2022

(November)

BIOTECHNOLOGY

(Honours)

(Recombinant DNA Technology)

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer Question No. **1** which is compulsory and *any* **four** from the rest

1. Write briefly on the following : 2×6=12

(a) EcoR1

(b) Transgene

(c) Phagemids

(d) X-gal

(e) PCR

(f) Liposomes

2. *(a)* Outline the important and relevant safety measures in rDNA technology. 5

   (b) Cite two examples of mammalian cell lines and their applications in rDNA technology. 4

   (c) Can fungi be used as host systems for expressing recombinant proteins? Justify. 2

3. *(a)* Define blunt ends and sticky ends. Give one example each of enzymes that can create 3′ and 5′ overhangs respectively. 3+2=5

   (b) Differentiate between a cDNA library and a genomic library. 6

4. *(a)* What are the characteristics of a good cloning vector? 4

   (b) Draw a neat labelled diagram of pBR322. 3

   (c) Are expression vectors also cloning vectors? Justify your answer. 4

5. *(a)* How are recombinant molecules identified? 5

   (b) Discuss the role of DNA modifying enzymes giving examples. 6

(Continued)

6. Describe briefly on the following methods of gene delivery : 5½+5½=11

   (a) Microinjection

   (b) Biolistic method

7. Write short notes on any *two* of the following : 5½×2=11

   (a) Gene therapy

   (b) Selectable markers

   (c) Artificial chromosomes

8. *(a)* Name any three plant expression vectors. 3

   (b) What characteristics should a gene have to be used as a reporter? 4

   (c) Highlight few applications of transgenic plants. 4

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