2025

BOTANY

(Major)

Paper : BOT0500204

(Molecular Biology)

Full Marks : 45

Time : 2 hours

The figures in the margin indicate full marks for the questions.

1. Answer the following as directed : 1×5=5

(a) The triplet letter genetic code represents

(i) enzyme

(ii) protein

(iii) amino acid

(iv) both enzyme and protein

(Choose the correct option)

(b) D-form DNA is

(i) left handed coiled

(ii) right handed coiled

(iii) linear straight

(iv) None of the above

(Choose the correct option)

(c) Exons are

(i) inactive genes

(ii) active genes

(iii) both active and inactive genes

(iv) None of the above

(d) Viruses are made of _____ or _____.
(Fill in the blanks)

(e) Name the organelle found in both prokaryotic and eukaryotic cell.

2. Answer any *five* of the following questions : 2×5=10

(a) What is the difference between protoplasm and cytoplasm?

(b) What are chromomeres?

(c) What is genetic code?

(d) What is the difference between hnRNA and mRNA?

(e) Why is DNA negatively charged?

(f) What are neat shock proteins?

(g) Why tryptophan operon is a repressible operon?

(h) What is a TATA box?

(i) What is Lac operon?

(j) What do you mean by cot curve?

3. Answer any *four* of the following questions : 5×4=20

(a) What is deciphering of genetic code?

(b) Explain about the functions of the different types of enzymes involved in B-form DNA replication.

(c) Write briefly about the different types of polymerase enzymes.

(d) Write the difference between constitutive and facultative hetero-chromatin.

(e) Write briefly about split genes.

(f) Enumerate about the experiment which proved DNA as a carrier of genetic information.

(g) Write a short note on riboenzymes.

(h) Write about adopter hypothesis and discovery of mRNA template.

4. Answer any *one* of the following questions : 10

(a) What is an operon? Describe the concept of Lac operon in prokaryotes with a neat diagram. 2+8=10

(b) Describe the mechanism of transcription in eukaryotes. 10

(c) Describe the semi-conservative mode of linear DNA replication. 10

(d) Write about the various steps involved in the translation process of protein synthesis in prokaryotes. 10

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