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FACULTY OF MEDICINE, UNIVERSITY OF RUHUNA

Third Examination for Medical Degrees Part I – February/ March 2023

MICROBIOLOGY - Paper II



Question 1

1st March 2023

Answer all questions in the space provided

10.30 a.m. to 12.30 p.m. (2 hours)

1. A 28-year-old pregnant female in her 37th week of gestation presented to the sexually transmitted infection (STI) clinic complaining of multiple painful genital ulcers.

1.1 Name **two (2)** possible causative pathogens. (10 marks)

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1.2 List **two (2)** further characteristics of the ulcer that would help to differentiate each of the causative pathogens mentioned in 1.1. (10 marks)

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1.3 List **three (3)** appropriate microbiological investigations that would help in confirming the clinical diagnosis and state their expected results. (30 marks)

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1.4 From the two pathogens mentioned in 1.1 which one would cause complications to the newborn and state **three (3)** major complications caused by it. (20 marks)

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1.5 What is the recommended antimicrobial agent used in the treatment of the mother and the newborn against the pathogen mentioned in 1.4? (05 marks)

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1.6 How could you have prevented the occurrence of the complications mentioned in 1.4? (10 marks)

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1.7 State **three (3)** further steps in the management of the mother. (15 marks)

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Question 2

1st March 2023

Answer all questions in the space provided

10.30 a.m. to 12.30 p.m. (2 hours)

2. Scenarios related to management of infectious diseases including infection prevention and control are given below.

2.1 A fresh blood spill was detected on the laboratory floor

2.1.1 List **three (3)** infections that can be transmitted through a blood spill? (10 marks)

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2.1.2 What is the chemical disinfectant and its concentration used in the cleaning of this blood spill? (05 marks)

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2.1.3 Explain the important steps followed in cleaning this blood spill. (15 marks)

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2.2 Contaminated surgical instruments in a theatre

2.2.1 What is the most suitable method to make these instruments safe to reuse? (10 marks)

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2.2.2 What is the sterilization agent used in the method mentioned in 2.2.1? (05 marks)

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2.2.3 What are the sterilization conditions used in the method mentioned in 2.2.1 (06 marks)

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2.2.4 How would you monitor the efficacy of the above process? (08 marks)

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2.2.5 List **three (3)** other items that can be sterilized using the same method? (06 marks)

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2.3 Watery diarrhea in an ICU patient who is on broad-spectrum antibiotics

2.3.1 State the likely diagnosis and the causative organism (08 marks)

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2.3.2 List **two (2)** microbiological investigations you should perform in this patient? (10 marks)

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2.3.3 List **two (2)** important steps in the treatment of this patient and state **two (2)** antibiotics which will be used in the treatment. (08 marks)

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2.3.4 Write **three (3)** infection prevention and control measures that should be followed in this instance. (09 marks)

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Question 3

1st March 2023

Answer all questions in the space provided

10.30 a.m. to 12.30 p.m. (2 hours)

3.

3.1 Macrolides

3.1.1 Name **three (3)** antibiotics in this group. (06 marks)

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3.1.2 Outline the mechanism of action. (08 marks)

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3.1.3 List **three (3)** clinical conditions in which this class of antibiotics is used (06 marks)

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3.1.4 List **three (3)** bacterial pathogens against which this class of antibiotics is recommended. (06 marks)

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3.1.5. Write **two (2)** side effects of this class of drugs. (04 marks)

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3.2 Mantoux test

3.2.1. Briefly explain the immunological basis of this test (08 marks)

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3.2.2. Name **one (1)** indication for this test? (05 marks)

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3.2.3. What is the reagent used in this test and how is it administered (volume, route and the site) (08 marks)

Reagent -

Volume -

Route -

Site -

3.2.4 Describe how the results are recorded? (06 marks)

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3.2.5 Describe how the results are interpreted? (04 marks)

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3.2.6 State **one (1)** condition each in which this test can give false positive and false negative results. (04 marks)

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3.3 Cellulitis

3.3.1 Define cellulitis (05 marks)

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3.3.2 List **three (3)** causative pathogens. (09 marks)

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3.3.2 Name **three (3)** predisposing factors for this condition (06 marks)

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3.3.3 List **three (3)** complications of this condition (06 marks)

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3.3.4 Write **three (3)** antibiotics that are recommended in the empirical treatment of this condition. (09 marks)

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Question 4

1st March 2023

Answer all questions in the space provided

10.30 a.m. to 12.30 p.m. (2 hours)

4. Three clinical syndromes are given.

4.1 Deformed, discoloured brittle nails in a farmer

4.1.1 Name this condition (04 marks)

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4.1.2 List three (3) aetiological agents for this condition (09 marks)

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4.1.3 What microbiological investigations would help in the diagnosis and identification of the pathogens mentioned above? (04 marks)

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4.1.4 List the important steps in the collection and transport of relevant specimens (12 marks)

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4.1.5 List two (2) antimicrobial agents used in the treatment of this condition (04 marks)

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4.1.6 Name one (1) important measure taken to prevent this condition (02 marks)

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4.3 Fever, retro-orbital pain and petechial rash in a 10-year-old boy for 5 days duration.

His platelet count was 30,000/ mm³ and haematocrit was 47%. Ultrasound scan revealed pleural effusion.

4.3.1 What is the most likely diagnosis? (05 marks)

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4.3.2 List **four (4)** microbiological investigations available to diagnose this condition (08 marks)

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4.3.3 Briefly discuss the advantages and the disadvantages of the investigations listed in 4.3.2 (12 marks)

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4.3.4 Name **two (2)** complications that can occur in this patient (04 marks)

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4.3.5 List **three (3)** important measures to control this infection (06 marks)

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