

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

Master copy.


POSTGRADUATE DIPLOMA IN MEDICAL MICROBIOLOGY
EXAMINATION – DECEMBER 2016

Date :- 9th December 2016

Time :- 9.00 a.m. – 12.00 noon

STRUCTURED ESSAY PAPER

Answer **all** questions.

Answer each question in a separate book.

Write the index number in each answer book.

1. Sterilization and disinfection in health care settings is essential for infection prevention and control.
 - 1.1. Name three (03) methods used for sterilization. (15 marks)
 - 1.2. Briefly explain the principle of sterilization in autoclaving. (15 marks)
 - 1.3. Explain how the functional efficacy of an autoclave is tested. (25 marks)
 - 1.4. Briefly describe high level disinfection. (25 marks)
 - 1.5. Outline the steps in managing a blood spill on the floor in a hospital ward. (20 marks)

2.
 - 2.1. Typhus fever is suspected in patients with pyrexia of unknown origin (PUO) worldwide.
 - 2.1.1. Name the causative organisms and the mode of transmission in typhus fever. (10 marks)
 - 2.1.2. Outline the pathogenesis of scrub typhus. (25 marks)
 - 2.1.3. Name two (02) antibiotics used in the treatment of scrub typhus, giving their mechanisms of action. (15 marks)

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2.2. Patients with melioidosis are reported throughout the country.

2.2.1. Name the causative agent of melioidosis. (10 marks)

2.2.2. State the culture characteristics, microscopic features, biochemical tests and antimicrobial sensitivity patterns that would lead you to suspect the causative agent in a routine diagnostic laboratory. (30 marks)

2.2.3. Name two (02) laboratory tests used for confirmation of the diagnosis. (10 marks)

3. A nurse sustains a needle stick injury to her fingertip while taking a blood sample from a 30 year old febrile male patient.

3.1. What immediate advice would you give her regarding first aid? (10 marks)

3.2. Name the important viral infections which could be transmitted in this situation **and** state the risk of transmission of each. (30 marks)

3.3. How would you assess the risk of transmission of the above infections in a needle stick injury? (40 marks)

3.4. What infection prevention and control (IPC) measures should be taken to minimize needle stick injuries? (20 marks)

4. Answer the following on hypersensitivity.

4.1. Name the different types of hypersensitivity, giving clinical examples. (20 marks)

4.2. Describe the pathogenesis of type 1 hypersensitivity. (40 marks)

4.3. Describe the clinical features of one (01) disease due to type 1 hypersensitivity. (20 marks)

4.4. Briefly discuss how you would diagnose the disease mentioned in 4.3. (20 marks)

5. A 14 year old boy presented with fever, cough and wheezing of 5 days duration. His white blood cell counts were as follows (normal range is given within brackets).

Total white blood cells	10800/mm ³	(4000-11000/ mm ³)
Neutrophils	3600/ mm ³	(2000-7700/ mm ³)
Lymphocytes	2500/ mm ³	(800-4400/ mm ³)
Eosinophils	4400/ mm ³	(40-440/ mm ³)
Basophils	50/ mm ³	(0-110/ mm ³)
Monocytes	250/ mm ³	(80-880/ mm ³)

- 5.1. Name three (03) possible parasitic conditions for the above scenario and a parasite responsible for each condition. (15 marks)
- 5.2. What is the mode of transmission of each parasite mentioned in 5.1? (15 marks)
- 5.3. What laboratory investigations would confirm the diagnosis? (20 marks)
- 5.4. Considering one of the parasitic infections listed in 5.1
- 5.4.1. What is the treatment of choice? (20 marks)
- 5.4.2. What are the prevention and control measures? (30 marks)
6. State the likely clinical diagnosis and list the common aetiological agent(s) for the following three (03) scenarios. Describe the laboratory diagnosis including specimen collection and transport for each condition.
- 6.1. A 40 year old patient with uncontrolled diabetes presented with fever, unilateral facial swelling, sinus pain and serosanguinous nasal discharge of five days duration. On examination necrotic black lesions were seen over the hard palate. (50 marks)
- 6.2. A 10 year old boy presented with a painful boggy mass on the scalp with pus discharging points. There was loss of hair over the lesion with adjacent hairs matted with thick crusting. (30 marks)
- 6.3. A young female complained of grittiness when combing her hair. On examination there were black, hard, adherent nodules on the hair shafts. (20 marks)