

## Question Paper

Exam Date & Time: 09-Sep-2019 (10:00 AM - 12:30 PM)



### MANIPAL ACADEMY OF HIGHER EDUCATION

MELAKA MANIPAL MEDICAL COLLEGE (MANIPAL CAMPUS)  
MBBS PHASE - I STAGE - II DEGREE EXAMINATION - SEPTEMBER 2019  
Monday, September 09, 2019  
Microbiology [M2MIC]

#### MICROBIOLOGY - PART - II (ESSAY)

Section Duration: 120 mins

Max. Marks : 60

Answer all the questions

Draw diagrams wherever appropriate

1. Explain the structure of gram positive and gram negative bacterial cell wall with a labelled diagram.  
(6 marks)
2. Explain the mechanism of plasmid mediated gene transfer in bacteria.  
(4 marks)
3. Classify fungi based on morphology with examples.  
(4 marks)
4. A 20 year old truck driver presented to the skin and venereal disease clinic with a genital ulcer which was painless for the previous 10 days. Previously, he had unprotected sexual contact with a commercial sex worker. On examination, the ulcer was found to be circumscribed, indurated and partially healed. The inguinal lymphnodes were also enlarged and were nontender. Dark ground microscopy of the specimen collected from the lesion revealed motile spirally coiled bacteria.
  - 4A. What is the probable stage of disease and the etiological agent?
  - 4B. Explain ONE non-specific test for the diagnosis of this condition.  
(1+3 = 4 marks)
5. A 3 year old boy was brought to the emergency department with high fever and neck rigidity who on examination showed positive Kernig's sign. CSF collected was turbid, which on microscopy showed gram negative pleomorphic bacilli and neutrophils. The organism grew well in the presence of Staphylococcus aureus on blood agar. The child's mother informed the attending doctor that the boy had missed his primary immunization.
  - 5A. Name the etiological agent in this case.
  - 5B. Explain the pathogenesis of this condition.
  - 5C. Name the vaccine used to prevent this infection.  
(1+3+1 = 5 marks)

6. Discuss the immunoprophylaxis of poliomyelitis. (5 marks)
7. Explain laboratory diagnosis of pulmonary tuberculosis. (6 marks)
8. With the help of a labelled diagram, explain the structure of the Human Immunodeficiency Virus. (6 marks)
9. Explain the pathogenesis and clinical manifestations of *Entamoeba histolytica* infection. (2+2 = 4 marks)
10. Describe the laboratory diagnosis of Hepatitis B virus infection. (5 marks)
11. Describe the clinical manifestations and laboratory diagnosis of enteric fever. (2+5 = 7 marks)
12. A 65-year old man who was catheterized, developed dysuria and hematuria. Gram staining of the urine sample collected from the catheter showed gram-negative bacilli and pus cells. Culture of the urine on MacConkey's agar had a colony count of  $10^4$  CFU/ml which were lactose fermenting. The isolated organism was motile, indole positive and oxidase negative.
- 12A. Name the etiological agent.
- 12B. Comment on the significance of the colony count.
- 12C. List TWO virulence factors of the agent specific to this case. (1+2+1 = 4 marks)

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