

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 vectors 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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