

Question Paper

Exam Date & Time: 06-Feb-2023 (10:00 AM - 01:00 PM)

SECOND PROFESSIONAL YEAR MBBS DEGREE EXAMINATION - FEBRUARY 2023

SUBJECT: MICROBIOLOGY PAPER I

(CBME BATCH)

Marks: 80

Duration: 160 mins.

Answer all the questions.

Illustrate your answers with diagrams wherever necessary.

Long Question:

- 1) A 70-year-old retired bank employee developed dry cough, high grade fever, chills, myalgia. He was diabetic with pre-existing chronic obstructive pulmonary disease. Viral work-up was positive for a viral etiology. It is an enveloped virus with segmented RNA and the envelope is characterised by presence of glycoproteins, neuraminidase, and hemagglutinin.
 - 1A) Identify the causative virus. (1 mark)
 - 1B) Explain the pathogenesis of the disease. (3 marks)
 - 1C) This virus was responsible for major pandemics in the past. Explain with reasoning. (4 marks)
 - 1D) Write four infection control practices recommended for the above case. (2 marks)

- 2) Enumerate central and peripheral lymphoid organs. Explain the structure of thymus and role in development and maturation of lymphoid cells. How are T lymphocytes different from B lymphocytes? Enumerate other cells of immune system with one function for each.

(1+4+2+3 = 10 marks)

3. Short Answer Questions:

- 3A) Discuss laboratory diagnosis of malaria. (4 marks)
- 3B) Explain the immunopathogenesis of rheumatic fever. Enumerate two laboratory investigations for rheumatic fever with the interpretative criteria. (4 marks)
- 3C) Enumerate four bacterial causes of lobar pneumonia and write their Gram stain morphology. (4 marks)
- 3D) Explain the principle and role of acid-fast staining in the diagnosis of pulmonary tuberculosis. (4 marks)
- 3E) Compare live and killed vaccines with appropriate examples. (4 marks)
- 3F) Discuss the beneficial role of normal microbial flora. List two diseases where primary pathogenesis is due to imbalance in normal microbial flora. (4 marks)
- 3G) How is laboratory diagnosis of viruses different from bacterial diagnosis? Enumerate methods used for viral cultivation. (4 marks)
- 3H) What are the safety precautions to be followed while handling the autoclave? Write a note on measures to ensure the effective sterilization. (4 marks)
- 3I) Explain pathogenesis of HIV infection. (4 marks)
- 3J) Name four bacterial diseases mediated by exotoxins. Write 2 differences between exotoxin and endotoxin? (4 marks)
- 3K) What are the different mechanisms of antimicrobial resistance in bacteria? Mention the gene

responsible for Methicillin resistance in MRSA. (4 marks)

- 3L) List different modes of disease transmission with one example for each. (4 marks)
- 3M) Write the aetiologies and pathogenesis of acute lymphatic filariasis. (4 marks)
- 3N) Name four common bacteria causing ventilator associated pneumonia. Write the measures to prevent the same. (4 marks)
- 3O) Enumerate four opportunistic infections. Plan laboratory diagnosis for a suspected case of esophageal candidiasis. (4 marks)

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Question Paper

Exam Date & Time: 08-Feb-2023 (10:20 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND MBBS DEGREE EXAMINATION – FEBRUARY 2023

SUBJECT: MICROBIOLOGY PAPER II

(CBME BATCH)

Marks: 80

Duration: 160 mins.

Answer all the questions.

Essay Questions.

- 1) A 50-year-old male farmer from rural Tamil Nadu presented to the OPD of a tertiary care centre with a progressive painless swelling following a splinter injury in the medial aspect of the right foot. Examination revealed a tumefaction 15 cm x 20 cm in size, with multiple sinuses draining seropurulent material with brown to black coloured granules. Microscopic examination of the granules revealed septate fungal hyphae.
- 1A) What is the most likely diagnosis? Justify your answer. (2)
- 1B) Describe the pathogenesis of this disease. (3)
- 1C) Describe the laboratory diagnosis of this condition. How would you differentiate from other pathogens causing similar condition? (3)
- 1D) What is the management of this patient's condition? (2)
- 2) A 21-year-old male presents to the clinic with chief complaint of an ulcer on the penis, which began as a papule 3 weeks back and slowly progressed to present state. On examination, the ulcer was painless, had a clean yet indurated base, and had no discharge/ pus. Left inguinal nodes were palpable and painless. On questioning, the patient admitted to having unprotected sex with multiple partners in the past few months. The VDRL test was reactive at a titer of 1/64.
- 2A) What is the diagnosis and the causative agent? (1)
- 2B) Explain the principle, interpretation, advantages and disadvantages of the VDRL test. (4)
- 2C) What is the drug of choice for treating the patient's condition? (1)
- 2D) How would this condition progress in untreated at this stage? (4)
- 3) **Short Answer Questions:**
- 3A) Describe the prophylaxis of enteric fever. (4)
- 3B) Describe the laboratory tests that will give an early, presumptive diagnosis of cholera. How would you further confirm the diagnosis? (4)
- 3C) Describe the pathogenesis and clinical types of botulism. (4)

- 3D) Draw a neat labeled diagram of hydatid cyst. Mention the methods of laboratory diagnosis of hydatid disease of liver. (4)
- 3E) Describe the source of infection, transmission, laboratory tests and complications caused by *Ascaris lumbricoides*. (1+1+1+1 = 4)
- 3F) Enumerate the serological markers of Hepatitis B virus infection, and describe the significance of each. (4)
- 3G) Describe the virulence factors associated with *Staphylococcus aureus* causing skin infections (4)
- 3H) Describe the pathogenesis of poliomyelitis (4)
- 3I) Microscopic examination of CSF from a patient with symptoms of chronic meningitis shows the presence of capsulated Gram positive budding yeast cells. What is the likely etiological agent? Describe the laboratory tests you would perform to confirm the diagnosis? (4)
- 3J) Describe the pathogenesis and laboratory diagnosis of Japanese B encephalitis. (4)
- 3K) Plan a complete laboratory diagnosis for a case of suspected gonorrhoea with an emphasis on specimen collection and transportation. (4)
- 3L) Discuss the laboratory diagnosis of vaginal candidiasis (4)
- 3M) A 40 day old infant's serum is tested positive for IgM antibodies to *Toxoplasma*. What is the likely mode of infection, mechanisms of disease and salient clinical manifestations in the infant? (4)
- 3N) A 9-year-old boy was brought to the clinic by his parents with lacerated wounds on the left leg due to unprovoked bite by a stray dog while walking home from school. On examination, there were five wounds, two of them were 3 cm long each and were bleeding. The other three were smaller wounds. What infection does this boy run the risk of contracting, and what is the causative agent? What do you think is the risk category? How would you manage this patient? (4)
- 3O) Describe the pathogenesis of human anthrax. (4)

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