

1.2.3 Name the possible aetiological agents which could be isolated from the specimen/s mentioned in 1.2.1. (3 marks)

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1.2.4 State how you would report your findings (positive and negative). (2 marks)

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1.3 List FOUR (04) bacterial species that cause typical pneumonia. (4 marks)

- i.
- ii.
- iii.
- iv.

1.4 How do you instruct a patient to collect sputum samples for the diagnosis of pulmonary tuberculosis? (6 marks)

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1.5 What are the types of specimens that can be collected for laboratory diagnosis of extra pulmonary tuberculosis? (2 marks)

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Total - 25 marks

Q2

2.1 List FOUR (04) causative agents of watery diarrhea. (4 marks)

- i.
- ii.
- iii.
- iv.

2.2 What is the correct specimen type collected for bacteriological investigation of watery diarrhea? (2 marks)

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2.3 How do you transport the above mentioned specimen (2.2) if transportation is delayed? (3 marks)

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Q3

A 35 years old female with type II diabetes presented to the wound clinic with an infected, open wound. After cleaning the wound bed, two wound swabs were collected and sent for bacteriological investigations.

3.1 How do you transport these specimens to the microbiology laboratory? (2 marks)

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3.2 How do you store these specimens, if the transportation is delayed? (2marks)

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3.3 Following laboratory findings were obtained on the swab specimens sent from the patient.

Gram stain	: >25 Pus cells/LPF	
	Gram-positive cocci and Gram-negative bacilli	
Culture	: <i>Staphylococcus aureus</i> (4+) and <i>E. coli</i> 2-3 colonies	
ABST	: Done only for <i>S. aureus</i>	
	Penicillin	R
	Cefoxitin	S
	Erythromycin	R
	Clindamycin	R
	Ciprofloxacin	S
	Vancomycin	S
	D zone was seen	

3.3.1. Briefly discuss the ABST results. (8 marks)

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3.3.2 How should you place antibiotics in order to detect the D zone of inhibition? (3 marks)

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3.3.3 How do you report the ABST result? (6 marks)

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3.4 What is the drug/ chemical group that clindamycin belongs to? (2 marks)

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3.5 What is the mode of action of clindamycin? (2 marks)

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Total – 25 Marks

Q4

4.1 List **FIVE (05)** antibiotic groups that inhibits bacterial protein synthesis? **(5 marks)**

- i.
- ii.
- iii.
- iv.
- v.

4.2 Write down the principle of disc diffusion method of antimicrobial sensitivity testing.

(11 marks)

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4.3 List **FIVE (05)** facts to be considered while reporting quality control testing of the ABST?
(5 marks)

- i.
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- ii.
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- iii.
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- iv.
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- v.
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4.4 List **FOUR (04)** relevant corrective actions to be taken for procedures with unexpected results.
(4 marks)

- i.
- ii.
- iii.
- iv.

Total – 25 Marks

Part C: Essay Questions (40 marks)

1. Diphtheria is a serious disease caused by toxigenic strains of *Corynebacterium diphtheria*. A 9-year-old boy who presented with fever, tonsillar plaques and respiratory failure was diagnosed as having diphtheria.

Discuss, the laboratory diagnosis of diphtheria in the microbiology laboratory under the following headings:

- a) the type of specimen(s) to be collected
- b) specimen processing using different culture media and expected results/ findings
- c) different staining methods to be used and expected results/ findings
- d) additional identification methods (20 marks)

2. There are three major antibiotic resistance patterns in Gram positive bacteria. Describe the antibiotic resistant patterns in Gram positive bacteria and laboratory tests used to detect their resistance mechanisms. (20 marks)

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