2019

(October)

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) Hybridization

(b) T_4 ligasé

(c) X-gal

(d) EcoRI

(e) Blunt end

(f) cDNA

2. (a) What are containment facilities? Explain the various levels of containment facilities in rDNA technology. 1+5=6

(b) Discuss with suitable diagrams the salient features of plasmid vectors with examples. 5

3. (a) Describe the role of SAM in restriction modification system with suitable examples. 6

(b) What are DNA modification enzymes? Discuss their roles with suitable examples. 5

4. (a) "Some vectors have one origin of replication, while the others have two." Justify this statement. 5

(b) Differentiate between cloning vectors and expression vectors. 6

5. (a) What are thermostable enzymes? Discuss their significance giving one example. 4

(b) Explain the technique of blue-white screening. 3

(c) Describe the salient features of retroviral vectors. 4

(Continued)

6. (a) You are given the following DNA sequences :

5′ ATTGAGGATCCGTAATGTGTCCTGATCACGCTCCACG–3′

3′ TAACTCCTAGGCATTACACAGGACTAGTGCGAGGAGC–5′

(i) If this DNA is cut with BamHI, how many DNA fragments would you expect? 3

(ii) Write the sequence of those double-stranded DNA fragments. 3

(iii) Write the sequence of the over-hang. 3

(b) Which type of restriction enzyme does not usually require ATP? Explain. 2

5½×2=11

7. Write on the following :

(a) Chemical transformation

(b) Artificial chromosome

8. (a) What is ligation? Describe the process with suitable example. 6

(b) What are selectable markers? How are they useful in cloning experiments? 5

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