

RAN-2606000102037001 / 2406000102030701
2nd MBBS Examination September - 2026
Microbiology Paper - 1
[Total Marks: 100
સૂચના : / Instructions

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
 Fill up strictly the above details on your answer book

Seat No.:

Student's Signature

SECTION - I
Q.1.
MCQ
1 × 20 = 20

- The most commonly used method for sterilization of culture media is:
 - Hot air oven
 - Autoclaving
 - Pasteurization
 - Filtration
- The mordant used in Gram staining is:
 - Safranin
 - Acetone
 - Gram's iodine
 - Carbol fuchsin
- Bacterial endospores are commonly produced by species belonging to:
 - Neisseria and Moraxella
 - Bacillus and Clostridium
 - Staphylococcus and Streptococcus
 - Mycoplasma and Ureaplasma
- Direct transfer of plasmid DNA from one bacterium to another usually occurs by:
 - Conjugation
 - Transduction
 - Transformation
 - Sporulation
- Endotoxin is principally associated with:
 - Peptidoglycan of Gram-positive bacteria
 - Lipopolysaccharide of Gram-negative bacteria
 - Bacterial capsule
 - Flagellar protein
- A kidney transplant recipient develops acute rejection despite ABO compatibility. The rejection is most likely due to differences in:
 - Platelet antigens
 - HLA antigens
 - Rh antigens
 - Hemoglobin variants
- A 35-year-old man presents with lower abdominal pain, fever, and frequent passage of small volume stools mixed with blood and mucus for the past 5 days. He complains of tenesmus. Stool microscopy demonstrates motile trophozoites containing ingested red blood cells. What is the likely organism?
 - Giardia lamblia
 - Entamoeba histolytica
 - Cryptosporidium parvum
 - Balantidium coli

8. A pregnant woman in her third trimester develops acute hepatitis after consuming contaminated water. She rapidly progresses to acute liver failure. Which virus is the most likely cause?
 - A. HDV
 - B. HBV
 - C. HCV
 - D. HEV
9. The primary lymphoid organs are:
 - A. Spleen and lymph nodes
 - B. Thymus and bone marrow
 - C. Tonsils and spleen
 - D. Peyer patches and lymph nodes
10. The immunoglobulin that can normally cross the placenta is :
 - A. IgA
 - B. IgE
 - C. IgG
 - D. IgM
11. The classical complement pathway is commonly activated by:
 - A. Antigen-antibody complexes
 - B. Bacterial endotoxin alone
 - C. Mannose residues
 - D. Interferons
12. CD4-positive T lymphocytes recognize antigens presented with :
 - A. MHC class I
 - B. MHC class II
 - C. IgG
 - D. Complement C3
13. Serum sickness is an example of:
 - A. Type I hypersensitivity
 - B. Type II hypersensitivity
 - C. Type III hypersensitivity
 - D. Type IV hypersensitivity
14. A 30-year-old man presents with profuse watery diarrhoea after consuming contaminated street food. On examination, he is severely dehydrated. His stool resembles "rice-water." Stool microscopy shows comma-shaped, Gram-negative bacilli with darting motility. Which transport medium is preferred?
 - A. Stuart transport medium
 - B. Amies transport medium
 - C. Cary-Blair transport medium
 - D. Robertson's cooked meat medium
15. A 35-year-old veterinarian presents with intermittent fever for 3 weeks, excessive sweating (especially at night), malaise, and low back pain. He regularly assists in the delivery of cattle and consumes unpasteurized milk. Blood culture later grows small Gram-negative coccobacilli. What is the most likely diagnosis?
 - A. Leptospirosis
 - B. Brucellosis
 - C. Tuberculosis
 - D. Q fever
16. The tissue morphology of *Histoplasma capsulatum* is:
 - A. Large yeast with broad-based budding
 - B. Intracellular small yeast within macrophages
 - C. Septate hyphae with acute-angle branching
 - D. Thick-walled spherules
17. Which of the following intestinal helminth eggs are characteristically bile-stained?
 - A. *Enterobius vermicularis*
 - B. *Ascaris lumbricoides*
 - C. *Hymenolepis nana*
 - D. *Ancylostoma duodenale*
18. A suspected case of infective endocarditis was admitted to the ICU. Which one of the following is best sample for this case?
 - A. Three blood sample from three different site
 - B. One blood sample during peak of fever
 - C. One blood and One urine sample
 - D. Peripheral blood for smear, CRP and ESR

19. Which of the following laboratory test is used to diagnose dengue infection within 3 days of fever?
- IgM antibody by ELISA
 - IgG antibody by ELISA
 - NS1 antigen by ELISA
 - HRP2 antigen by rapid card test
20. Negri bodies are seen in
- Adeno virus
 - HIV virus
 - Chandipura virus
 - Rabies virus

SECTION - II

Q.2. Clinical Scenario Based Questions 12 MARKS

1. A 35 year old female, admitted in the hospital started complaining of breathlessness, tightness in chest following administration of an injection of Penicillin. She developed rashes all over the body along with erythematous, oedematous plaque and urticarial wheal. She was treated as an emergency and she recovered fully by the next day.
- What type of immune reaction is this? (1)
 - Explain the immunological mediators and mechanism of action of this reaction. (5)
 - Which are the manifestations of such type of immune reaction? (3)
 - Describe the treatment for this & precautions to be taken to avoid such events in the future. (3)

Q.3. Short Note (Any 4 out of 5) (7 × 4) = 28 Marks

- Define anaerobic bacteria with 2 examples. Describe different methods of anaerobiosis.
- Write differences between endotoxin and exotoxin
- Methods of gene transfer in bacteria.
- Principle, applications and modifications of polymerase chain reactions in patient care.
- Write difference between gram positive and gram negative bacterial cell wall. Enumerate functions and methods of detection of bacterial well wall

SECTION - III

Q.4. Essay Type Question/Clinical Scenario Based Questions 12 MARKS

A 30 year old male with history of multiple sex partners is admitted with complaints of unexplained fever, progressive loss of weight, persistent diarrhoea and generalized lymphadenopathy for the past 6 months. (1+2+2+3+4)

- What is the most probable diagnosis? (1)
- What are the different modes of transmission? (2)
- Write the Pathogenesis. (2)
- Write in details WHO clinical stages for this condition. (3)
- Write in details the Laboratory Diagnosis of this condition. (4)

Q.5.

Short Note (Any 4 out of 5; AETCOM Compulsory)

(7 × 4) = 28 Marks

1. What is Communication? What are the different types of communication? (1+3+3)
Discuss the importance of efficient communication in health care setting
 2. Discuss Pathogenesis, Complications and Laboratory diagnosis of Malaria. (3+4)
 3. Systemic Fungal Infections. (7)
 4. Laboratory diagnosis of Enteric Fever. (7)
 5. Life cycle and laboratory diagnosis of Ascaris Lumbricoides (4+3)
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RAN-26060001020370002/2406000102030702

IInd MBBS Examination September - 2026
Microbiology Paper - II

Time: 3 Hours]

[Total Marks: 100

સૂચના : / Instructions

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
 Fill up strictly the above details on your answer book

Seat No.:

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Student's Signature

Q.1. MCQs

1 × 20 = 20

- A patient presents with high fever, severe myalgia, retro-orbital pain and thrombocytopenia during monsoon season. The vector is most likely:
 - Anopheles mosquito
 - Culex mosquito
 - Aedes mosquito
 - Sandfly
- An HIV-positive patient presents with headache and meningitis. CSF examination shows an encapsulated budding yeast. The most likely organism is:
 - Candida albicans
 - Cryptococcus neoformans
 - Aspergillus fumigatus
 - Histoplasma capsulatum
- A patient develops itchy, ring-shaped lesions over the trunk with central clearing. The causative organisms primarily infect:
 - Blood vessels
 - Keratinized tissues
 - Intestinal mucosa
 - Hepatocytes
- A patient with recurrent seizures undergoes brain imaging that reveals multiple cystic lesions with an eccentric scolex. The most likely diagnosis is:
 - Hydatid disease
 - Cerebral malaria
 - Neurocysticercosis
 - Toxoplasmosis
- A patient presents with fever and painful enlarged inguinal lymph nodes after exposure to rats and fleas. The likely causative organism is:
 - Brucella melitensis
 - Yersinia pestis
 - Francisella tularensis
 - Coxiella burnetii
- A hospital notices an increasing number of catheter-associated urinary tract infections in the ICU. Which infection-control activity is most useful for identifying trends and evaluating preventive measures?
 - Routine prophylactic antibiotics
 - Infection surveillance
 - Daily fumigation
 - Routine patient isolation
- The most common bacterial cause of community-acquired pneumonia in adults is:
 - Staphylococcus aureus
 - Streptococcus pneumoniae
 - Klebsiella pneumoniae
 - Pseudomonas aeruginosa

8. A typical pneumonia associated with cold agglutinins is classically caused by:
 - A. *Mycoplasma pneumoniae*
 - B. *Chlamydia trachomatis*
 - C. *Legionella pneumophila*
 - D. *Coxiella burnetii*
9. Which enzyme helps *Staphylococcus aureus* form a protective clot around itself?
 - A. Streptokinase
 - B. Coagulase
 - C. Hyaluronidase
 - D. DNase
10. A young woman presents with dysuria and vaginal discharge. Intracellular Gram-negative diplococci are seen in the urethral smear. The likely organism is:
 - A. *Neisseria gonorrhoeae*
 - B. *Chlamydia trachomatis*
 - C. *Treponema pallidum*
 - D. *Gardnerella vaginalis*
11. The recommended screening test for syphilis commonly used in routine practice is:
 - A. VDRL/RPR
 - B. Widal test
 - C. Weil-Felix test
 - D. ASO titre
12. Which organism is particularly important as a cause of meningitis in neonates?
 - A. *Streptococcus agalactiae*
 - B. *Vibrio cholerae*
 - C. *Shigella dysenteriae*
 - D. *Staphylococcus epidermidis*
13. Which of the following is the best indicator organism of fecal contamination of water?
 - A. Coliform (other than *Escherichia coli*)
 - B. Fecal (thermotolerant) *Escherichia coli*
 - C. *Pseudomonas aeruginosa*
 - D. *Clostridium perfringens*
14. Which organism is classified as a Category A bioterrorism agent because of its high mortality and ease of dissemination?
 - A. *Vibrio cholerae*
 - B. *Bacillus anthracis*
 - C. *Staphylococcus aureus*
 - D. *Salmonella Typhi*
15. Which virus is associated with Burkitt lymphoma?
 - A. Human papillomavirus
 - B. Epstein-Barr virus
 - C. Hepatitis A virus
 - D. Rota virus
16. The species of *Haemophilus* that requires both X and V factors for its growth is:
 - A. *H. parahaemolyticus*
 - B. *H. ducreyi*
 - C. *H. influenzae*
 - D. *H. parainfluenzae*
17. Which of the following is a dimorphic fungus?
 - A. *Histoplasma capsulatum*
 - B. *Cryptococcus neoformans*
 - C. *Candida albicans*
 - D. *Mucor* species
18. What is the primary vector for the transmission of the chandipura virus?
 - A. Mosquito
 - B. Ticks
 - C. Sandflies
 - D. Fleas
19. The most common organism causing furuncle is:
 - A. *Streptococcus pneumoniae*
 - B. *Staphylococcus aureus*
 - C. *Escherichia coli*
 - D. *Mycobacterium tuberculosis*
20. Which of the following viruses is associated with hand, foot, and mouth disease?
 - A. Enterovirus 71
 - B. Coxsackie virus type A 16
 - C. Coxsackie virus type 23
 - D. A and B both

Section - 2

- Q.2.** A 5 year-old child visited OPD with complain of high grade fever, neck rigidity, irritability and altered sensorium since last 2 days. CSF is collected and sent to central laboratory. CSF was turbid with total cell count 1800 cells/cu.mm. (90% neutrophils), raised protein & reduced glucose. Gram stain of the CSF shows Gram positive, lanceolate shaped diplococci. 12
- a. What is the probable clinical diagnosis, and likely causative agents for this condition. (3)
- b. Describe the pathogenesis & laboratory diagnosis of this condition. (6)
- c. Write about immunization for this disease. (3)
- Q.3.** **Answer in brief (4 out of 5)** (7 Marks × 4) = 28
- a. Classify helminths and write in detail about Wuchereria bancrofti. (2 + 5)
- b. Morphology, Pathogenesis and Laboratory diagnosis of Cryptococcus infections. (2 + 2 + 3)
- c. Enumerate various types of larva migrans along with their etiological agents. (4 + 3)
Describe pathogenesis & laboratory diagnosis of any one .
- d. Write in detail about prions.
- e. A 20 year old hostel student presented with sudden fever, myalgia, headache, cough etc. On asking he informed that many other students are also affected suggesting a seasonal viral infection well known for its antigenic variations. Identify the virus, describe its antigenic variations & laboratory diagnosis. (1+3+3)

Section 3

- Q.4.** A 28 year old male patient presented to out-patient department with non-itchy rash involving palms and swollen inguinal lymphnodes. O/E mucocutaneous papules forming large pink to greyish lesions and a macular rash with a crater like scarred painless lesions on scrotum, probably in a healing phase. The patient provides a history of multiple sexual partners. 12
- a. What is the probable clinical diagnosis and name the causative organism. (2)
- b. Mention the various clinical stages of this disease. (4)
- c. Write in details about laboratory diagnosis. (6)
- Q.5.** **Answer in brief (4 out of 5, AETCOM compulsory)** (7 Marks × 4) = 28
- a. A 29 year old man presents with intense itching, burning and peeling skin between the toes. He reports a history of wearing tight, sweaty shoes continuously. O/E erythematous, itchy patches with fissures and maceration between the toes was observed. (2+5)
- (1) Identify clinical condition & causative organisms and
- (2) Describe the pathogenesis & laboratory diagnosis of such skin infection.
- b. Morphology, classification and Laboratory diagnosis of Herpes Virus. (2+2+3)
- c. Discuss emerging and re-emergent infections. (7)
- d. Enlist four viral infections transmitted through arthropod vector. (2+5)
Write in detail about any one.
- e. What is empathy, What is its role in patient care.