

M.B.B.S. SECOND PROFESSIONAL EXAMINATION, FEBRUARY-2025**MICROBIOLOGY****PAPER - FIRST****[Time allotted: Three hours]****SET - A****[Max Marks: 100]****Q. 1. Multiple choice questions (Darken the single best response in OMR sheet. Time allotted 20 minutes) (20 x 01 = 20)**

1. Which stage of the malaria parasite causes relapse?
 - a. Sporozoite
 - b. Trophozoite
 - c. Hypnozoite
 - d. Merozoite
2. Which is the infective form of mosquito?
 - a. Sporozoite
 - b. Trophozoite
 - c. Gametocyte
 - d. Merozoite
3. Which of the following viral markers is first to appear in blood after infection with hepatitis B virus?
 - a. HBsAg
 - b. HBcAg
 - c. HBeAg
 - d. Antibody to HBsAg
4. Fungal agent that does not infect nail:
 - a. Trichophyton
 - b. Epidermophyton
 - c. Microsporum
 - d. Candida albicans
5. One of the following fungi is capsulated:
 - a. Aspergillus fumigatus
 - b. Rhizopus
 - c. Candida albicans
 - d. Cryptococcus neoformans
6. Chagas disease is caused by:
 - a. Trypanosoma rangeli
 - b. Trypanosoma cruzi
 - c. Trypanosoma brucei gambiense
 - d. Trypanosoma brucei rhodesiense
7. All of the following are DNA viruses, **EXCEPT**:
 - a. Herpes simplex virus
 - b. Hepatitis B virus
 - c. Enterovirus virus
 - d. Adeno virus
8. Rotavirus vaccine is given by which route?
 - a. Intramuscular
 - b. Intravenous
 - c. Oral
 - d. Subcutaneous
9. Scrub typhus is caused by:
 - a. Rickettsia prowazekii
 - b. Coxiella burnetti
 - c. Ehrlichia sennetsu
 - d. Orientia tsutsugamushi
10. Which antibody mediates mucosal immunity?
 - a. IgM
 - b. IgG
 - c. IgA
 - d. IgE
11. C1 esterase inhibitor deficiency leads to:
 - a. Paroxysmal nocturnal hemoglobinuria
 - b. Hereditary angioneurotic edema
 - c. Immune complex disease
 - d. Recurrent pyogenic infections
12. The largest virus in size is:
 - a. Herpes simplex virus
 - b. Hepatitis B virus
 - c. Pox virus
 - d. Adeno virus
13. Which of the following bacteria does not require an arthropod vector for its transmission?
 - a. *Coxiella burnetti*
 - b. *Rickettsia akari*
 - c. *R. prowazekii*
 - d. *Bartonella quintana*
14. Classification of shigella is on the basis of fermentation of
 - a. Lactose
 - b. Sucrose
 - c. Mannitol
 - d. Glucose
15. Which HIV testing strategy is used in India for diagnosis of an individual with symptoms suggestive of AIDS clinically?
 - a. Strategy I
 - b. Strategy IIA
 - c. Strategy IIB
 - d. Strategy III
16. Candida species resistant to azoles:
 - a. *Candida albicans*
 - b. *Candida krusei*
 - c. *Candida tropicalis*
 - d. *Candida dubliniensis*
17. Malta fever is caused by:
 - a. *Staphylococcus*
 - b. *Brucella melitensis*
 - c. *Pneumococcus*
 - d. *Escherichia coli*
18. Lyme's disease is caused by
 - a. *Borrelia recurrentis*
 - b. *B. duttoni*
 - c. *B. burgdorferi*
 - d. *B. hermsii*
19. All of the following are live vaccine, **EXCEPT**:
 - a. Mumps vaccine
 - b. Measles vaccine
 - c. Rubella vaccine
 - d. Injectable Polio vaccine
20. Widal is a type of
 - a. Agglutination test
 - b. Precipitation test
 - c. Flocculation test
 - d. ELISA

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Note: Attempt all questions in sequence.
Draw suitable diagrams (wherever necessary)

- Q. 2. Give reasons:** (5 x 2 = 10)
- CSF samples for bacterial culture should not be refrigerated in case of delay in processing.
 - Viral RNA detection is the best tool for diagnosis of HIV during window period.
 - Secondary immune response is prompt.
 - There is no safe and effective vaccine till date against HIV infection
 - Type IV hypersensitivity is called as delayed hypersensitivity.
- Q. 3. Problem based question:** (5 x 2 = 10)
- A 16-year-old male presented to the emergency department with high-grade fever associated with chills and rigor which rises every third day. On physical examination anemia and splenomegaly were present. His blood sample was subjected to rapid diagnostic test which revealed bands near pLDH line and control line, but no band near the HRP-II antigen line.
- What is the etiological agent based on the above history?
 - Write briefly on the life cycle of the etiological agent.
 - Describe the pathogenesis of the clinical condition.
 - What are the various diagnostic modalities for this condition?
 - How will you treat this condition?
- Q. 4. Write briefly on:** (4 x 6 = 24)
- Visceral leishmaniasis
 - Mechanisms of antimicrobial resistance
 - Biomedical waste management
 - Discuss the importance of maintaining confidentiality of laboratory reports.
- Q. 5. Structured question:**
- (i) Define sterilization and disinfection. List the physical methods of sterilization. Write down the principle, temperature, time period and uses of hot air oven. (2+2+6=10)
- (ii) Name hepatitis viruses. What are the modes of transmission of hepatitis B virus. Write a note on serological markers of hepatitis B virus in various stages of hepatitis B virus infection. (2+4+4=10)
- Q. 6. Answer as indicated:** (4 x 4 = 16)
- Difference between *Taenia solium* and *Taenia saginata* in tabular form.
 - Draw a labelled diagram of the structure of IgG.
 - Draw a flowchart diagram of the classical complement pathway.
 - List four causes of food poisoning.
