



**WEST BENGAL STATE UNIVERSITY**  
B.Sc. Honours/Programme 4th Semester Examination, 2020

**MCBHGEC04T/MCBGCOR04T- MICROBIOLOGY (GE4/DSC4)**

**MEDICAL MICROBIOLOGY AND IMMUNOLOGY**

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..*

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

1. Answer any **four** questions from the following: 2×4 = 8
  - (a) State the basic difference between mode of action of Penicillin and Lysozyme.
  - (b) Define Zoonotic disease with example.
  - (c) How can opportunistic pathogens cause infections?
  - (d) Name any two anti-viral compounds and their mode of action.
  - (e) What do you mean by naïve T cell?
  - (f) Which type of antibody is present in breast milk? For which property does this antibody bind with antigens having multiple epitope?
  - (g) All immunogens are antigens but not all antigens are immunogen – Explain.
  - (h) What are interferons?
  
2. (a) How can dilution susceptibility tests and disk diffusion tests be used to determine microbial drug sensitivity? 2+2
  - (b) Diphtheria toxin is an example of lysogenic conversion – Explain. 2
  - (c) Why do penicillins and cephalosporins have a higher therapeutic index than most other antibiotics? 2
  
3. (a) What are the roles of the capsule and the fimbriae of bacteria in microbial adherence? 2
  - (b) What are bacteriocins and what is their function in host defense mechanism? 3
  - (c) Mention two important drugs for treatment of TB and their mode of action. 3
  
4. (a) Why does antibiotics are considered as secondary metabolite? 2
  - (b) Why Streptomycin is known as aminoglycosidic antibiotic? 2
  - (c) State the mechanism of action of Puromycin. 2
  - (d) Define Exotoxin and Endotoxin. 2

5. (a) Which family does measles virus belong? 1  
(b) Name the causative agent of cerebral malaria. Why does spleen enlargement occur in malarial infection? Name one sulphonamide drug for treating patients infected with amoebiasis. 1+2+1  
(c) Name two different subtypes of influenza virus. 1  
(d) State the pathogenesis caused by polio virus. 2
6. (a) Contrast active and passive immunity. 3  
(b) Distinguish among isotype, allotype, and idiotypic. 3  
(c) Distinguish between  $T_c$ , and CTL. 2
7. (a) Compare the structures and function of monocytes and neutrophils. 2+2  
(b) What is the function of lymph nodes? 2  
(c) How the entrapped microorganism is destroyed in phagolysosome? 2
8. (a) Why does hemagglutination occur and how can it be used in the clinical laboratory? 3  
(b) What do you mean by Bence-Jones Protein? What is plasmacytoma? 2+2  
(c) Write down the formula for determination of variability at each position of VL and VH domains of antibody? 1
9. (a) Define adjuvants. What are the benefits of using it? Mention the components of Freund's incomplete adjuvant. 1+1+2  
(b) What is the role of Toll-like receptors (TLRs) in phagocytosis? 2  
(c) What is hapten? 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.*

—x—