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IV Semester B.Sc. Degree Examination, September - 2022

BIOTECHNOLOGY

Genetic Engineering

(Scheme Fresher - CBCS PRIOR 2020-21)

Paper : IV

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates :

Draw Neat Labelled Diagrams Wherever necessary.

SECTION - A

I. Write short notes on the following.

(5×2=10)

- 1) Rolling circle model of replication.
- 2) Wobble Hypothesis.
- 3) Promoters
- 4) Tryptophan operon
- 5) Jumping genes.

SECTION - B

II. Answer any four of the following

(4×5=20)

- 6) Write a note on prokaryotic gene structure.
- 7) Describe mismatch repair mechanism of DNA
- 8) Write the characteristics of Genetic code.
- 9) Explain post transcriptional modification in eukaryotic mRNA.
- 10) Explain the structure of mitochondrial DNA.

[P.T.O.]



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SECTION - C

III. Answer any THREE of the following.

(3×10=30)

- 11) Describe the experiment of Hershey and chase to prove that DNA is the genetic material.
- 12) Explain the functions of proteins and enzymes involved in the replication of DNA in prokaryotes.
- 13) Write a note on
 - a) Conjugation
 - b) Transduction
- 14) Describe the process of translation in prokaryotes.
- 15) What is an operon? Explain the lactose operon in detail.

SECTION - D

IV. Answer the following in one word or a sentence each.

(10×1=10)

- 16) Give an example for right handed DNA.
 - 17) What is SSB protein?
 - 18) What is a Hfr cell?
 - 19) What is a cistron?
 - 20) Name the repressor in Lac operon
 - 21) What is acetylation?
 - 22) Expand CpDNA
 - 23) What is attenuation?
 - 24) Who discovered transposable elements in maize?
 - 25) What is poly A tail?
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IV Semester B.Sc. Degree Examination, October - 2022

BIOTECHNOLOGY

Genetic Engineering

(CBCS Freshers Scheme 2020-21)

Paper : IV



Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

Draw neat Labelled Diagrams wherever necessary.

SECTION - A

I. Write short notes on the following.

(5×2=10)

1. pBR 322
2. Alkaline Phosphatase
3. Antibiotic Resistance Gene
4. Expression Vector
5. GM crop

SECTION - B

II. Answer any Four of the following.

(4×5=20)

6. What are restriction enzymes ? Explain the types.
7. Explain cosmid vector in gene cloning.
8. Explain electroporation method of gene transfer.
9. Write the salient features of Human Genome Project.
10. Write a note on conservation of Germplasm.

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SECTION - C

III. Answer any Three of the following

(3×10=30)

11. Write a note on
 - a) DNA Polymerases
 - b) DNA Ligases
12. Explain in detail the steps involved in Agarose gel electrophoresis. Add a note on its application.
13. Write a note on
 - a) Calcium chloride method
 - b) Gene gun method
14. What are gene libraries ? Explain cDNA cloning techniques.
15. Explain the production of recombinant insulin by recombinant DNA technology.

SECTION - D

IV. Answer the following in one word or a sentence each.

(10×1=10)

16. What is 5' – 3' exonuclease activity?
 17. What is the function of phosphokinase?
 18. What is Taq polymerase?
 19. Expand PAGE.
 20. Name the membrane used in western blot technique.
 21. What is a commonly used prokaryotic vector in gene cloning.
 22. What is Genomic library?
 23. Give an example for pesticide resistant plant.
 24. Who is the father of Golden rice?
 25. Which technique is used to produce flavr savr tomato?
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