WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 4th Semester Examination, 2020

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 central dogma?
   (b) The base composition of M13 phage DNA is – A-23%; T-36%; G-21% and C-20%, what is the nature of M13 phage DNA?
   (c) What is Shine-Dalgarno sequence?
   (d) What are linker histones?
   (e) What are Okazaki fragments?
   (f) What are peptide hormones?

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

   (a) Briefly describe the Avery-McLeod-McCarty experiment to prove DNA as genetic material. 3
   (b) Give an account of cp-DNA. 3
   (c) What is proof reading activity in replication? What will happen if the function is mutated? 2+1
   (d) Briefly mention the specific role of all the enzymes required for DNA replication in prokaryotes. 3
   (e) Distinguish between rho-dependent and rho-independent termination of transcription. 3
   (f) Describe the reactions involved in the aminoacylation (charging) of a tRNA molecule. 3
   (g) Distinguish between constitutive and facultative heterochromatin. 3
   (h) Discuss the similarities and differences between *E. coli* RNA polymerase and eukaryotic RNA polymerase. 3
   (i) What are transcription factors? Describe the promoter sites for initiation of transcription in eukaryotes. 1+2
   (j) At which end of m RNA is poly A? What is cap? Are there eukaryotic mRNA molecules that do not contain either feature? 1+1+1
   (k) Differentiate between the mechanisms of RNA splicing between group I and group II introns. 3
   (l) State the properties of Ribozymes. What major roles are played by Ribozymes in cells? 1+2

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

(a) With suitable sketches briefly describe the leading strand and lagging strand synthesis in prokaryotes. Why primers are required for DNA synthesis? 4+1

(b) What is spliceosome? With suitable diagram discuss the splicing mechanism of splicing introns. 1+4

(c) What do you mean by degeneracy of genetic code? Discuss the triplet binding technique of deciphering the genetic code. Is genetic code strictly universal? 1+3+1

(d) What makes the lac operon turn on? Briefly describe the mechanism of negative control of lac operon. 2+3

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.*

——×——