'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 3rd Semester Examination, 2023

CC7-MICROBIOLOGY

MOLECULAR BIOLOGY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.

1. Answer any ***five*** of the following: 1×5 = 5

   (a) Define promoter.

   (b) Define introns.

   (c) Name one translational inhibitor.

   (d) What is primosome?

   (e) Define Tm.

   (f) What is writhe?

   (g) What is the major function of peptidyl transferase?

   (h) Define the Wobble hypothesis.

2. Answer any ***three*** of the following: 5×3 = 15

   (a) What are the various transcription factors involved in transcriptional bubble formation? 5

   (b) Write a note on various enzymes and proteins involved in DNA replication. 5

   (c) Explain semi-conservative replication with the help of Meselson-Stahl Experiment. 5

   (d) Write a note on the RNA Polymerase Holoenzyme. 5

   (e) Describe the steps involved in the recycling of elongation factors in the process of prokaryotic translation. 5

3. Answer any ***two*** of the following: 10×2 = 20

   (a) Explain the positive and negative regulation of lac operon with the help of suitable diagram. 5+5

   (b) Describe in detail the initiation and elongation steps of prokaryotic DNA replication. Calculate the number of hydrogen bonds present in a DNA of 500 bps having 20% Guanine. 8+2

   (c) Discuss in detail the chromatin structure modification through the mechanism of DNA methylation and histone acetylation. 5+5

   (d) Explain in detail the activation of tRNA and the mechanism of initiation of translation in prokaryotes with suitable diagram. 5+5

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