WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 4th Semester Examination, 2021

BOTACOR08T-BOTANY (CC8)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer the following questions in brief: 1×6 = 6

(a) What is facultative heterochromatin? Give an example.

(b) Why in Griffith's experiment the healthy mouse die when a mixture of non-virulent type IIR bacteria and heat killed virulent Type IIIS bacteria of *Streptococcus pneumoniae* are injected into a healthy mouse?

(c) Name one organism having linear single stranded DNA.

(d) Name the enzyme responsible for replication of eukaryotic chromosomal ends.

(e) What are SSB proteins?

(f) Name an inhibitor of protein synthesis.

2. Answer any ***eight*** questions from the following: 3×8 = 24

(a) Distinguish among A-DNA, B-DNA and Z-DNA.

(b) Give a concise account of mt-DNA.

(c) Differentiate between the m-RNA of prokaryotes and eukaryotes.

(d) Distinguish between Euchromatin and Heterochromatin.

(e) Describe the mechanism of prokaryotic termination of translation.

(f) What is open promoter complex? Mention the role of σ (sigma) factor in transcription initiation.

(g) Describe the experiment that demonstrated semi-conservative nature of DNA replication.

(h) Distinguish between repressible and inducible operon.

(i) What does 'export ready' mRNA mean? What distinguishes an 'export ready' mRNA from an mRNA that is detained in the nucleus?

(j) Discuss the splicing mechanism of introns mediated by spliceosomes.

(k) Write a short note on cot curve.

(l) Circle the initial codon and stop codon present in the following bacterial mRNA sequences 5′ UUUGGGCUUAUGUUUAAAUUUAAAUUUUGAAAUGAU 3′.

What are isoacceptor tRNAs?

3. Answer any ***two*** questions from the following: 5×2 = 10

(a) Briefly describe how Hershey and Chase demonstrated that DNA is passed to new phages during phage reproduction.

(b) How does a dsDNA denatured? State the characteristic features of denatured DNA. What is melting temperature (Tm) of DNA? Melting temperatures of double-stranded DNA molecules for three organisms A, B and C are 70°C, 85°C and 75°C respectively. Arrange these organisms in ascending order as per the G–C content of DNA. Explain citing proper reasons.

(c) Explain the mechanism of 5′ capping of mRNA and mention its function.

(d) Describe the structure of Tryptophan operon. Add a note on Attenuation.

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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