

(6 pages)

Reg. No. :

Code No. : 30850 E Sub. Code : SAMI41

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2021.

Fourth Semester

Microbiology — Allied

GENETIC ENGINEERING

(For those who joined in July 2017 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. The decoding of mRNA to form a polypeptide chain is
 - (a) Translation
 - (b) Replication
 - (c) Transcription
 - (d) DNA repair mechanism

2. Which molecules are involved in protein synthesis?
- (a) Transfer RNA, introns and Mutagens
 - (b) Messenger RNA, introns and ribosomal RNA
 - (c) Ribosomal RNA, transfer RNA and anti mRNA
 - (d) Messenger RNA, ribosomal RNA and transfer RNA
3. ECORI has which of the following hexanucleotide recognition sequence?
- (a) GAATTC
 - (b) GGATCC
 - (c) AGATCT
 - (d) GCAGCA
4. DNA extracted from an organism is cut into small size of DNA by
- (a) polymerase enzyme
 - (b) helicase enzyme
 - (c) gyrase enzyme
 - (d) restriction enzyme
5. Size of pBR³²² is _____.
- (a) 100 kb
 - (b) 10 kb
 - (c) 4.3 kb
 - (d) 43 kb

6. Plasmids that incorporate a segment of bacteriophage λ DNA that has the cohesive end site are
- (a) Phagemid
 - (b) Cosmid
 - (c) BAV
 - (d) Shuttle vector
7. Western blotting is the technique for the detection of
- (a) specific DNA in a sample
 - (b) specific RNA in a sample
 - (c) specific protein in a sample
 - (d) none of these
8. A genomic library is
- (a) a collection of many clones possessing different DNA fragments from the same organisms bound to vector
 - (b) a database where the sequence of an organisms genome is stored
 - (c) a place where the information of the genetic organization of organisms are kept
 - (d) a book that describes how to isolate DNA from a particular organism

9. PCR is a
- (a) DNA degradation technique
 - (b) DNA amplification process
 - (c) DNA sequencing technique
 - (d) None of these
10. *Thermus aquaticus* is the source of
- (a) Taq polymerase (b) Vent polymerase
 - (c) Both (a) and (b) (d) Primase enzyme

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain the process of post transcriptional modification.

Or

- (b) Explain the process of post translational modification.

12. (a) Brief note on Restriction Site and its utilities.

Or

- (b) Explain :
- (i) Bam H₁ restriction enzymes
 - (ii) Hind III restriction enzymes.

13. (a) Give a brief note on Natural plasmid vectors.

Or

(b) Write note on phagemid and cosmid.

14. (a) Explain the brief note on molecular probes.

Or

(b) Write note on :

(i) Southern blot

(ii) Western blot.

15. (a) Describe the process of DNA Finger Printing.

Or

(b) Brief note on micro array in protein engineering.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Give a detailed process of Transcription.

Or

(b) Describe the process of Translation.

17. (a) Write an account on enzymes involved in genetic engineering.

Or

(b) Briefly explain the types of Restriction enzymes.

18. (a) Give an account on plasmid based vectors.

Or

(b) Write an account on some hybrid vectors.

19. (a) How will you construct the chimeric DNA? Explain it.

Or

(b) Write an account on DNA Libraries.

20. (a) Explain the gene amplification method of PCR and its modification.

Or

(b) Give a brief note on application of PCR in biotechnology and genetic engineering.
