

**POSTGRADUATE INSTITUTE OF MEDICINE**  
**UNIVERSITY OF COLOMBO**

**POSTGRADUATE DIPLOMA IN MEDICAL MICROBIOLOGY**  
**EXAMINATION - DECEMBER 2013**

**Date :-** 10<sup>th</sup> December 2013

**Time :-** 9.00 a.m. – 12.00 noon

**STRUCTURED ESSAY PAPER**

Answer all **six (06)** questions.

Answer each question in a separate book.

1. Bacterial infections can affect pregnant women throughout pregnancy and during the peripartum period. They may also affect the fetus and the newborn.
  - 1.1. Name **four (04)** bacterial pathogens that cause maternal or neonatal adverse outcomes during pregnancy or peripartum period. (20 marks)
  - 1.2. Outline the possible adverse outcomes caused by **two (02)** of the pathogens stated in 1.1. (40 marks)
  - 1.3. Discuss the laboratory diagnosis of **one (01)** of the pathogens mentioned in 1.1. (20 marks)
  - 1.4. What antibiotics will effectively treat the infections caused by the pathogen mentioned in 1.3 ? (20 marks)
2.
  - 2.1. Name **five (05)** antibiotics, which interfere with bacterial cell wall synthesis at different steps of the process. (20 marks)
  - 2.2. Write the step of cell wall synthesis inhibited by each antibiotic mentioned above. (20 marks)
  - 2.3. Describe the mechanisms of resistance to two of the above mentioned antibiotics and their genetic basis. (60 marks)

3. An 8 year old girl developed a generalized itchy rash, which first appeared 2 days ago on her trunk as discrete macules. They developed into papules and subsequently to small vesicles which spread over her face, trunk, scalp and then to her limbs. On examination, she had a temperature of 38°C.

3.1. What is the likely diagnosis and the etiological agent of this condition? (06 marks)

3.2. List **four (04)** possible complications of this disease. (08 marks)

3.3. What groups of patients are more prone to the complications listed above? (16 marks)

3.4. Describe the transmission and pathogenesis of this infection. (30 marks)

3.5. Outline the

3.5.1. laboratory diagnosis of this infection (20 marks)

3.5.2. antimicrobial therapy and prevention of this infection. (20 marks)

4.

4.1. A 12 year old child was bitten by a dog and was given equine rabies immunoglobulin (ERIG) as part of rabies post exposure prophylaxis.

4.1.1. Six days later, he develops fever, joint pain and a widespread urticarial rash.

Describe the immune mechanisms responsible for the above clinical features. (40 marks)

4.1.2. Eight days following the dog bite, the mother takes the child to the local dispensary for dressing of the wound and the child is given a pain killer and an antibiotic. One hour after taking the drugs, he develops generalized urticaria, swelling of the lips and difficulty in breathing.

Name the drug that should be given including the dose and the route of administration in this situation. (10 marks)

4.2. Describe the role of natural killer cells in tumor immunity. (30 marks)

4.3. Describe what is meant by 'monoclonal antibodies' giving one example. (20 marks)

Contd..../3-

5. State the likely diagnosis, list the aetiological agent/s and describe the laboratory confirmation of the diagnosis including specimen collection and transport in the following clinical scenarios:
- 5.1. Hypopigmented macular lesions on the back of the chest and neck in a 50 year-old male. (20 marks)
- 5.2. White plaques in the buccal mucosa of a bottle fed neonate. (40 marks)
- 5.3. Multiple chronic ulcerative warty lesions on the lower leg of a gardener of 6 months duration. (40 marks)
- 6.
- 6.1. Name the parasitic infection that is most likely to cause each of the clinical scenarios described in (a), (b) and (c) below. (15 marks)
- (a) A 24 year old pregnant female presenting with anaemia
- (b) A 5 year old boy presenting with blood and mucus diarrhoea
- (c) A 32 year old male presenting with a history of swelling of the left lower limb.
- 6.2. Explain how each of these patients is likely to have acquired the infection. (30 marks)
- 6.3. Taking ONE of the parasitic infections mentioned in 6.1
- 6.3.1. Describe the pathogenesis of the clinical manifestations. (20 marks)
- 6.3.2. Name the investigations that could be performed to arrive at a laboratory diagnosis. (10 marks)
- 6.3.3. Describe the principles of prevention and control. (25 marks)