

M.B.B.S. SECOND PROFESSIONAL EXAMINATION, DECEMBER-2022

MICROBIOLOGY

PAPER - SECOND

[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 1 = 20)

1. Vector for leishmaniasis is:
 - a. Anopheles mosquito
 - b. Aedes mosquito
 - c. Sandfly
 - d. Tsetse fly
2. Hand foot and mouth disease is caused by:
 - a. HSV
 - b. Coxsackie virus
 - c. Measles
 - d. Chickenpox
3. Oriental sore is caused by:
 - a. *Leishmania mexicana*
 - b. *Leishmania tropica*
 - c. *Leishmania braziliensis*
 - d. *Leishmania chagasi*
4. The correct sequence of manifestations seen in measles is:
 - a. Fever-koplik's spot-rash
 - b. Koplik's spot-fever-rash
 - c. Rash-fever-koplik's spot
 - d. Rash- koplik's spot-fever
5. Glanders and farcy is caused by:
 - a. *Pseudomonas aeruginosa*
 - b. *Burkholderia mallei*
 - c. *Burkholderia pseudomallei*
 - d. *Stenotrophomonas maltophilia*
6. Neonatal meningitis acquired through an infected birth canal is due to:
 - a. *S. pyogenes*
 - b. *Viridans streptococci*
 - c. *S. agalactiae*
 - d. *S. pneumoniae*
7. Spore with drum stick appearance is produced by:
 - a. *C. bifementans*
 - b. *C. perfringens*
 - c. *C. tetani*
 - d. *C. tertium*
8. Polyribosyl ribitol phosphate (PRP) antigen is present in the capsule of *H. influenzae*:
 - a. Serotype a
 - b. Serotype b
 - c. Serotype c
 - d. Serotype d
9. Malignant pustule is the term used for:
 - a. An infected malignant melanoma
 - b. A carbuncle
 - c. A rapidly spreading rodent ulcer
 - d. Anthrax of the skin
10. Principle toxin for gas gangrene is:
 - a. Alpha toxin
 - b. Theta toxin
 - c. Beta toxin
 - d. Delta toxin
11. False statement regarding Japanese encephalitis:
 - a. It is caused by flavivirus
 - b. Transmitted by Aedes mosquito
 - c. Endemic in India
 - d. Man is dead-end host
12. Ecthyma gangrenosum is caused by:
 - a. *Pseudomonas*
 - b. *Bordetella*
 - c. *Brucella*
 - d. *H.influenzae*
13. The most effective way of preventing tetanus:
 - a. Hyperbaric oxygen
 - b. Antibiotics
 - c. Tetanus toxoid
 - d. Surgical debridement and wound toilet
14. Plague is transmitted by:
 - a. Rat flea
 - b. Soft tick
 - c. Hard tick
 - d. Louse
15. Corona virus is a:
 - a. Single stranded DNA virus
 - b. Double stranded DNA virus
 - c. Single stranded RNA virus
 - d. Double stranded RNA virus
16. Tinea versicolor is caused by:
 - a. *Candida albicans*
 - b. *Trichophyton rubrum*
 - c. *Trichophyton violaceum*
 - d. *Malassezia furfur*
17. Serotyping of *Streptococcus pyogenes* is based on which of the following protein?
 - a. M protein
 - b. T protein
 - c. R protein
 - d. Carbohydrate antigen
18. Gram stain morphology of bacillus anthracis is:
 - a. Tennis racket appearance
 - b. Drum stick appearance
 - c. Bamboo stick appearance
 - d. Spectacle glass appearance
19. Germ tube test is diagnostic for:
 - a. *Candida albicans*
 - b. *Cryptococcus*
 - c. *Candida glabrata*
 - d. *Coccidioides immitis*
20. What is significant bacteriuria?
 - a. Bacterial count $>10^5$ CFU/ml
 - b. Bacterial count between 10^4 and 10^5 CFU/ml
 - c. Bacterial count $<10^3$ CFU/ml
 - d. Bacterial count $=10^3$ CFU/ml

**MICROBIOLOGY
PAPER- SECOND**

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

- Q. 2. Give reasons why:** (5 x 2 = 10)
- IgG antibodies cannot be used to diagnose congenital toxoplasmosis.
 - Oral polio vaccine protects both, the vaccinated individual and the community.
 - Robertson's cooked meat media is the most commonly used anaerobic media.
 - Quellung's reaction is positive in *Streptococcus pneumoniae*.
 - CSF samples for bacterial culture should not be refrigerated in case of delay in processing.
- Q. 3. Problem based question:** (1+1+3+5 = 10)
- A 35-year-old male, Sahil, presented to the clinic with a painless, small genital ulcer. Detailed history revealed that he visited a commercial sexual worker about two weeks back. On examination, enlarged non-tender lymph nodes were found in both groins.
- What is the probable clinical diagnosis?
 - What is the most likely etiological agent?
 - Write down the pathogenesis of the above condition.
 - Describe the laboratory diagnosis of the condition in detail.
- Q. 4. Write briefly on:** (4 x 6 = 24)
- Laboratory diagnosis of diphtheria
 - Superficial mycosis
 - Free-living amoeba
 - Discuss the information that is needed to be written in the request form and the sample container of patient's sample.
- Q. 5. (i)** Name the causative agent of tuberculosis. Describe the pathogenesis, clinical manifestations and laboratory diagnosis of pulmonary tuberculosis. (1+3+2+4=10)
- (ii)** Enumerate common zoonotic infections affecting human beings. Write in brief the pathogenesis, clinical manifestations and post-exposure prophylaxis of rabies. (4+6= 10)
- Q. 6. Answer as indicated :** (4 x 4 = 16)
- List the clinical manifestations of infections caused by *Staphylococcus aureus*.
 - Define antigenic shift and antigenic drift.
 - Write a note on laboratory diagnosis of leprosy.
 - Enumerate the four most common etiological agents of pyogenic meningitis.

M.B.B.S. SECOND PROFESSIONAL EXAMINATION, DECEMBER-2022

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 1 = 20)

1. Examples of enriched media are all **except**:
 - a. Blood agar
 - b. Loeffler's serum slope
 - c. Blood culture media
 - d. MacConkey agar
2. Mechanism of direct transfer of free DNA:
 - a. Transformation
 - b. Conjugation
 - c. Transduction
 - d. Transposition
3. Extended spectrum β -lactamases (ESBL) producing organisms are resistant to all, **except**:
 - a. All penicillins
 - b. 3rd generation cephalosporins
 - c. Monobactam
 - d. Carbapenems
4. Obligate intracellular bacteria are all, **except**:
 - a. *M. leprae*
 - b. *Rickettsia*
 - c. *Chlamydia*
 - d. *M. tuberculosis*
5. Chemical nature of endotoxin is:
 - a. Lipopolysaccharide
 - b. Protein
 - c. Carbohydrate
 - d. Amino acid
6. Causative agent of pseudomembranous colitis is:
 - a. *Clostridium tetani*
 - b. *Clostridium botulinum*
 - c. *Clostridioides difficile*
 - d. *Clostridium perfringens*
7. Causative agent of Q-fever:
 - a. *Bartonella*
 - b. *Coxiella burnetii*
 - c. *Ehrlichia*
 - d. *R. prowazekii*
8. Causative agent of Gonorrhoea is:
 - a. *Neisseria gonorrhoeae*
 - b. *Mycoplasma pneumoniae*
 - c. *Corynebacterium diphtheriae*
 - d. *Staphylococcus aureus*
9. *Streptococcus pyogenes* can be differentiated from *Streptococcus agalactiae* by:
 - a. Bacitracin resistant
 - b. CAMP test negative
 - c. Alpha haemolytic colonies on blood agar
 - d. Gram-positive cocci in clusters
10. Which of the following DNA virus is single stranded?
 - a. Parvovirus
 - b. Hepatitis B virus
 - c. Poxvirus
 - d. Adenovirus
11. The largest virus in size is:
 - a. Herpes simplex virus
 - b. Hepatitis B virus
 - c. Poxvirus
 - d. Adenovirus
12. Which of the following parasite is transmitted by dog?
 - a. *Taenia saginata*
 - b. *Hymenolepis nana*
 - c. *Echinococcus granulosus*
 - d. *Diphyllobothrium latum*
13. Host harboring adult or sexual stage of a parasite is called:
 - a. Definitive host
 - b. Intermediate host
 - c. Reservoir host
 - d. Amplifying host
14. *Tinea versicolor* is caused by:
 - a. *Trichophyton rubrum*
 - b. *Trichophyton violaceum*
 - c. *Malassezia furfur*
 - d. *Candida albicans*
15. Organisms that does **not** affect the nail:
 - a. *Trichophyton*
 - b. *Epidermophyton*
 - c. *Microsporum*
 - d. *Candida*
16. Type of hypersensitivity reaction in myasthenia gravis is:
 - a. Type I
 - b. Type II
 - c. Type III
 - d. Type IV
17. Endotoxin acts by:
 - a. Classical pathway
 - b. Lectin pathway
 - c. Alternative pathway
 - d. combined pathway
18. In a patient with typhoid, diagnosis after 15 days of onset of fever is best done by:
 - a. Blood culture
 - b. Stool culture
 - c. Urine culture
 - d. Widal test
19. Crescent-shaped or banana-shaped gametocytes are seen in infection with:
 - a. *Plasmodium vivax*
 - b. *Plasmodium falciparum*
 - c. *Plasmodium malariae*
 - d. *Plasmodium ovale*
20. Type I hypersensitivity is mediated by which of the following immunoglobulins:
 - a. IgA
 - b. IgG
 - c. IgM
 - d. IgE

MICROBIOLOGY
PAPER- FIRST

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

- Q. 2. Give reasons:** **(5 x 2 = 10)**
- a. Why Penicillin doesn't work in Mycoplasma Pneumonia
 - b. Why a regimen of multiple drugs given in treatment of Tuberculosis
 - c. Why is the Secondary immune response faster than Primary immune response.
 - d. Why is anti Rh globulin administered immediately following delivery to Rh negative female carrying Rh positive foetus
 - e. Why *streptococcus pyogenes* not isolated from blood or throat in Rheumatic heart disease
- Q. 3. Problem based question:** **(2+2+2+4 = 10)**
- A group of students presented to medical emergency department with complaints of watery diarrhoea, abdominal cramps, nausea and vomiting. They had consumed sugarcane juice at a roadside shop the previous morning.
- a. What are the students suffering from?
 - b. What is the causative agent of the clinical condition?
 - c. How was the infection transmitted?
 - d. How will you carry out the Lab workup to make the diagnosis?
- Q. 4. Write briefly on:** **(4 x 6 = 24)**
- a. Conjugation
 - b. Type II Hypersensitivity reaction
 - c. Typhoid carriers
 - d. An asymptomatic international traveller comes to a COVID lab to get himself tested. He is anxious and doesn't want to be quarantined in case he turns out to be positive. He has a fear of social stigma. How will you maintain confidentiality pertaining to patient identity on the Lab result?
- Q. 5. (i)** How is Visceral Leishmaniasis transmitted? Draw the life cycle of *Leishmania donovani*. Enumerate 4 most common clinical features of Visceral Leishmaniasis. How is the condition diagnosed? **(1+2+4+3 = 10)**
- (ii)** How does the transmission of Hepatitis B virus occur? Enumerate various outcomes of HBV infection in the form of flow chart. How is the condition diagnosed? **(3+3+4= 10)**
- Q. 6. Answer as indicated :** **(4 x 4 = 16)**
- a. Draw a labelled diagram of microscopic appearance of Hydatid cyst
 - b. Draw a flow chart on Laboratory Diagnosis of Hepatitis C virus infection
 - c. Draw a labelled diagram of structure of HIV labelling Envelope proteins, RNA and reverse transcriptase.
 - d. Draw diagrams to show the morphological forms of *Plasmodium vivax* seen in peripheral blood