WEST BENGAL STATE UNIVERSITY

B.Sc. Programme 5th Semester Examination, 2020, held in 2021

MCBGDSE02T-MICROBIOLOGY (DSE1)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate marks of question.
Candidates should answer in their own words and adhere to the word limit as practicable.

Question No. 1 is compulsory and any *four* questions from the rest

1. Answer any ***four*** questions from the following: 2×4 = 8
   (a) Why is *Escherichia coli* considered as model organism in prokaryotic world?
   (b) What do you mean by recombination frequency?
   (c) What are the differences between a plasmid and an episome?
   (d) What is repetitive DNA?
   (e) What do you mean by transposable elements?
   (f) In case of chromosomal aberrations, why is this relation $2n+1+1 \neq 2n+2$ true?
   (g) What are multiple alleles?

2. (a) Define test cross. Why is it considered as back cross also? 2+1
   (b) What are co-dominance and incomplete dominance? 2
   (c) What is karyotyping? 2
   (d) What are pseudoalleles? 1

3. (a) What is Linkage? State the Morgan theory of linkage with suitable example. 1+3
   (b) What are the factors that affect Crossing over? 2
   (c) How does Crossing over differ from linkage? 2

4. (a) 'Coiling of snails are due to cytoplasmic inheritance' — Explain this phenomenon with suitable diagram. 4
   (b) How does euchromatin differ from heterochromatin? 2
   (c) Classify the chromosomes on the basis of location of the centromere. 2

5. (a) State the structure and composition of nucleosome. 3
   (b) Indicate the mechanism of site-specific recombination with suitable example. 3
   (c) Mention the importance of RecBCD complex in homologous recombination. 2

6. (a) What are paracentric and pericentric inversion in chromosomal abnormality? 3
   (b) What are the causes of (i) Klinefelter syndrome, (ii) Turner syndrome, (iii) Down syndrome? Answer briefly. 3
   (c) What do you mean by sex-linked disorder? 2

7. (a) Define Q banding of chromosome. 2
   (b) Define epistasis with an example. 3
   (c) Explain Mendel's law of independent assortment with a suitable example. 3

8. (a) Explain the coupling phase of linkage with suitable example. 3
   (b) What are R-plasmids? 2
   (c) Mendel was considered as a lucky geneticist. Do you think so? Give reasons for your answer. 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.*

——×——