



WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 5th Semester Examination, 2020, held in 2021

MCBADSE01T-MICROBIOLOGY (DSE1/2)

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.*

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

1. Answer any ***four*** questions from the following: 2×4 = 8
 - (a) What is human microbiome initiative?
 - (b) Define the term phylotype.
 - (c) What is species richness? Describe with example.
 - (d) What is the first metabolite database?
 - (e) What are siderophores? How do siderophores contribute in bacterial virulence?
 - (f) What are aggresins?
 - (g) How does *Mycobacterium tuberculosis* resist intracellular killing?

2. (a) Discuss the role of bacteriophages in bacterial genome evolution. 4
(b) What are pathogenicity islands? Write down their characteristics. 1+3

3. (a) Define Metagenomics. 2
(b) Outline the methods to determine or deduce the individual genomes or parts of genomes, from environmental sample in metagenomic study. How these data can be used to determine species diversity and potential of microbial community of the environment? 3+3

4. (a) Discuss about the characteristics of a DNA sequence by which you can identify a horizontally acquired gene/locus in the genome. 4
(b) Which one will contribute more towards bacterial genome evolution and why? 2+2
 - (i) Generalized transduction vs specialized transduction,
 - (ii) Small size vs large size of bacteria.

5. (a) What is meant by annotation of genome sequence? 2
(b) Name a fundamental tool used to find regions of similarity between different genomes or within a single genome. 2
(c) Differentiate homologs, orthologs and paralogs. 4
6. (a) Why bacteria form biofilms? 4
(b) Briefly describe the molecular aspects of biofilm formation. 4
7. (a) Describe the range of possible virus-cell interaction during viral pathogenesis in animal cells. 4
(b) Define virokinins. Differentiate between cytotoxic and non-cytotoxic productive viral infections. 1+3
8. (a) What is uncoating? Schematically represent the three major uncoating strategies of animal viruses. 2+4
(b) RNA viruses with (-) strand and double stranded RNA genomes must carry RNA dependent RNA polymerase – why? 2

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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