

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

SELECTION EXAMINATION FOR MD (EMERGENCY MEDICINE)
DECEMBER 2021 (RESCHEDULED)

Date :- 13th December 2021

Time:- 9.00 a.m. - 12.00 noon

ESSAY PAPER

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

Answer **each question in a separate book.**

1.

- 1.1. A 44-year-old woman presented with a two-hour history of epigastric pain. Pain was severe, sharp and radiating to her back. She had vomited twice.

On examination she was in considerable pain. Her pulse was 88/minute, blood pressure 120/80 mmHg and epigastric tenderness was present with mild rebound tenderness but no guarding.

On the second day, ultrasound scan revealed a cystic mass filled with fluid, found anterior to the pancreas. It was shown to be compressing the large vessels found in the vicinity. This was drained by a connection created on the posterior wall of the stomach.

- 1.1.1. Describe the anatomical basis of the pain in this patient. (20 marks)

- 1.1.2. Describe the anatomical basis of the procedure mentioned above.
(20 marks)

- 1.2. Describe the formation, course, tributaries, termination of internal jugular vein and its clinical significance. (40 marks)

- 1.3. States the different locations where arterial pulse is felt in the lower limb, mentioning the specific artery that is palpated in each location and the structure against which it is palpated. (20 marks)

2.
 - 2.1. Describe the renal compensatory mechanisms to maintain the H^+ homeostasis in diabetic ketoacidosis. (50 marks)
 - 2.2. A patient on loop diuretics had dilute urine and hypokalaemia. Explain the physiological basis of these findings. (50 marks)
3.
 - 3.1. Describe the pharmacological principles in planning an antibacterial regimen to treat acute bacterial meningitis. (40 marks)
 - 3.2. Explain the pharmacological basis for the beneficial effects of Enalapril in the treatment of chronic heart failure. (30 marks)
 - 3.3. Describe the factors which determine the plasma elimination half-life of medicine. (30 marks)
4. A 54-year-old man was intubated due to reduced GCS. His end-tidal CO_2 was 25mmHg.
 - 4.1. List four (04) methods available to monitor CO_2 in expired gases. (10 marks)
 - 4.2. State the method used to measure the CO_2 tension in blood. (05 marks)
 - 4.3. Briefly describe the physical principle behind the use of electromagnetic radiation to monitor the CO_2 in a gas mixture. (40 marks)
 - 4.4. Draw and label the capnograph waveform. (20 marks)
 - 4.5. What diagnostic information can be gained from capnography in your clinical practice? (25 marks)

5. A 70-year-old man was admitted to hospital in an acute confusional state. He had not been on any medication. On examination there was no evidence of dehydration or oedema.

His biochemical investigations are provided:

Serum

Sodium	110	mmol/L	(135 - 146)
Potassium	3.6	mmol/L	(3.5 - 5.1)
Urea	7.0	mg/dL	(6-24)
Creatinine	0.62	mg/dL	(0.74 - 1.24)
eGFR	> 60	mL/min/1.73m ²	
Glucose	90	mg/dL	
Total protein	6.1	g/dL	(6.0 - 8.3)

Urine

Sodium	56	nmol/L	
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- 5.1. What is the most likely cause for the electrolyte abnormality seen in this patient? (03 marks)
- 5.2. List four (04) reasons that helped you to arrive at a diagnosis. (12 marks)
- 5.3. What further biochemical investigation/s would confirm the diagnosis stated in 5.1? (10 marks)
- 5.4. Briefly indicate the principles of management of the condition you mentioned in 5.1. (15 marks)

He had digital clubbing. Chest X-ray revealed a right sided pleural effusion.

The CT scan of the chest revealed a mass in right thoracic cavity.

Blood

Hb	18.5g/dL	(12 - 15)
Platelet count	230 x 10 ⁹ /L	(150 - 300)
WBC	5 x 10 ⁹ /L	(4 - 12)

- 5.5. What is the most likely aetiological diagnosis? (15 marks)
- 5.6. A guided biopsy was taken.
How would the histological appearance help in the diagnosis? (25 marks)
- 5.7. Give two (02) reasons for his abnormal haemoglobin value. (20 marks)

6. A 25-year-old woman was admitted to the emergency department as she had fainted after arriving at her workplace. She had been feeling unwell for a few weeks and complained of weakness and loss of weight. On examination she was conscious but dizzy, her blood pressure was 100/60 mmHg with a postural drop and pulse rate was 130/minute.

Investigations revealed

Capillary blood glucose	50 mg/dL	
Serum sodium	133 mg/dL	(135 - 146)
Serum potassium	5.9 mg/dL.	(3.5 - 5.1)

- 6.1. What is the most likely endocrine cause for this presentation?
(10 marks)
- 6.2. Explain the pathophysiological basis of the following observations.
(65 marks)
- 6.2.1. Feeling unwell and weakness
 - 6.2.2. Hypoglycaemia
 - 6.2.3. Electrolyte derangements
 - 6.2.4. Abnormal blood pressure
- 6.3. State one (01) investigation used to confirm the diagnosis.
(10 marks)
- 6.4. Explain the physiological basis of the investigation stated in 6.3.
(15 marks)