



বিদ্যাসাগর বিশ্ববিদ্যালয়

VIDYASAGAR UNIVERSITY

B.Sc. Honours Examination 2021

(CBCS)

4th Semester

BOTANY

PAPER—C8T & C8P

MOLECULAR BIOLOGY

Full Marks : 60

Time : 3 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

THEORY : C8T

Group – A

Answer any *two* questions.

2×15

1. What is an operon? Distinguish between inducible and repressible operon. Explain the mechanism of positive and negative control in lac operon with suitable diagram. 2+3+10

2. Describe the initiation phase of protein synthesis in prokaryotes and eukaryotes. How protein synthesis is inhibited? Write the post-translational modification of proteins. Write the function and application of heat shock proteins (HSPs). 6+2+2+5
3. Give a labelled sketch of the ultrastructure of a complete nucleosome. Explain the three levels of DNA packaging in eukaryotic chromosomes. 7+8
4. What is Ribozyme? Describe the rho independent termination of prokaryotic transcription. Discuss the process of group 1 and group 2 intron splicing. 2+3+10

Group – B

Answer any *one* question. 1×10

5. What is capping enzyme? Discuss on polyA tail and significance. Describe the processing of messenger RNA in eukaryotes. 2+4+4
6. Describe the structure of tRNA explaining significance of different parts of it, with the aid of a suitable drawing. Illustrate the rolling circle and theta mode of replication. 5+5

PRACTICAL : C8P

Answer any *one* question. 1×20

1. Write the method of isolating DNA from plant tissue. Illustrate the steps followed for estimating DNA by UV spectrophotometry. 10+10
2. Elaborate the procedure of preparing LB medium. Give a comparative account of prokaryotic RNA polymerase and eukaryotic RNA polymerase. 12+8
3. Write down the steps of experiment of Avery *et al* to prove DNA as a genetic material. 12+8