UNIVERSITY OF JAFFNA, SRI LANKA
FACULTY OF ALLIED HEALTH SCIENCES
THIRD YEAR SECOND SEMESTER EXAMINATION IN BScHons (MLS)-2023
MLSDM 3243 DIAGNOSTIC MICROBIOLOGY

Date: 11.06.2025 **Time: 2 hours**

ANSWER ALL FOUR QUESTIONS.

1. A sputum sample is received in a clinical microbiology laboratory from a 70- year- old patient with suspected pneumonia.

1.1 Describe how to process a sputum sample in a clinical microbiology laboratory. (30 marks)

1.2 A bacterial pathogen isolated from the above specimen, appeared as small colonies with greenish discoloration on blood agar and seen as gram positive diplococci on gram stain.

1.2.1 Name the most probable bacterial isolate (05 marks)

1.2.2 Give the reason for the colony appearance (05 marks)

1.2.3 List the tests carried out in a clinical microbiology laboratory to identify the pathogen mentioned in 1.2.1 (10 marks)

1.2.4 Describe the laboratory tests in 1.2.3 to confirm the bacterial pathogen mentioned in 1.2.1 (30 marks)

1.3 Name four possible contaminants you would expect from this specimen on culture. (10 marks)

1.4 Name three organisms that do not grow from a sputum sample in routine culture. (10 marks)

2. A stool sample of a 60- year-old man with diarrhea was received for microbiological diagnosis.

2.1 Name three bacterial pathogens which could be isolated routinely from the above specimen. (15 marks)

2.2 Briefly describe how you would process the above sample in a clinical microbiology laboratory. (25 marks)

2.3 Describe how you would identify the bacteria mentioned in 2.1 in a microbiology laboratory including the methods of the tests used. (60 marks)

3. A urine sample from a 35-year-old woman with acute uncomplicated urinary tract infection is received for microbiological diagnosis.

3.1 Briefly describe how would you process the above sample in a clinical microbiology laboratory. (20 marks)

3.2 Culture on CLED agar of the above given urine specimen showed pure growth of yellow colonies and gram stain showed gram positive cocci in groups.

3.2.1 Describe the tests you would perform to identify the pathogen (30 marks)

3.2.2 Name the most probable bacterial pathogen isolated from this specimen (05 marks)

3.3 Name other two gram positive bacterial pathogens which could cause the condition mentioned in 3. (10 marks)

3.4 Briefly describe the laboratory tests used to identify the pathogens mentioned in 3.3. (35 marks)

4. A blood sample of a 2- year-old-child with suspected blood infection was inoculated into a blood culture bottle was received for microbiology diagnosis. An automated blood culture system was used in the laboratory for blood culture.

4.1 Mention the details you would check when receiving an inoculated blood culture bottle. (10 marks)

4.2 Name three types of automated blood culture system and mention the working principle of each type. (25 marks)

4.3 Discuss the advantages and disadvantages of using automated blood culture system (30 marks)

4.4 On sub culturing of the above mentioned blood culture bottle on chocolate agar yielded translucent colonies and appears gram negative cocco bacilli on gram stain.

4.4.1 Name the most probable bacterial pathogen isolated (05 marks)

4.4.2 Briefly describe the tests used to identify the pathogen mentioned in 4.4.1 (30 marks)