'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 4th Semester Examination, 2022

CC8-BOTANY

MOLECULAR BIOLOGY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.

GROUP-A

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

   (a) What is spliceosome?

   (b) What is rho (ρ) factor?

   (c) Name any two stop codons.

   (d) What is gene silencing?

   (e) What is Shine-Dalgarno sequence?

   (f) What is lagging strand?

   (g) What are heat shock proteins?

   (h) What is euchromatin?

GROUP-B

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

   (a) Write the steps of translation that are inhibited by chloramphenicol and actinomycin. 5

   (b) Enumerate the Universal features of genetic code. 5

   (c) Differentiate between: $2\frac{1}{2}\times2 = 5$

      (i) B-DNA and Z-DNA

      (ii) Constitutive heterochromatin and facultative heterochromatin.

   (d) Write notes on: $2\frac{1}{2}\times2 = 5$

      (i) θ (theta) mode of replication

      (ii) Cot curves.

   (e) Write the role of transcription factors in initiation of transcription. 5

GROUP-C

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

(a) Draw and label the clover leaf model of t-RNA. Mention its role in protein synthesis. 7+3 = 10

(b) Prove through Hershey-Chase experiments that DNA is the genetic material. 10

(c) How steroid hormone synthesis are regulated at transcription level? What is gene silencing? 8+2 = 10

(d) Describe regulation of gene expression by lac operon model. What are ribozymes? 8+2 = 10

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