

**2406000102030701**  
**EXAMINATION JANUARY 2024**  
**BACHELOR OF MEDICINE AND BACHELOR OF SURGERY**  
**(SECOND YEAR)**  
**MICROBIOLOGY ( PAPER - I ) ( NEW ) ( OMR )**

[Time: As Per Schedule]

[Max. Marks: 100]

**Instructions:**

1. Fill up strictly the following details on your answer book

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- c. Subject Code No : **2406000102030701**

2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.

Seat No:

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Student's Signature

**Microbiology: Paper-I**

**Q.1 MCQs**

**20**

1. Name the Gram-positive cocci that form grape-like clusters:  
A. Streptococcus                      B. Staphylococcus  
C. Enterococcus                        D. Pneumococcus
2. The immunoglobulin predominant in secretions like saliva and tears is:  
A. IgA                                      B. IgG  
C. IgM                                      D. IgE
3. Name the staining method used to detect acid-fast bacteria:  
A. Gram staining                        B. Ziehl-Neelsen staining  
C. India ink staining                    D. Methylene blue staining
4. The causative agent of amoebic dysentery is:  
A. Giardia lamblia                      B. Entamoeba histolytica  
C. Cryptosporidium parvum            D. Balantidium coli
5. The toxin responsible for food poisoning caused by Clostridium botulinum is:  
A. Endotoxin                              B. Botulinum toxin  
C. Tetanospasmin                        D. Exotoxin A

6. The complement pathway that is antibody-dependent is called:

- A. Classical pathway
- B. Alternative pathway
- C. Lectin pathway
- D. Terminal pathway

7. The causative agent of typhoid fever is:

- A. Escherichia coli
- B. Salmonella typhi
- C. Shigella flexneri
- D. Vibrio cholerae

8. The immunoglobulin responsible for anaphylactic reactions is:

- A. IgE
- B. IgA
- C. IgM
- D. IgG

9. Which test is used to confirm the diagnosis of Helicobacter pylori infection?

- A. Urease breath test
- B. ELISA for antibodies
- C. Stool antigen test
- D. All of the above

10. Name the organism that causes gas gangrene:

- A. Clostridium perfringens
- B. Clostridium difficile
- C. Clostridium tetani
- D. Escherichia coli

11. Which hepatitis virus is transmitted via the fecal-oral route?

- A. Hepatitis B
- B. Hepatitis C
- C. Hepatitis A
- D. Hepatitis D

12. Which of the following is a zoonotic bacterial infection?

- A. Salmonella typhi
- B. Leptospira interrogans
- C. Vibrio cholerae
- D. Shigella flexneri

13. The gold standard for malaria diagnosis is:

- A. Peripheral blood smear
- B. Rapid diagnostic tests
- C. ELISA for antigens
- D. PCR

14. The causative organism of pseudomembranous colitis is:

- A. Escherichia coli
- B. Clostridium difficile
- C. Shigella dysenteriae
- D. Salmonella typhi

15. The organism associated with peptic ulcer disease is:

- A. Helicobacter pylori
- B. Escherichia coli
- C. Shigella flexneri
- D. Vibrio cholerae



16. What is the major vector for Dengue fever?  
 A. Aedes aegypti mosquito      B. Anopheles mosquito  
 C. Culex mosquito                D. Sandfly
17. Which organism is associated with prosthetic valve endocarditis?  
 A. Staphylococcus epidermidis    B. Staphylococcus aureus  
 C. Escherichia coli                D. Enterococcus faecalis
18. Name the staining method used for identifying Cryptococcus neoformans:  
 A. Gram stain                      B. India ink staining  
 C. Ziehl-Neelsen staining        D. Lactophenol cotton blue
19. Which immunoglobulin is the first to be produced in a primary immune response?  
 A. IgA                                B. IgG  
 C. IgM                                D. IgE
20. Rocky mountain spotted fever is due to  
 A. R. rickettsii                      B. R. prowazekii  
 C. R. typhi                            D. R. conorii

### Section 02

#### Q.2 Essay-

12

Describe in detail the structure and function of the cell wall and cell membrane of a gram-negative rod with the help of a diagram.

#### Q.3 Answer in Brief (Any 4 out of 5)

28

1. What are the primary components of the innate immune system, and how do they differ from those of the adaptive immune system?
2. Describe in detail the structure & Function of the Bacterial Cell wall write methods of Demonstration of cel wall
3. Describe the mechanism of action of beta-lactam antibiotics.
4. Discuss the immunopathogenesis of an autoimmune disease
5. Write about antigen-antibody reactions and their applications in diagnostics.

**Section 03**

**Q.4** A 35-year-old male presents with high-grade fever, fatigue, and new onset of a heart murmur. Blood culture grows *Streptococcus viridans*. **12**

1. What is the likely clinical condition? **2**
2. Discuss the pathogenesis of this condition. **5**
3. Describe the laboratory diagnosis and treatment options **5**

**Q.5 Answer in Brief(Any 4 out of 5)** **28**

1. Describe the laboratory diagnosis of amoebic liver abscess
2. Explain the laboratory diagnosis of typhoid fever.
3. Write about *Clostridium difficile* infections and their management.
4. Importance of effective communication skills in Doctor-Patient relationship
5. Pyrexia of unknown origin: definition, causes and diagnostic test used

\*\*\*\*\*END\*\*\*\*\*



**2406000102030702**  
**EXAMINATION JANUARY 2024**  
**BACHELOR OF MEDICINE AND BACHELOR OF SURGERY**  
**(SECOND YEAR)**  
**MICROBIOLOGY (PAPER - II) (NEW) (OMR)**

[Time: As Per Schedule]

[Max. Marks: 100]

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4. All questions are compulsory.

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Student's Signature

**Microbiology: Paper-II**

**Section 1**

**Q.1 MCQ**

**20**

1. The fungus that exhibits septate hyphae with dichotomous branching on KOH mount is:
  - a. Cryptococcus
  - b. Mucor
  - c. Penicillium
  - d. Aspergillus
2. Rhinosporidiosis is characterized by all the following except:
  - a. It is caused by a fungus.
  - b. The fungus is usually found in dirty water.
  - c. It manifests as polyps that bleed easily.
  - d. It can be cultured easily in the laboratory.
3. Total number of categories in Biomedical Waste are:
  - a. 10
  - b. 8
  - c. 4
  - d. 2

4. Which medium is preferred for culturing *Mycobacterium tuberculosis*?
  - a. MacConkey agar
  - b. Lowenstein-Jensen medium
  - c. Chocolate agar
  - d. Sabouraud's agar
5. Buruli ulcer is caused by:
  - a. *M. xenopi*
  - b. *M. malmoense*
  - c. *M. scrofulaceum*
  - d. *M. ulcerans*
6. *Neisseria gonococcus* is primarily associated with which of the following conditions?
  - a. Genital infections
  - b. Pharyngitis
  - c. Meningitis
  - d. Skin abscess
7. Ecthyma gangrenosum is caused by:
  - a. *Brucella*
  - b. *H. influenzae*
  - c. *Pseudomonas*
  - d. *Bordetella*
8. Which of the following intestinal parasites migrate to the lung in their lifecycle, except:
  - a. *Trichinella spiralis*
  - b. *Ancylostoma duodenale*
  - c. *Ascaris lumbricoides*
  - d. *Strongyloides stercoralis*
9. Gram-stain morphology of *Bacillus anthracis* is:
  - a. Tennis racket appearance
  - b. Bamboo stick appearance
  - c. Drumstick appearance
  - d. Spectacle glass appearance
10. Epstein-Barr virus is associated with the following malignancies, except:
  - a. Nasopharyngeal carcinoma
  - b. Burkitt's lymphoma
  - c. Carcinoma of the cervix
  - d. Non-Hodgkin lymphoma
11. Which of the following is vector for leishmaniasis:
  - a. Sandfly
  - b. Reduvid bug
  - c. *Anopheles* mosquito
  - d. Tsetse fly
12. *Cryptococcus neoformans* is most likely to cause:
  - a. Pulmonary infection
  - b. Meningitis
  - c. Skin infections
  - d. Bone infections
13. MGIT used in tuberculosis diagnosis is:
  - a. Automated culture
  - b. Biochemical test
  - c. Microscopic method
  - d. None of the above



14. Which of the following fungus DOES NOT infect nail:
- Trichophyton
  - Epidermonhvtton
  - Microsporum
  - Candida albicans
15. The amplifier host for Japanese B Encephalitis is:
- Ardeid birds
  - Pigs
  - Forests
  - Hérons
16. Neisseria meningitidis primarily causes:
- Meningitis
  - Urethritis
  - Endocarditis
  - Pharyngitis
17. The fungus that causes mucormycosis most commonly belongs to which genus?
- Rhizopus
  - Candida
  - Cryptococcus
  - Aspergillus
18. Which of the following statements about the shape of the virus is correct?
- Rotavirus - Wheel-shaped
  - Tobacco Mosaic Virus - Filamentous-shaped
  - Ebola Virus - Rod-shaped
  - Adenovirus - Brick-shaped
19. MRSA is mediated due to
- Plasmid
  - mecA gene
  - . Transposons
  - None
20. All of the following antimicrobial agents act on cell membrane, except
- .Gramicidin
  - Daptomycin
  - Polymyxins
  - Vancomycin

### Section 2

#### Q.2 Essay –

12

A 35 year old female from a village of Bihar came to the hospital with history of fever on and off for the past one year and recently developed unilateral swelling of the left lower limb. Her blood sample was sent for peripheral blood smear examination which revealed worm like structures, 240 um in length with pointed tail tip.

1. Name the disease and its etiological agent. 2
2. Describe the life cycle, pathogenesis and laboratory diagnosis of this condition. 5
3. Explain prevention and treatment of this clinical condition. 5

**Q.3 Answer in Brief(Any 4 out of 5 ) 28**

1. Cutaneous fungal infections.
2. Overview of zoonotic infections affecting the musculoskeletal system.
3. Pyogenic infections in skin and soft tissues.
4. BCG vaccine.
5. Streptococcal pharyngitis.

#### Section 03

**Q.4 What are catheter-associated urinary tract infections (CAUTIs)? 12**

Explain their causes, symptoms, and preventive measures.

**Q.5 Answer in Brief(Any 4 out of 5 ) 28**

1. Mechanisms of antimicrobial resistance in hospital-acquired infections.
2. Laboratory diagnosis of bacterial meningitis.
3. Role of Candida albicans in bloodstream infections.
4. Nongonococcal urethritis.
5. Cryptococcus Meningitis

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**2106000102030101**  
**Examination February – March 2024**  
**SECOND MBBS**  
**MICROBIOLOGY ( PAPER - I ) - LEVEL 3**

[Time: Three Hours]

[Max. Marks: 100]

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  - c. Subject Code No : **2106000102030101**
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3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.
5. Write heading of each question properly.
6. Write legibly.

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Student's Signature

**SECTION – I**

(General Microbiology, Immunology, Infections of Blood stream & cardiovascular system, Gastro intestinal tract & Hepatobiliary system)

**Q.1 Multiple choice questions (MCQs).**

**1\*20=20**

1. Most common protozoan parasite responsible for Steatorrhea is:
  - A. Giardia lamblia
  - B. Entamoeba histolytica
  - C. Entamoeba coli
  - D. Enteromonas hominis
  
2. Test done to differentiate between Pathogenic and nonpathogenic strains of Staphylococcus aureus is
  - A. Oxidase test
  - B. Catalase test
  - C. Coagulase test
  - D. Glucose fermentation test
  
3. Dengue virus infection is transmitted by
  - A. Culex mosquito
  - B. Anopheles mosquito
  - C. Aedes aegypti
  - D. Tick

4. Infection with *Plasmodium falciparum* is suspected if the infected RBC is
- A. Normal in size
  - B. showing multiple infections
  - C. Both (A) and (B)
  - D. shows motile form inside the RBCs
5. Which of these techniques is not used for cultivation of viruses
- A. Inanimate culture media
  - B. Tissue culture
  - C. Animal inoculation
  - D. Embryonated egg
6. Rocky mountain spotted fever is due to
- A. *R. rickettsii*
  - B. *R. typhi*
  - C. *R. prowazekii*
  - D. *R. conorii*
7. IgE
- A. Protects body fluids
  - B. Protects body surfaces
  - C. Protects blood stream
  - D. Mediates reaginic hypersensitivity
8. Negri bodies of Rabies are
- A. Intracytoplasmic eosinophilic inclusions with basophilic inner granules
  - B. Intracytoplasmic basophilic inclusions with basophilic inner granules
  - C. Intracytoplasmic acidophilic inclusions with basophilic inner granules
  - D. None of the above
9. Transduction is a method of gene transfer from one bacteria to another by
- A. Passage of genetic material through sex pilli
  - B. Direct cell to cell contact and protoplasmic fusion
  - C. Plasmids transfer
  - D. Cross infecting Bacteriophages



10. In Gram's staining " Gull wing" shape is seen in
- A. Yersinia pestis
  - B. Vibrio cholerae
  - C. Acinetobacter
  - D. Campylobacter
11. CBNAAT is
- A. Chip based nucleic acid amplification test
  - B. Cartridge based nucleic acid amplification test
  - C. Both (a) and (b)
  - D. None of the above
12. Production of germ tube within 2 hours serves as identification character for
- A. Ray fungus
  - B. Cryptococcus neoformans
  - C. Rhizopus
  - D. Candida albicans
13. Which of the following parasites cause megaloblastic anemia
- A. Diphyllbothrium latum
  - B. Taenia solium
  - C. Ancylostoma duodenale
  - D. Echinococcus granulosus
14. RA factor in Rheumatoid arthritis is a/an
- A. Antigen
  - B. Auto-antibody
  - C. Hapten
  - D. Antibody
15. Graft between two individuals sharing same genetic constitution is referred to as
- A. Allograft
  - B. Isograft
  - C. Xenograft
  - D. Autograft
16. Which of these enzyme is not found inside the core of the virus
- A. DNA Polymerase
  - B. Reverse transcriptase
  - C. Neuraminidase
  - D. RNA Polymerase
17. Amastigote forms of Leishmania donovani are found in
- A. The cells of Reticuloendothelial system
  - B. Red blood cells
  - C. Culture media
  - D. Digestive tract of insect vector
18. RAST detects \_\_\_\_\_ hypersensitivity reaction
- A. Type I
  - B. Type II
  - C. Type III
  - D. Type IV

19. In PCR, denaturation occurs at
- A. 55°C
  - B. 72°C
  - C. 95°C
  - D. None of the above
20. Which of these is not a live attenuated vaccine
- A. TAB
  - B. MMR
  - C. Sabin's vaccine
  - D. BCG

## SECTION – II

(General Microbiology, Immunology)

**Q.2 Essay type question / clinical scenario based.**

12

Enlist & Describe in Detail about methods of gene transfer and discuss the mechanisms of drug resistance in bacteria

**Q.3 Short Note (any 4 out of 5)**

7\*4=28

1. Mechanism of Bacterial Pathogenesis
2. Describe in detail the structure & Function of the Bacterial Cell wall & write methods of Demonstration of cell wall.
3. Write in detail about Immune complex mediated hypersensitivity reaction.
4. Classify immunity. Describe the various mechanism of innate/acquired immunity.
5. Draw the two common complement activation pathways and describe the importance of complement in health and disease.

## SECTION – III

(Infections of Blood stream & Cardiovascular system, Gastro intestinal tract & Hepatobilliary system)

**Q.4 Essay type question / clinical scenario based.**

12

Enumerate Hepatitis Viruses and their mode of transmission. Describe viral markers, Treatment & Prophylaxis of Hepatitis B Infection.



**Q.5 Short Note (any 4 out of 5)**

**7\*4=28**

1. A 35 year old male was admitted in casualty with complain of severe colicky abdominal pain. Patient gave H/O of stool passage of blood and mucus with foul smell for last few days. Wet mount stool preparation showed motile protozoa with pseudopodia. On examination tenderness in right hypochondrium and mild hepatomegaly is found.
  - a. What is the most probable cause for this condition? **1**
  - b. Write pathogenesis of this condition. **3**
  - c. Write the details of diagnostic modalities of above condition. **3**
  
2. A 25 year old man from urban area admitted in hospital presented with high fever, headache, and retro orbital pain, sever back pain for 5 days and bleeding nose today morning. On examination rash are seen on the body. Blood reports shows platelet count is 20,000/mm<sup>3</sup>.
  - a. What is the most probable cause for this condition? **1**
  - b. Write pathogenesis of this condition. **3**
  - c. Write the details of laboratory diagnosis of above condition. **3**
  
3. Enumerate the nematodes infesting intestine. Describe the life cycle, laboratory diagnosis of any one of them.
  
4. Classify Rickettsia. Describe the etiology, pathogenesis, laboratory diagnosis of spotted fevers.
  
5. Rheumatic Fever

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**2106000102030102**  
**Examination February – March 2024**  
**SECOND MBBS**  
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[Time: Three Hours]

[Max. Marks: 100]

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Student's Signature

**SECTION – I**

**(Infections of skin soft tissues & musculoskeletal systems, Respiratory system, Infections of central nervous system, genitourinary system, Hospital acquired Infections, Miscellaneous)**

**Q.1 Multiple choice questions (MCQs).**

**1\*20=20**

- 1) PRAS is
  - A. Pro-Reduced Anaerobic system
  - B. Pro-Reduced Aerobic system
  - C. Pre-Reduced Anaerobic system
  - D. Pre-Reduced Aerobic system
  
- 2) The fungus that exhibits septate hyphae with dichotomous branching on KOH mount is
  - A. Cryptococcus
  - B. Penicillium
  - C. Mucor
  - D. Aspergillus



- 3) Differentiating feature of *Neisseria gonococcus* from *Neisseria meningitidis* is?
- A. Oxidase Positive                      B. It ferments glucose  
C. It ferment Maltose                    D. It reduce Nitrates
- 4) *Proteus* antigen cross react with?
- A. *Klebsiella*                                B. *Rickettsiae*  
C. *Chlymydiae*                              D. *E.coli*
- 5) The common cause of Pneumonia in immunocompromised patients is
- A. *C. tropicalis*                            B. *P. jiroveci*  
C. *C. A. niger*                                D. *P. marneffi*
- 6) The following are moments of hand hygiene
- A. After touching a patient  
B. Before any aseptic procedure  
C. After touching patients surroundings  
D. All of the above
- 7) Total number of Categories in BioMedical Waste are
- A. 10    B. 6  
C. 4    D. 2
- 8) MGIT used in tuberculosis diagnosis is actually
- A. Automated culture                      B. Biochemical test  
C. Microscopic method                    D. None of the above
- 9) Buruli ulcer is caused by
- A. *M. xenopi*                                 B. *M. scrofulaceum*  
C. *M. malmoense*                         D. *M. ulcerans*
- 10) The amplifier host for Japanese B Encephalitis is
- A. Ardeid birds                                B. Pigs  
C. Egrets                                        D. Herons
- 11) Epstein-Barr virus is associated with the following malignancies except
- A. Nasopharyngeal carcinoma            B. Burkitt's lymphoma  
C. Carcinoma of cervix                    D. Non-Hodgkin lymphoma

- 12) Which of the following is correct statement regarding the shape of the virus
- A. Rota virus- wheel shape
  - B. Tobacco mosaic virus- Filamentous shape
  - C. Ebola virus- Rod shape
  - D. Adeno virus- Brick shape
- 13) Guinea worm disease is caused by
- A. Schistosoma haematobium
  - B. Ancylostoma duodenale
  - C. Trichinella spiralis
  - D. Dracunculus medinensis
- 14) In Influenza, antigenic drift is due to
- A. Point mutation
  - B. Deletion mutation
  - C. Genetic reassortment
  - D. All of the above
- 15) The following intestinal parasite migrate to lung in their life cycle except
- A. Trichinella spiralis
  - B. Ascaris lumbricoides
  - C. Ancylostoma duodenale
  - D. Strongyloides stercoralis
- 16) The following fungus infect Central Nervous system except
- A. Mucor
  - B. Aspergillus
  - C. Cryptococcus neoformans
  - D. Acremonium species
- 17) Wool Sorter's disease is caused by
- A. Bacillus anthracis
  - B. Staphylococcus aureus
  - C. Yersinia pestis
  - D. Rhodococcus equi
- 18) All of the following parasites can cause encephalitis except
- A. Acanthamoeba
  - B. Ascaris lumbricoides
  - C. Toxoplasma gondii
  - D. Naegleria
- 19) Koch-Weeks bacillus is
- A. Haemophilus aegyptius
  - B. Haemophilus ducreyi
  - C. Haemophilus parainfluenzae
  - D. Haemophilus hemolyticus



- 20) Ecthyma gangrenosum is caused by
- Moraxella lacunata
  - Stenotrophomonas maltophilia
  - Pseudomonas aeruginosa
  - Burkholderia pseudomalle

## SECTION – II

**(Infections of skin soft tissues, musculoskeletal systems & Respiratory system)**

**Q.2 Essay type question / clinical scenario based.**

**12**

A 5 year old boy presented to the pediatric OPD with H/O pain in throat and difficulty in swallowing. He had low grade fever for the past 2 days. On examination he was found to have cervical lymphadenopathy and tonsillar pillars were covered by gray-white discharge. (On examination a grey brown color thick fibrinous membrane on the pharynx). His vaccination card showed that the child's immunization was not complete.

1. What is the clinical condition?(1 mark)
2. Name the most probable etiological agent responsible for this condition. (1 mark)
3. Write in detail the pathogenesis of the condition. (4 marks)
4. Write in details of laboratory diagnosis & treatment of above condition. (4+2 marks)

**Q.3 Short Note (any 4 out of 5)**

**7\*4=28**

1. Discuss skin and soft tissue infections caused by Staphylococcus aureus. Write its lab diagnosis
2. Cutaneous leishmaniasis
3. Mycetoma
4. Mumps
5. Discuss the vaccine against Poliomyelitis.

## SECTION – III

**(Infections of central nervous system, genitourinary system,  
Hospital acquired Infections, Miscellaneous)**

**Q.4 Essay type question / clinical scenario based.**

**12**

Define HAI. Enlist major types of HAI. Explain Standard precaution & write Detail about Hand Hygiene. Write in detail about bundle care approach for prevention of device associated Infection

**Q.5 Short Note (any 4 out of 5)**

**7\*4=28**

1. A 25-year-old Australian visited his local doctor complaining of difficulty in swallowing liquids, loss of appetite and restlessness. He had a travel history to India one month back and did mention being bitten by a street dog.
  - a. What is the most probable etiological diagnosis?
  - b. Discuss the laboratory diagnosis and the vaccines available for human use.
2. Define and describe the properties of an Idea Disinfectant. Enumerate the various Disinfecting agents and their applications.
3. Classify anaerobes. Describe the aetiology, pathogenesis, lab diagnosis and prophylaxis of tetanus.
4. Non gonococcal urethritis
5. Congenital toxoplasmosis.

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