

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MASTER OF SCIENCE IN MEDICAL TOXICOLOGY
FINAL EXAMINATION – JUNE 2014

Date :- 4th June 2014

Time:- 1.00 p.m. – 4.00 p.m.

SEQ PAPER

Answer **all four (04)** questions in Part A.

Answer any **two (02)** out of the **five (05)** questions in Part B.

Answer each question in a separate book.

PART A

1. A 23 year old university student (body weight 50 kg) is admitted to the Emergency Treatment Unit with vomiting and buzzing in her ears. She has ingested 60 tablets of 300mg soluble aspirin 5 hours before admission. She is drowsy. Pulse is 120/minute, blood pressure is 100/60 mmHg and her respiratory rate is 24/minute.
 - 1.1. Briefly discuss the value of gastric decontamination in this patient? (20 marks)
 - 1.2. List the investigations you would do on admission indicating the importance of each of the investigation you mention. (30 marks)
 - 1.3. What are the criteria for ICU admission of a patient following acute aspirin poisoning? (20 marks)
 - 1.4. Explain the toxicological basis for the use of urine alkalization in acute salicylate poisoning. (30 marks)

Contd...../2-

2. A 30 year old man was brought to hospital one hour after intentionally swallowing approximately 50mL of a 20% paraquat solution. Within ten minutes of swallowing paraquat, he had vomited. On admission he was febrile and had a sore throat, dysphagia and a distended abdomen. He was dyspnoeic with a respiratory rate of 40/minute and there were fine crepitations in the lung bases.

2.1. What are the clinical features of paraquat toxicity? (20 marks)

2.2. What is the mechanism of paraquat toxicity? (20 marks)

2.3. What laboratory tests should be requested in patients with paraquat toxicity? (20 marks)

2.4. How does the serum paraquat concentration assist in determining prognosis? (10 marks)

2.5. How should you manage the above patient? (30 marks)

3. A 23 year old female, weighing 55kg, was brought to hospital after intentionally ingesting 30 tablets of amitriptyline (50 mg tablets), approximately one and half hours prior to arrival.

On admission pulse rate was 110/minute and blood pressure was 90/60 mmHg and ECG shows broad complex tachycardia.

3.1. Describe the toxicokinetics of amitriptyline. (20 marks)

3.2. Explain the clinical features of amitriptyline overdose (30 marks)

3.3. What is the risk assessment for this patient? (20 marks)

3.4. Explain how you would manage this patient (30 marks)

4. A 45 year old house wife felt pricking pain in her left ankle in the backyard of her house under high grown vegetation. She called for help and walked back to the house. There was a bleeding puncture at the lateral side of the left foot below the ankle. The bite site was painful and within half an hour the swelling extended up to the mid calf. The family members suspected snakebite.

4.1. Name three (3) possible offending snakes. (15 marks)

She was admitted to a tertiary care hospital in 25 minutes. Medical officer on duty did the initial assessment.

4.2. Name three (3) principles of the initial assessment. (30 marks)

After 2 hours of observation a decision was taken to give her antivenom serum as there were signs of envenoming.

4.3. What is the antivenom serum regime indicated? (15 marks)

Half an hour after commencing antivenom serum she developed itching of body and her blood pressure was 90/60 mmHg.

4.4. What is the immediate management? (20 marks)

On the 2nd day, her urine output was about 20 mL/hour, serum creatinine was 2.1 mg/dl (Normal 0.5mg/dl – 1.2mg/dl), platelet count was $54 \times 10^9/L$, haemoglobin was 8 g/dL.

4.5. Explain the above findings (20 marks)

Contd.../4-

PART B

- 5.
- 5.1. What are the uses of pesticides in Sri Lanka? (30 marks)
 - 5.2. Discuss the value of the Control of Pesticides Act of Sri Lanka. (30 marks)
 - 5.3. List five (5) pesticides banned in Sri Lanka in the last two decades. (10 marks)
 - 5.4. Discuss the steps the government should take to reduce morbidity and mortality from pesticide poisoning. (30 marks)
6. A 24 year old male was brought to the Emergency Treatment Unit for change of behavior. He is suspected to be a cocaine abuser. He complains of runny nose, "bugs" crawling in the body and itching. He was restless and was grinding his teeth frequently. Clinical examination revealed multiple caries teeth, features of gingivitis. He was febrile and pulse rate was 116/minute, blood pressure was 160/95 mmHg. He had few rhonchi in his lungs and had moderately dilated pupils.
- 6.1. List clinical features that would support cocaine abuse? (10 marks)
 - 6.2. Describe the mechanism of action of cocaine. (20 marks)
 - 6.3. List three (3) life threatening conditions that may arise due to this substance abuse. (30 marks)
 - 6.4. List the criteria for diagnosis of substance dependency. (40 marks)
- 7.
- 7.1. Define the term LC_{50} (lethal concentration 50) (20 marks)
 - 7.2. List the sources and the constituents that causes air pollution.(30 marks)
 - 7.3. Discuss the magnitude of the problem of air pollution in the developing world. (50 marks)

8. A major fire occurs in a fertilizer factory and a toxic gas identified as ammonia is released into the environment.
- 8.1. Discuss the likely signs and symptoms that victims would exhibit following exposure. (40 marks)
 - 8.2. What advice would you give to the Fire Service personnel who were involved in fighting this fire? (30 marks)
 - 8.3. Outline your plan of management for the above disaster. (30 marks)
9. You are appointed as a toxicologist to the North Central Province of Sri Lanka. The statistics show very high mortality related to pesticide poisoning.
- 9.1. How would you design an epidemiological study to evaluate the problem? (40 marks)
 - 9.2. What are the prevention strategies that could be adopted in the province to reduce morbidity and mortality from pesticides poisoning? (30 marks)
 - 9.3. Discuss the role of a regional Poisons Information Centre. (30 marks)