2020

MICROBIOLOGY — GENERAL

Paper : DSE-A-1

(Genetic Engineering and Biotechnology)

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Day 2

Group - A

1. Answer ***any five*** questions : 2×5

(a) A laboratory strain of *E.coli* is resistant to ampicilin. Can this *E.coli* be used as host in recombinant DNA technology? Explain your answer.

(b) What is the speciality of type II restriction enzyme?

(c) What is primer dimer in PCR?

(d) What is Klenow?

(e) What is cosmid vector?

(f) Write the name of an octacutter restriction enzyme.

(g) What is blunt end ligation?

2. Write short notes on (***any three***) : 5×3

(a) Liposomes

(b) Ti-plasmid

(c) BACs

(d) SDS-PAGE

(e) T4 poly nucleotide kinase.

Group - B

Answer ***any five*** questions.

3. (a) Describe the advantages of λ-phage based rectors over plasmid vectors.

(b) Describe the function of IPTG for the over expression of a protein from lac-promoter based expression vector in *E.coli*. 2½+2½

Please Turn Over

4. (a) Describe the difference between southern blotting and western blotting.

(b) "Blocking of the membrane with a non-specific protein like BSA is very important during western blot analysis"— justify the statement. 2½+2½

5 (a) Why is the presence of unique restriction enzyme site(s) at the non-essential part of a cloning vector very important?

(b) What is the difference between an endonuclease and an exonuclease?

(c) What do you know about GM-crops? 2+1+2

6. (a) How do you prepare human growth hormone by the help of RDT?

(b) Why is partial digestion of genomic DNA with restriction endonucleases done during preparation of genomic DNA library? 2½+2½

7. (a) Name one vector that is suitable for cloning in mammalian cell. Give two characteristic features of it.

(b) Write down two advantageous features of M13-based vectors.

(c) Give an example of a low copy cloning vector. (1+1)+2+1

8. How will you prepare genetically engineered recombinant human insulin? 5

9. (a) Describe the different steps of RT-PCR.

(b) How is it different from real time PCR? 3½+1½

10. (a) Describe the difference between genomic DNA-library and cDNA library. Mention the importance of cDNA library in genetic engineering.

(b) What is 'intellectual property right'? (2+1½)+1½

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