

Q.P. Code: 216001
Reg. no.:
**Second Professional MBBS Degree Regular/Supplementary Examinations
 December 2024**
Microbiology Paper II
Time: 3 Hours
Total Marks: 100

- Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers
- Indicate the question number correctly for the answer in the margin space
- Answer all parts of a single question together • Leave sufficient space between answers
- Draw table/diagrams/flow charts wherever necessary

1. Multiple Choice Questions
(20x1=20)

The Answers to MCQ questions (Q.No. i to Q.No. xx) shall be written continuously on the first two writing sheets (ie Page No. 3 & 4) only

Read the following clinical history and select the most appropriate response for questions (i) -(v)

A 4 year old boy was brought to the emergency with a history of altered sensorium, inability to eat and one episode of seizure in the last 2 days. The child used to play with street dogs.

- What is the likely clinical diagnosis
 - Guillain barre syndrome
 - ECHO virus encephalitis
 - Rabies
 - Herpes Simplex encephalitis
- An antemortem diagnostic method is
 - Negri bodies in brain by Immunohistochemistry
 - Antigen in corneal smear by immunofluorescence
 - Antibody detection in saliva
 - RNA in brain by RTPCR
- Vaccine to prevent rabies in humans is
 - Sheep brain vaccine
 - Neural vaccine
 - Human diploid cell vaccine
 - Jeryl Lynn vaccine
- Rabies virus can be transmitted to humans by all of the following routes EXCEPT
 - Bite by infected bats
 - Inhalation of virus containing aerosols
 - Cornea transplantation
 - Consumption of raw milk of infected animals
- The protein which acts as virulence factor is the
 - Nucleoprotein
 - Glycoprotein G
 - Matrix protein
 - Hemagglutinin

Question numbers (vi)-(x) are multiple response type questions. Read the statements & mark the answers appropriately.

- Cholera
 - Has potential to cause pandemics
 - Hanging drop test of stool sample helps in rapid diagnosis
 - Causes dysentery in children
 - Can present as hypovolemic shock in severe cases leading to death
 - 1, 2, 3 are correct
 - 1, 3, 4 are correct
 - 2, 3, 4 are correct
 - 1, 2, 4 are correct
- Bile-stained eggs are seen in infection with
 - Ascaris
 - Hookworm
 - Trichuris
 - Taenia
 - 1, 2, 3 are correct
 - 1, 2, 4 are correct
 - 1, 3, 4 are correct
 - 2, 3, 4 are correct
- Hand foot and mouth disease is **NOT** caused by
 - Cytomegalovirus
 - Coxsackie virus
 - Calicivirus
 - ECHO virus
 - 1, 2, 3 are correct
 - 2, 3, 4 are correct
 - 1, 3, 4 are correct
 - 1, 2, 4 are correct
- This is **NOT** a mode of transmission of *Schistosoma hematobium*
 - Bite of Tsetse fly
 - Consumption of vegetables contaminated with metacercaria
 - Penetration of cercaria through the skin
 - Blood transfusion
 - 2, 3, 4 are correct
 - 1, 2, 3 are correct
 - 1, 3, 4 are correct
 - 1, 2, 4 are correct
- A 28 year old male, following consumption of canned food, came with complaints of difficulty in swallowing, blurred vision, which soon progressed to respiratory paralysis. This bacteria is **NOT** the likely etiology.
 - Enterotoxigenic Escherichia coli
 - Clostridium botulinum
 - Campylobacter jejuni
 - Yersinia enterocolitica
 - 1, 2, 4 are correct
 - 1, 3, 4 are correct
 - 2, 3, 4 are correct
 - 1, 2, 3 are correct

Question numbers (xi) – (xv) are single response types

- Which of the following parasites causes keratitis.
 - Acanthamoeba
 - Naegleria
 - Balamuthia
 - Sappinia
- Meningitis caused by the following agents can be prevented by vaccination EXCEPT
 - Neisseria meningitidis*
 - Streptococcus pneumoniae*
 - Hemophilus influenzae*
 - Listeria monocytogenes*

(PTO)

- xiii. Swimming pool granuloma is caused by *Mycobacterium*
a) marinum b) kansasii c) ulcerans d) abscessus
- xiv. River blindness is caused by
a) *Brugia malayi* b) *Oncocerca volvulus* c) *Loa loa* d) *Mansonella species*
- xv. Diphtheria vaccine is a
a) Subunit vaccine b) Toxoid vaccine c) Whole cell vaccine d) Recombinant vaccine

Question numbers (xvi) – (xx) consists of two Statements-Assertion (A) and Reason (R). Answer these questions by selecting the appropriate options given below.

- xvi. A: Whooping cough is caused by *Bordetella pertussis*.
R: Whooping cough is mainly seen in adults.
a) Both A and R are true and R is the correct explanation of A c) A is true but R is false
b) Both A and R are true and R is not the correct explanation of A d) A is false but R is true
- xvii. A: Specific antivirals are available to treat Japanese Encephalitis.
R: Japanese Encephalitis is the most common cause of vaccine preventable encephalitis in Asia.
a) Both A and R are true and R is the correct explanation of A c) A is true but R is false
b) Both A and R are true and R is not the correct explanation of A d) A is false but R is true
- xviii. A: *Cryptococcus neoformans* cannot be cultured.
R: Rapid diagnosis of Cryptococcal meningitis can be done on CSF sample by India Ink preparation.
a) Both A and R are true and R is the correct explanation of A c) A is true but R is false
b) Both A and R are true and R is not the correct explanation of A d) A is false but R is true
- xix. A: Hepatitis B virus is preventable by vaccination.
R: Hepatitis B can be transmitted parenterally.
a) Both A and R are true and R is the correct explanation of A c) A is true but R is false
b) Both A and R are true and R is not the correct explanation of A d) A is false but R is true
- xx. A: *Plasmodium falciparum* is the species of *Plasmodium* producing most serious complications.
R: Malaria is caused by bite of female *Anopheles* mosquito
a) Both A and R are true and R is the correct explanation of A c) A is true but R is false
b) Both A and R are true and R is not the correct explanation of A d) A is false but R is true

Essays

(2x10=20)

2. A 70 year old man was brought to the emergency department with fever, cough, and dyspnoea. Physical examination revealed a dull note on percussion. X-ray chest revealed a patch on the right lung area. The gram stain of sputum sample revealed numerous pus cells and Gram positive lanceolate shaped diplococci.
a) What is the clinical diagnosis and what is the probable etiological agent.
b) What culture media is used to enable the growth of the organism suspected and how will you confirm the identity of the organism.
c) Discuss the virulence factors and pathogenesis of this etiological agent.
d) What are the vaccines available for this etiological agent. Discuss. (2+3+3+2)
3. A 30 year old female was brought to the hospital with complaints of loss of weight and appetite of 3 months duration. On examination, she was jaundiced and hepatomegaly present. she gave a history of blood transfusion in the past. Lab investigation showed she was HBsAg positive.
a) What is the most probable clinical diagnosis.
b) What are the different modes of transmission of this agent.
c) Discuss the laboratory diagnosis of this infection.
d) Add a note on the immunoprophylaxis. (1+2+5+2)

Short Essays

(6X6=36)

4. Hydatid disease.
5. Define pandemic. Name any four pandemics. Describe in detail strategies taken for their control. (1+2+3)
6. List FOUR clinically important anaerobes. List samples to be collected. Describe the sample collection process. (2+2+2)
7. Primary Amoebic meningoencephalitis – discuss etiology, pathogenesis and laboratory diagnosis. (1+2+3)
8. Mode of transmission, clinical presentation and laboratory diagnosis of Nipah virus infection (2+2+2)
9. Shigellosis.

Short Answers

(6x4=24)

10. Antibiotic associated diarrhea.
11. List, in tabular form, the CSF parameters, in normal CSF and in pyogenic, viral and tubercular meningitis.
12. How will you instruct a patient with suspected lower respiratory tract infection to collect a sputum sample.
13. How is *Toxoplasma gondii* transmitted. Add a note on the laboratory diagnosis of congenital *Toxoplasma* infection.
14. Modes of transmission and laboratory diagnosis of Monkey pox (M Pox)
15. List FOUR oncogenic viruses.
