

UNIVERSITY OF JAFFNA, SRI LANKA
SECOND EXAMINATION FOR MEDICAL DEGREES PART (II)
July 2024
Academic Year 2019/2020
Microbiology - Paper II

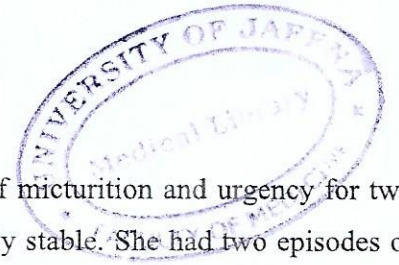
Date: 02.07.2024

9.00 am to 11.00 am. (Two hours)

Answer all four questions

Answer each question in a separate answer book

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1. A 48-year-old farmer presented with cough, loss of appetite, loss of weight and night sweats for three weeks and haemoptysis for two days. He did not have any other significant illnesses in the past. This was the first time he was seeking medical advice for this illness.
- On auscultation, crepitations were heard over the right apical region of the lung.
- 1.1 State the most possible infective disease in this patient. (05 marks)
- 1.2 Name the most common causative organism of the disease mentioned in 1.1. (05 marks)
- 1.3 Discuss the medical significance of the basic characteristics of the organism mentioned in 1.2. (20 marks)
- 1.4 Describe the possible source and the mode of transmission of the disease mentioned in 1.1. (20 marks)
- 1.5 Name the first bacteriological investigation that will be done in this patient in Sri Lanka for the aetiological diagnosis. (05 marks)
- 1.6 Discuss the advantages and disadvantages of the investigation mentioned in 1.5. (20 marks)
- 1.7 Name and describe the transmission-based precautions that should be practiced in this patient if he needs to be admitted to hospital. (25 marks)
2. 2.1 A 29-year-old woman developed an annular, itchy rash with a raised inflamed margin on her forearm. She said that it has been increasing in size with central clearing.
- 2.1.1 State the most possible clinical diagnosis and the aetiological agents. (10 marks)
- 2.1.2 Describe the possible sources and modes of transmission of this infection. (25 marks)
- 2.1.3 Name the most reliable specimen for the aetiological diagnosis of the infection in this patient. (05 marks)
- 2.1.4 Name two (2) microbiological tests that can be done to confirm the aetiological agent. (10 marks)
- 2.1.5 Describe briefly how to collect and transport the specimen you mentioned in 2.1.3. (20 marks)
- 2.2 Discuss the antimicrobial treatment of the infections caused by the organisms you mentioned in 2.1.1 at different sites of the body. (30 marks)



3. 3.1 A 59-year-old woman presented to the OPD with dysuria, frequency of micturition and urgency for two days. She did not have any other complaints and was haemodynamically stable. She had two episodes of similar symptoms within the last six months and was treated elsewhere with ciprofloxacin without doing a urine culture. This time, she was started on nitrofurantoin empirically after collecting urine for culture. Pure growth of ESBL producing *E. coli*, more than 10^5 CFU/ml, was isolated from her urine.
- 3.1.1 Explain what an ESBL producer is. (10 marks)
- 3.1.2 Describe briefly the pathogenesis of urinary tract infection in this patient. (10 marks)
- 3.1.3 Describe the measures to be taken to minimise contamination of the urine specimen collected for culture. (20 marks)
- 3.1.4 State the temperature at which urine should be transported to the laboratory for culture. (05 marks)
- 3.2 3.2.1 Describe the possible risk factors for urinary tract infections in women. (25 marks)
- 3.2.2 Discuss the consequences of antimicrobial resistance. (30 marks)
4. 4.1 A 45-year-old prisoner and injecting drug user presented with complaints of persistent fatigue, mild abdominal discomfort, and a decrease in appetite over the past few months. He described the fatigue as worsening over time, with the abdominal discomfort primarily located in the right upper quadrant. The blood tests conducted seven months ago and again now showed positive results for Hepatitis B surface antigen and Hepatitis C IgM antibodies and were negative for HIV. He has not gone for the follow up clinic visits as instructed.
- 4.1.1 State the most likely diagnosis of this patient. (05 marks)
- 4.1.2 Name the most likely viruses responsible for this condition in this patient. (05 marks)
- 4.2 4.2.1 Describe the possible risk factors associated with infections by the viruses mentioned in 4.1.2. (35 marks)
- 4.2.2 State all the markers for each virus mentioned in 4.1.2 and describe their usefulness. (35 marks)
- 4.2.3 Describe the preventive measures for the infections caused by the viruses mentioned in 4.1.2. (20 marks)