

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

**MD (EMERGENCY MEDICINE) EXAMINATION – DECEMBER 2020**

**Date :-** 8<sup>th</sup> December 2020

**Time:-** 9.00 a.m. – 12.00 noon

**STRUCTURED ESSAY QUESTION PAPER**

Answer all ten (10) questions.

Answer each question in a separate book.

1. A 30-year-old man is brought to the Emergency Department following a stab injury to right hypochondrium with the knife in situ. He is smelling of alcohol and is swearing loudly. His blood pressure is 110/80 mmHg and pulse rate is 120/minute. Air entry is reduced in the right chest. Respiratory rate is 30/minute. Arterial oxygen saturation (SpO<sub>2</sub>) is 96% on air.
  - 1.1. Out-line with reasons five (05) important steps in the immediate management of this patient. (40 marks)
  - 1.2. An intercostal drainage tube is inserted into his right chest. What are the indicators in relation to that procedure that would suggest he may need a thoracotomy? (20 marks)
  - 1.3. The patient pulls out the knife by himself in the Emergency Department and immediately the blood pressure crashes to 60/40 mmHg with a tachycardia of 140/minute. Blood gushes out from the stab wound. What are the four (04) most important steps in your management? (40 marks)
2. A 70-year-old man is brought to the Emergency Department after he collapsed at home. He tells you that he was sitting on his chair watching the TV when he started to feel unwell and then lost consciousness for a short time. This has never happened before and he is now fully recovered.
  - 2.1. Write five (05) other important pieces of information that you should ask about in the history that may aid in the diagnosis of this patient's transient loss of consciousness. (20 marks)
  - 2.2. Write four (04) findings on examination, that if present, would indicate risk of an adverse outcome in any patient with syncope. (20 marks)
  - 2.3. List four (04) findings on the ECG, that if present, would indicate a possible cardiac cause for his collapse. (20 marks)
  - 2.4. Write four (04) specific blood tests that should be done to help in diagnosing the cause of this patient's collapse giving the expected abnormality in each of the test mentioned (40 marks)

Contd..../2-

3. A 75-year-old woman patient comes to the Emergency Department with bleeding per rectum for one day. According to her she has passed frank blood. The amount is approximately four tea-cups at a time, twice/day. She is on treatment for hypertension with beta blockers but not on any other medications. She is very pale, pulse rate is 118/minute and blood pressure is 90/60 mmHg. Arterial oxygen saturation (SpO<sub>2</sub>) is 98% on air. Abdominal palpation is normal and rectal examination reveals frank blood and clots.

3.1. List five (05) possible causes for her bleeding. (25 marks)

3.2. Write five (05) steps in the management of this patient in the first hour. (25 marks)

3.3. List five (05) investigations that would help you to determine the source of bleeding. (25 marks)

3.4. On examination you detect that she has bleeding from lumps at the anal canal.

Outline three (03) measures you could perform to reduce it in the Emergency Department? (25 marks)

4. A 40-year-old woman is presented to your Emergency Department with signs of severe respiratory distress. She has a fenestrated tracheostomy which was inserted 10 months ago following a thyroidectomy.

Her vital parameters are as follows:

Respiratory rate	30/minute
SpO <sub>2</sub>	85% on room air
Blood pressure	108/70 mmHg
Heart rate	126/minute

After examination, you suspect a blocked tracheostomy tube.

4.1. Write five (05) steps in your immediate management. (30 marks)

4.2. A family member present revealed recent episodes of bleeding from the tracheostomy which had stopped spontaneously.

List four (04) possible causes of bleeding from this patient's tracheotomy Site. (20 marks)

4.3. While attending to the patient, you observe a sudden continuous gush of blood coming out of the tracheotomy tube.

What complication may have occurred? (10 marks)

4.4. Briefly explain how you would manage this complication. (40 marks)

5. A 65-year-old man is brought to Emergency Department by his wife. He had been found drowsy and unresponsive. He had been running a temperature over the past few day and had become increasingly breathless. His wife said that he had been coughing up more than his usual amount of sputum which was greenish in colour. He had used his inhaler every few hours over the past few days without much relief of symptoms.

His usual medications include tiotropium metered dose inhaler (MDI), budesonide+ formoterol MDI for his "breathing problems" and bendroflumethiazide for hypertension.

His estimated weight is 60 Kg

He gives a 60 pack year history of smoking.

Following findings were made on examination:

GCS	12/15
Temperature	37.8°C
Pulse rate	98/minute regular
Blood Pressure	140/84 mmHg
JVP	Not elevated
Heart sounds	Normal and no peripheral oedema.
Respiratory rate	30/minute, using accessory muscles of respiration with laboured breathing.
SpO <sub>2</sub> 88% on FiO <sub>2</sub> 24 % through venturi device.	

In the Emergency Department he is treated with IV hydrocortisone, nebulized bronchodilators and antibiotics.

After 1 hour of treatment, patient fails to improve.

The Registrar in the Emergency Department commences patient on non-invasive ventilation (NIV).

His current NIV settings are,

Mode	pressure support ST
FiO <sub>2</sub>	35%
IPAP	12 cm H <sub>2</sub> O
EPAP	4 cm H <sub>2</sub> O
Ti	0.8
Rise time	1
Tidal volume	400 - 425 ml
Respiratory Rate	16 breaths/minute

One hour after commencement of NIV, you are called to see this patient because he is restless and agitated, nurses are finding difficult to keep the NIV mask.

His ABG showed

ABG before the NIV		ABG 1 hr after the NIV	
pH	7.31 ,	pH	7.31
PaCO <sub>2</sub>	69mmHg (9.2 kPa)	PaCO <sub>2</sub>	71.25 mmHg (9.5 KPa)
PaO <sub>2</sub>	54mmHg (7.2kPa)	PaO <sub>2</sub>	52.50 mmHg (7 KPa )
HCO <sub>3</sub> <sup>-</sup>	31mmol/L	HCO <sub>3</sub> <sup>-</sup>	36mmol/L

- 5.1. Write five (05) parameters you will assess when considering what may need to be done to increase the effectiveness of the NIV. (40 marks)
  - 5.2. Write six (06) possible causes of persistent hypercarbia/hypoxemia in relation to the NIV machine. (30 marks)
  - 5.3. Write three (03) adjustments you would make to current NIV settings. (30 marks)
6. A 50-year-old obese patient is re-admitted to the Emergency Department with a worsening tooth pain. He had been treated two days ago for a suspected tooth abscess and was referred to the dental surgeon. He gave a history of diabetes mellitus.

On examination he is ill looking.

Vital signs:

Respiratory rate	22/minute
SpO <sub>2</sub>	96% on room air
Blood pressure	110/82mmHg
Heart rate	110/minute
Temperature	38.8°C

He complains of difficulty in opening the mouth and protruding the tongue.

His neck and throat are tender and swollen.

- 6.1. What is the most probable diagnosis? (10 marks)
- 6.2. What other risk factors will you look for in the history and examination to support your diagnosis? (15 marks)
- 6.3. List three (03) lethal complications that may occur. (15 marks)
- 6.4. How would you manage this patient? (45 marks)
- 6.5. What antibiotics would you prescribe and give reasons for your choice. (15 marks)

7. A 35-year-old man was brought to the Emergency Department by an ambulance accompanied by the police from a private party. He had displayed sudden onset agitated, violent and combative behaviour.
- 7.1. How would you categorise agitated patients? (10 marks)
  - 7.2. List five (05) possible non toxicological causes of this presentation. (10 marks)
  - 7.3. List five (05) additional signs and symptoms of excited delirium syndrome. (10 marks)
  - 7.4. What are your goals of therapy for this patient? (15 marks)
  - 7.5. Outline five (05) physical and behavioural measures which can be used in managing this patient. (20 marks)
  - 7.6. List four (04) medical interventions you will use to achieve your goals with dose, route and frequency of administration of any drugs mentioned. (35 marks)
- 8.
- 8.1. List five (05) sources of radiation from which humans can be harmed. (15 marks)
  - 8.2. An explosion involving radiological material has occurred inside a bus transporting military personnel. You are called with a team of medical personnel at the incident site to triage and transport casualties to Emergency Department.  
Briefly explain principles governing triage in above incident. (40 marks)
  - 8.3. List three (03) body systems that may be affected by radiation poisoning describing the clinical features and pathophysiological rationale, and therapeutic options for each of these. (45 marks)

9. A 59-year-old farmer presented to Emergency Department with a history of fever for one day, neck pain, difficulty in swallowing and opening the mouth. On examination he was febrile and was sweating. His blood pressure was 165/95 mmHg and the heart rate was 134/minute. The Medical officer has made a tentative diagnosis of Tetanus in this patient.

9.1. List five (05) differential diagnosis for this clinical presentation. (15 marks)

9.2. Write further information in the history and examination that you would look for, to confirm the diagnosis of tetanus and to exclude the possibility of each of the conditions you mentioned in 9.1. (35 marks)

9.3. Briefly explain the pathophysiology of tetanus. (10 marks)

9.4. Explain your specific management plan for tetanus in the Emergency Department. (40 marks)

10. A 60-year-old woman presents to the emergency department complaining of sudden onset of dizziness which she describes as a sensation of spinning of the room. She has vomited several times and feels unsteady on her feet.

10.1. Write five (05) further features in the history or examination that if present, would indicate a peripheral cause of vertigo and five (05) features that would be more consistent with a central cause. (50 marks)

Following a detailed history and examination you diagnose benign paroxysmal positional vertigo. The patient has no past medical history and is usually very fit and active.

10.2. Briefly describe how you could confirm this diagnosis in the emergency department? (30 marks)

10.3. Briefly explain your first line treatment if this diagnosis is confirmed. (20 marks)