector series. (6)
3. Differentiate between the following pairs (any 5) :
- (a) YE_p and YC_p
 - (b) Biolistics and Liposome-mediated Transformation
 - (c) Genomic and cDNA libraries
 - (d) Shuttle and Binary Vectors
 - (e) DNA footprinting and DNA fingerprinting
 - (f) Type-I and Type-II Restriction Endonucleases (3×5=15)
4. (a) How is RDT useful in industrial production of humulin and tPA ? (5+5=10)
- (b) Expand the following abbreviations :-
RAPD, IPTG, cccDNA, ARS, PFGE. (1×5=5)
5. (a) Briefly outline the principle and methodology of DNA sequencing by chain termination method. (6)
- (b) Describe the basis of production and importance of Bt-cotton. (4)
- (c) Comment on the transformation of bacterial and non-bacterial cells. (3)
- (d) Give any 2 applications of Western blotting. (2)
6. (a) What are Microarrays ? Give their applications. (5)
- (b) Discuss the parameters considered in designing primers for a successful PCR reaction. (4)
- (c) Describe any one Expression vector containing a promoter of bacterial origin. (4)
- (d) Name any two fungi which can be used as host systems to express recombinant proteins. (2)