

**M.Sc. MICROBIOLOGY
FOURTH SEMESTER
MEDICAL MICROBIOLOGY
MMB - 402D**

(Use Separate Answer Scripts for Objective & Descriptive)

Duration: 3 hrs.

Full Marks: 70

[PART-A: Objective]

Time: 20 min.

Marks: 20

Choose the correct answer from the following:

1X20=20

1. Genetic variation in viruses contributes to their ability to evade the immuneresponse. Select the principal means by which antigenic shift occurs in influenza A virus.
 - a. Low fidelity of DNA dependent DNA polymerase
 - b. Low fidelity of RNA dependent RNA polymerase
 - c. Low fidelity of reverse transcriptase
 - d. Reassortment of fragments of the RNA genome
2. The aminoglycosides are a very active group of antibacterial agents, particularly against Gram-negative bacilli. Identify their mode of action from the list.
 - a. Disruption of cytoplasmic membrane function
 - b. Inhibition of bacterial cell wall synthesis
 - c. Inhibition of bacterial DNA gyrase
 - d. Inhibition of protein synthesis
3. A 22-year old female medical student recently returned from Tanzania presents with a history of haematuria. On investigation schistosomal serology is shown to be positive. Select the treatment of choice
 - a. Albendazole
 - b. Ivermectin
 - c. Mebendazole
 - d. Praziquantel
- 4 Diptheria Toxin is followed by which pathway
 - a. AB pathway
 - b. Membrane disrupting
 - c. Receptor mediated
 - d. None
- 4 Staphylococcal intoxication is caused by the toxin in the food from
 - a. Staphylococcus aureus
 - b. S. cerevisiae
 - c. S. thermophilus
 - d. none of these
6. What is the cell shape of the organisms belonging to the family Enterobacteriaceae?
 - a. Coccus
 - b. straight rod
 - c. Bacillus
 - d. Vibrio
7. Which of the following microorganisms is not responsible for urinary tract infection?
 - a. Escherichia coli
 - b. Klebsiella pneumoniae
 - c. Bacteroides fragilis
 - d. Proteus mirabilis
8. Which of the following are the virulence factors of *S. aureus*?
 - a. Hemolysin
 - b. Lecithinase
 - c. Plasmocagulase
 - d. Exfoliatin

9. Which of the following is a major virulence factor of *Streptococcus pneumoniae*?
 - a. streptolysin S
 - b. polysaccharide capsule
 - c. streptolysin O
 - d. M protein
10. *Escherichia coli* is one of the major enteric bacteria that causes diarrhea and is characterized according to its virulence properties. All are the types of *E. coli*, EXCEPT?
 - a. Enteropathogenic *E. coli*
 - b. Enterotoxigenic *E. coli*
 - c. Enterohemorrhagic *E. coli*
 - d. Enterolyticogenic *E. coli*
11. *Diarrhoea* is not caused by
 - a. Salmonella enteritidis
 - b. Shigella dysenteriae
 - c. Streptococcus pyogenes
 - d. Clostridium difficile
12. Name the most potent toxin produced by *Clostridium botulinum* and *C. tetani*
 - a. Neurotoxin
 - b. Cytotoxin
 - c. Aflatoxin
 - d. Exotoxins
13. Which of the following is less likely to be found as the normal flora of the intestine?
 - a. *Proteus* spp
 - b. *Salmonella* spp
 - c. *Escherichia* spp
 - d. *Staphylococcus* spp
14. Which one of the following tests can be useful to differentiate between *Moraxella catarrhalis* and saprophytic *Neisseria* spp from sputum specimen?
 - a. Oxidase
 - b. Butyrate esterase
 - c. Gram stain
 - d. Catalase
15. What is the drug of choice for the treatment of meningococcal disease?
 - a. Penicillin
 - b. Amphotericin
 - c. Methicillin
 - d. Penicillin G
16. The cell wall of gram-positive bacteria may contribute to the development of septic shock. Identify the component which is most associated with the induction of septic shock.
 - a. Capsular protein
 - b. Endotoxin
 - c. Peptidoglycan
 - d. Phospholipid
17. Each of the following parasite is transmitted by mosquitoes except:
 - a. *Leishmania donovani*
 - b. *Wuchereria bancrofti*
 - c. *Plasmodium vivax*
 - d. *Plasmodium falciparum*
18. Each of the following statements concerning *Trichomonas vaginalis* is correct except:
 - a. *T. vaginalis* is transmitted sexually
 - b. *T. vaginalis* can be diagnosed by visualizing the trophozoite
 - c. *T. vaginalis* can be treated effectively with metronidazole
 - d. *T. vaginalis* causes bloody diarrhea

19. Animals that are routinely infected with a protozoan or parasite are termed as

- a. definitive host
- c. reservoir host

- b. intermediate host
- d. parasitic host

20. Which of the following agent is used to prevent Malaria

- a. Mebendazole
- c. Inactivated vaccine

- b. Chloroquine
- d. Zinc tablet

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(PART-B : Descriptive)

Time : 2 hrs. 40 min.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. Define Toxigenicity? Difference between exotoxin and endotoxin? Write the mechanism of receptor mediated endocytosis with a neat diagram 2+2+6
=10
2. Explain the mode of drug action of penicillin and sulphanilamide with a neat diagram 5+5=10
3. Describe the morphology, cultural characteristics, pathogenicity and laboratory diagnosis of *Staphylococcus aureus*. Write the types of infection caused by *Staphylococcus aureus*. 8+2=10
4. Briefly describe the pathogenesis, transmission, clinical manifestation and laboratory diagnosis of *Proteus*. 10
5. What is emerging communicable disease? Briefly explain the Anthrax disease. What is the etiological agent of anthrax? Write the symptoms and pathogenesis of anthrax. 2+3+1+
4=10
6. Explain the life cycle of plasmodium vivax with a neat diagram. 10
7. Describe the mode of infection by microorganism. Discuss each step. 10
8. Explain the life cycle of *Balantidium coli*? 10

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