



WEST BENGAL STATE UNIVERSITY
B.Sc. Programme 5th Semester Examination, 2021-22

MCBGDSE02T-MICROBIOLOGY (DSE1)

INHERITANCE BIOLOGY

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) What are pseudoalleles?
 - (b) What do you mean by autosomal inheritance?
 - (c) What is polymorphism?
 - (d) State the function of a “centromere”.
 - (e) Discuss the structure of nucleosome.
 - (f) What is the difference between euchromatin and heterochromatin?
 - (g) All episomes are plasmids but all plasmids are not episomes. True or False. Justify.

2.
 - (a) What are the causes of (i) Klinefelter syndrome, (ii) Down syndrome? 2
 - (b) What are IS-elements? Draw the structure of any transposable elements. 3
 - (c) Explain briefly the Mendel’s Laws of segregation. 3

3.
 - (a) What is a linkage map? 2
 - (b) What is chromosomal interference? 2
 - (c) Discuss the cytological basis of crossing over. 4

4.
 - (a) State the differences between Universal and Human mitochondrial genetic codes. 2
 - (b) What is the difference between genetic code and genetic information? 2
 - (c) State the function of nucleosome. 2
 - (d) Why mitochondria is known as the power house of the cell? 2

5.
 - (a) State the significance of the following: 3
 - (i) Rec BCD
 - (ii) Ruv ABC.
 - (b) Explain the formation of ‘holiday junction’ during recombination with a suitable diagram. 3
 - (c) What are Ti-plasmid? 2

6. (a) Name the mostly studied bacterium in genetics. 1
(b) Briefly describe the ideal qualities that make an organism suitable for genetic experimentation. 4
(c) Explain the importance of *Arabidopsis thaliana* in genetics. 3
7. (a) What is endosymbiotic theory? 2
(b) What are the differences between autosomal and sex-linked disorders? 3
(c) What are the deviations of Mendelian inheritance? 3
8. (a) What are DNA-binding proteins? Mention the characteristics of amino acids found in DNA-binding proteins. 2
(b) What are the differences between “homologous” and “site-specific” recombination? 3
(c) Give two examples of human tumours associated with consistent chromosomal translocation. 2
(d) Name one disease associated with recessive lethal alleles in humans. 1

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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