

Question 1 (18 marks)

A 60 year old male weighing approximately 160 kg presents to the emergency department (ED) complaining of worsening shortness of breath over the last 4 days. Clinical examination reveals widespread wheeze throughout the lung fields.

His observations on arrival:

HR 110 bpm regular
BP 178/40 mmHg
SaO₂ 88 % on room air
Temp 37.8 °C
GCS (E3, V5, M6) – drowsy

An arterial blood gas (ABG) taken on room air shows the following:

		Reference range
pH	7.31	7.35 – 7.45
pCO ₂	108	35 – 45 mmHg
pO ₂	58	60 – 90 mmHg
HCO ₃ ⁻	56	22 – 26 mmol/L

- a) Regarding his ABG, complete the calculations and provide an interpretation of your findings in the context of this patient's presentation. (5 marks)

Expected HCO₃⁻ for chronic respiratory acidosis (1 mark)		
A-a gradient (1 mark)		
Expected A-a gradient for age (1 mark)		
Interpretation (2 marks)	1.	
	2.	

The patient's condition deteriorates whilst in the ED and you prepare for possible intubation.

- b) State six (6) anatomical or physiological sequelae of obesity that affect RSI (rapid sequence intubation) in the bariatric patient. (6 marks)

Respiratory (4 marks)	• • • •
Cardiovascular (1 mark)	•
GIT (1 mark)	•

- c) You are preparing to intubate this patient. State three (3) strategies you will employ to improve first pass success. (3 marks)

1.
2.
3.

The patient desaturates post successful intubation. A chest X-ray shows a right main bronchus intubation resulting in a complete collapse of the left lung.

d) State four (4) interventions you would perform to improve his oxygenation. (4 marks)

1.

2.

3.

4.

Question 2 (12 marks)

An 85 year old female is brought in by ambulance to your tertiary emergency department with a 6 hour history of bright red per rectum bleeding and lower abdominal discomfort.

Her medications include warfarin because of atrial fibrillation.

a) List the seven (7) most likely causes of bleeding in this patient. (7 marks)

1.

2.

3.

4.

5.

6.

7.

The patient continues to bleed and her blood pressure drops to 85/40. Her INR result is pending. Resuscitation has been commenced with packed red cells. You decide to empirically reverse the warfarin.

b) List three (3) agents, including doses, that you would use to reverse her warfarin. (3 marks)

	Agent / Dose (3 marks)
1	
2	
3	

- c) While you are considering investigations to locate the source of bleeding, a junior doctor asks for an explanation between the two listed imaging studies. Give one (1) rationale for each investigation. (2 marks)

Investigation	Rationale (2 marks)
CT angiogram	
Radionucleotide scan	

Question 3 (18 marks)

An 80 year old male is brought into an emergency department after being struck by a car. He has isolated severe left knee pain. The skin is intact.

His X-ray is provided.



- a) What significant abnormality is shown on this X-ray? (1 mark)

- b) State the knee joint structure that is most commonly damaged with this injury. (1 mark)

- c) Complete the following table. State three (3) neurovascular structures that may be injured and two (2) supportive examination findings for each. (9 marks)

Neurovascular Structure (3 marks)	Supportive Examination Finding (6 marks)

- d) List three (3) bedside investigations to evaluate for a vascular injury or complication. (3 marks)

1.

2.

3.

- e) List four (4) patient factors that significantly impair your assessment of distal limb neurovascular status. (4 marks)

1.

2.

3.

4.

Question 4 (18 marks)

A 59 year old male was brought to your emergency department by ambulance after suffering a brief tonic-clonic seizure.

He has been unwell with lethargy and vomiting, after undergoing his first session of chemotherapy for a newly diagnosed malignancy a few days ago.

His observations are:

GCS	15
Temp	37.9 °C
HR	120 /min
BP	105/60 mmHg
RR	26 /min
SaO ₂	95 % on room air

You suspect tumour lysis syndrome as the cause of his symptoms.

a) List four (4) risk factors for development of tumour lysis syndrome. (4 marks)

1.

2.

3.

4.

b) List four (4) biochemical findings on lab results to support your suspected diagnosis. (4 marks)

1.

2.

3.

4.

Lab tests confirm tumour lysis syndrome.

- c) List five (5) treatments for the correction of the biochemical abnormalities. Explain your rationale. State no more than two (2) options for each abnormality. (10 marks)

Management (5 marks)	Mechanism (5 marks) Must be specific

Question 5 (12 marks)

You are tasked to investigate a critical incident in your emergency department.

At the end of a busy shift a junior doctor prescribed IV Augmentin to a 5 year old male with a penicillin allergy who had presented with a dog bite. Subsequently he had severe anaphylaxis and required management in ICU.

- a) State four (4) actions you would take in investigating and managing this incident. (4 marks)

1.

2.

3.

4.

- b) List three (3) system factors (not practitioner) that may have contributed to this error. (3 marks)

1.

2.

3.

Following the investigation, you submit recommendations to change hospital processes.

- c) List three (3) characteristics of the 'SMART' methodology that should be considered when writing a constructive recommendation. (3 marks)

1.

2.

3.

d) State two (2) potential barriers to change that might exist in the hospital. (2 marks)

1.

2.