

EXAMINATION TIME: 3 HOURS

DIRECTIONS TO CANDIDATE

1. Answer each question in the space provided in this question paper.
2. Do not write your name on this question paper.
3. Enter your examination number in the space below.
4. Cross out any errors completely.
5. Do not begin the exam until instructed to do so.
6. No examination papers or materials to leave the room.

ACEM ID NUMBER:

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Question 1

A 10 year old girl with a known history of asthma presents to your department with marked respiratory distress. She weighs 30kg.

- i. In the table below, compare the differences between six (6) clinical signs for a moderate-to-severe and a life-threatening asthma attack.

	Clinical sign in moderate-to-severe asthma	Clinical sign in life-threatening asthma
1		
2		
3		
4		
5		
6		

_____ /12

Question 1

- ii. List five (5) initial pharmacological treatments with dose ranges and routes of administration for her life threatening attack.

	Initial pharmacological treatments
1	
2	
3	
4	
5	

_____ /5

Question 1

iii. Complete the table provided with regard to intubating this patient.

ETT size:	
Induction agent and dose:	
Relaxant agent and dose:	

Question 1

- iv. List three (3) causes for hypotension post intubation, and one (1) intervention to treat each of them.

	Causes of hypotension post intubation	Intervention
1		
2		
3		

_____ / 6

Question 2

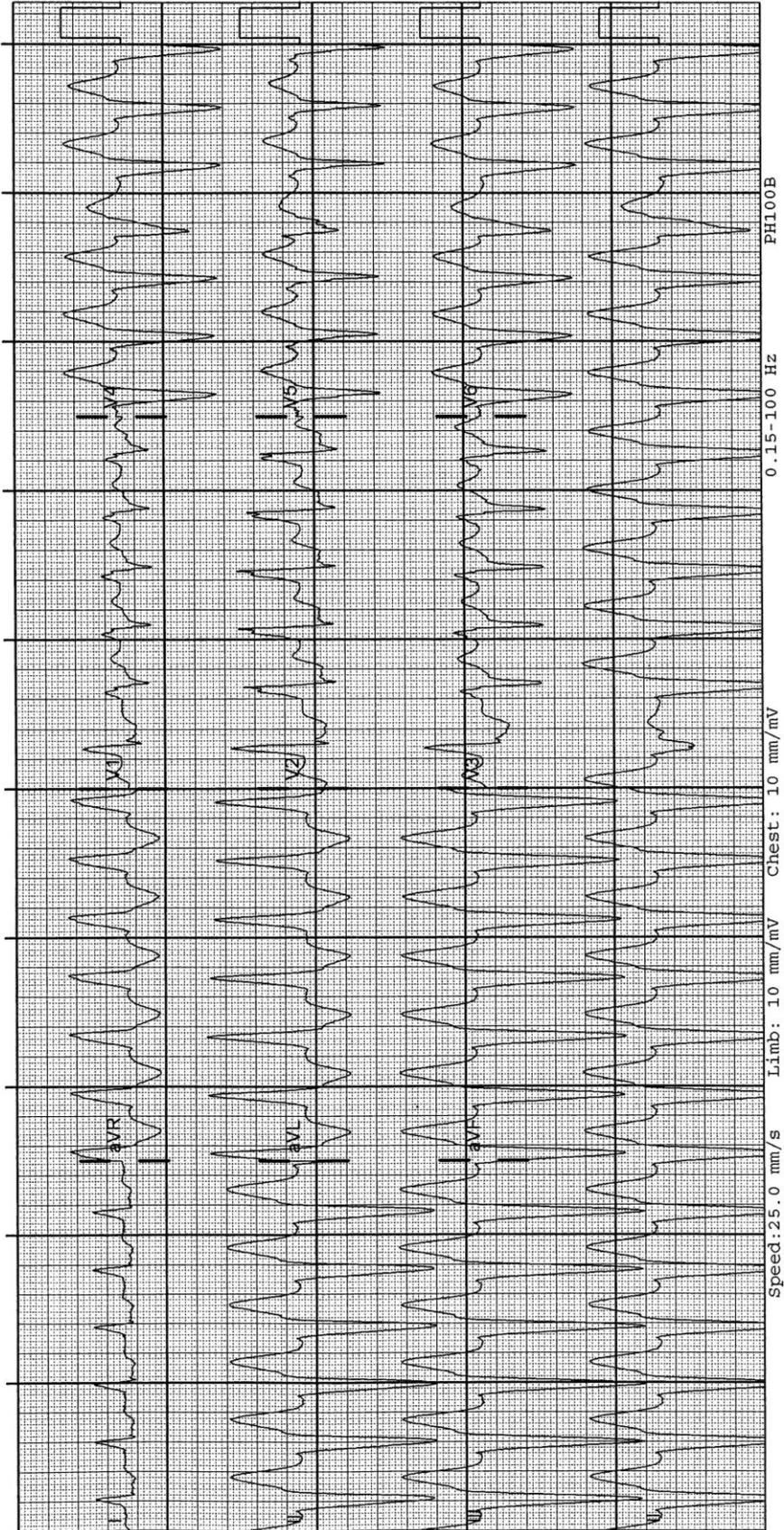
A 65 year old man presents to the emergency department with a history of palpitations.

His vital signs are:

BP	105/60	mmHg
RR	26	/min
Temperature	36.2	°C

His ECG is on the following page.

Question 2



Question 2

- i. List four (4) of the ECG abnormalities you can see to support the diagnosis of Ventricular Tachycardia.

1. _____

2. _____

3. _____

4. _____

_____ /4

- ii. List four (4) clinical features that would influence your decision to urgently electrically cardiovert this patient.

1. _____

2. _____

3. _____

4. _____

_____ / 4

Question 2

- iii. Assuming none of the features are present in (ii), list two (2) choices for chemical cardioversion, specifying drugs and doses.

	Drug	Dose
1		
2		

_____ / 4

Question 3

A 27 year old woman has been rescued from the surf by lifeguards at a nearby beach. Ambulance staff intubated her at the scene. Relevant vitals are:

O ₂ Saturation	92%	FiO ₂ 1.0
Temperature	32	°C
HR	120	beats/min
BP	90/56	mmHg

- i. In the table provided, list four (4) factors at the scene that indicate a poorer prognosis and four (4) factors on arrival to the emergency department that indicate a poorer prognosis.

	Factors at the scene	Factors on arrival to emergency department
1		
2		
3		
4		

Question 3

- ii. List six (6) neuro protective strategies you will employ. For each strategy include rationale or target parameters.

	Neuro protective strategy	Rationale or target parameters
1		
2		
3		
4		
5		
6		

_____ / 12

Question 4

A 32 year old woman is brought to your emergency department from a shopping centre where she had a witnessed collapse. On examination there is no evidence of trauma.

- i. List five (5) critical diagnoses you would consider, with one (1) risk factor and one (1) sign or symptom that would support each of these diagnoses.

	Critical diagnosis	Risk factor	Sign / Symptom
1			
2			
3			
4			
5			

_____ / 15

Question 4

- ii. List and justify three (3) urgent investigations you would do in the emergency department.

	Urgent investigation	Justification
1		
2		
3		

____ / 6

Question 5

A 35 year old woman is brought to the emergency department by ambulance having apparently taken an overdose 4 hours ago. She is triaged to the resuscitation room.

Her relevant vital signs are:

GCS	7	E1, V2, M4
BP	80/40	mmHg
RR	7	/min
Temperature	36.1	°C

His ECG is on the following page.

Question 5



Question 5

i. List four (4) abnormal ECG findings.

1. _____

2. _____

3. _____

4. _____

_____ / 4

ii. List three (3) drug classes that can cause these ECG changes with one (1) example of each.

	Drug classes	Example
1		
2		
3		

_____ / 6

Question 5

- iii. In the event of cardiac arrest, list two (2) modifications to your standard resuscitation, with one (1) rationale for each modification.

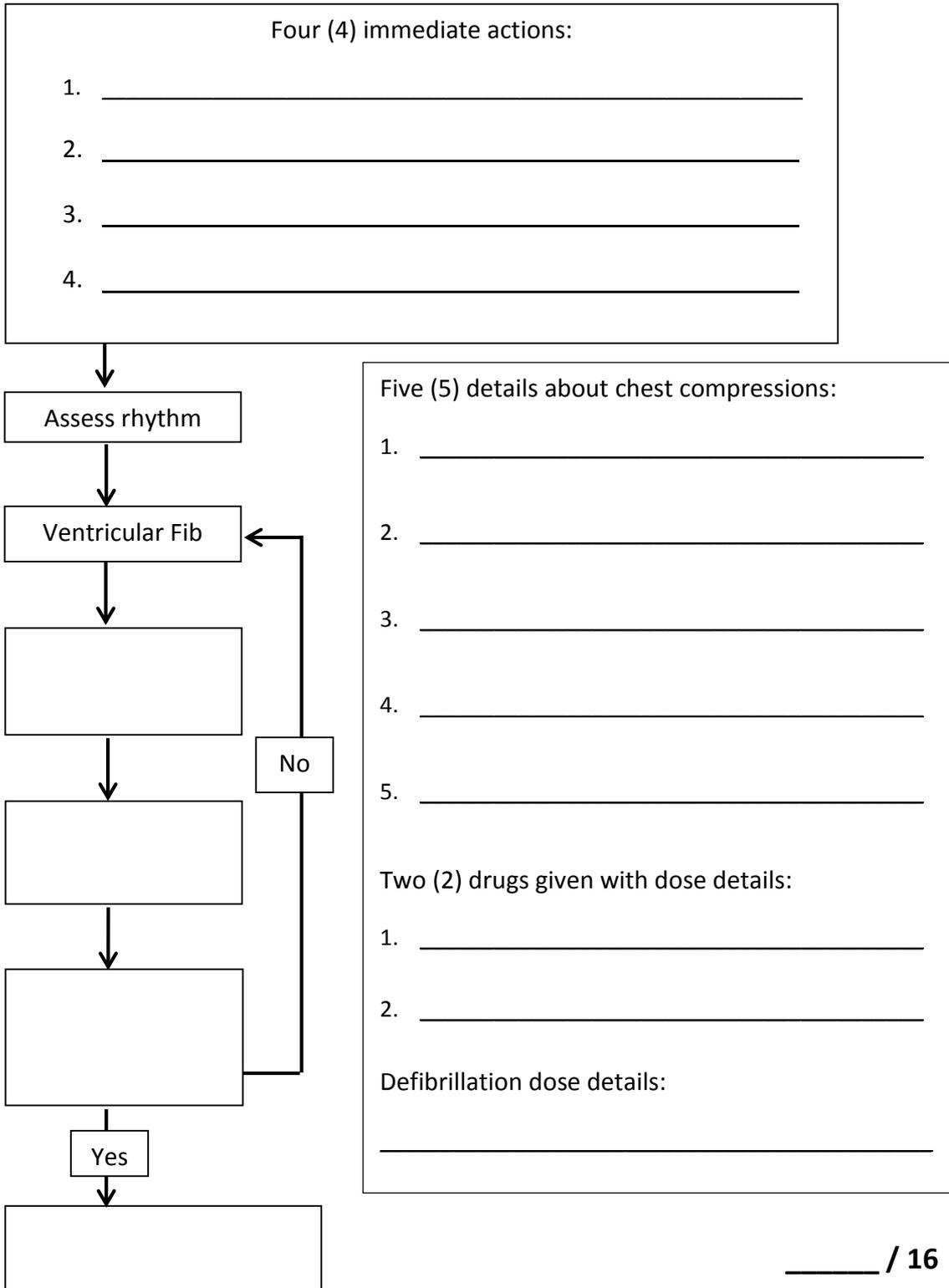
	Modification	Rationale
1		
2		

_____ / 4

Question 6

A 42 year old man has a witnessed collapse whilst sitting in the waiting room. Witnesses say he clutched his chest and then collapsed. You arrive with the emergency department resuscitation team. He is apnoeic and pulseless. The patient has been moved to the resuscitation room.

i. Complete the VF algorithm below, provide details in the relevant boxes.



_____ / 16

Question 6

- ii. If the patient has Return of Spontaneous Circulation (ROSC), is haemodynamically stable but is still unconscious (GCS 3), what are two (2) key issues to be addressed prior to the patient leaving the emergency department? Include two (2) examples of how to do this in each issue.

	Key issue	Examples of how this is achieved
1		1.
		2.
2		1.
		2.

_____ / 6

- iii. List four (4) tasks to complete after the patient has left the emergency department.

1. _____
2. _____
3. _____
4. _____

_____ / 4

Question 7

A 2 year old girl is referred by the GP with a high temperature. On examination she is pale and has increased work of breathing. She has a fine non blanching petechial rash on both her arms, legs and torso. Her lungs are clear. She has hepatosplenomegaly.

Her vital signs are:

HR	170	beats/min
BP	90/66	mmHg
RR	60	/min
Temperature	39	°C
O ₂ Saturation	96	% on room air
Cap return	2	sec

- i. List three (3) differential diagnostic categories and two (2) examples of each for this scenario.

	Diagnostic categories	Examples
1		1.
		2.
2		1.
		2.
3		1.
		2.

_____ / 9

Question 7

- ii. List six (6) immediate investigations and provide one (1) justification for each of them.

	Investigation	Justification
1		
2		
3		
4		
5		
6		

_____ / 12

Question 8 (same patient as question 7)

A 2 year old girl is referred by the GP with a high temperature. On examination she is pale and has increased work of breathing. She has a fine non blanching petechial rash on both her arms, legs and torso. Her lungs are clear. She has hepatosplenomegaly.

Her initial investigations show:

Hb	34	g/L	(120 – 180)
WCC	30×10^9	g/L	(4 – 10)
Platelet	40×10^9	g/L	(150 – 400)
Blood film	Immature blasts	g/L	

- i. List two (2) abnormalities on this result and give one (1) treatment for each.

	Abnormality	Intervention
1		
2		

_____ / 4

Question 8 (same patient as question 7)

ii. List four (4) likely potential complications arising from the underlying condition.

	Complications of underlying condition
1	
2	
3	
4	

_____ / 4

iii. List four (4) likely potential complications arising from the emergency treatment of this patient.

	Complications of treatment
1	
2	
3	
4	

_____ / 4

Question 9

An 89 year old woman, previously independent and well, is brought to the emergency department following the onset of a severe headache.

Her vital signs are:

BP	190/100	mmHg
HR	88	beats/min
RR	20	/min
Temperature	36.6	°C
O ₂ Saturation	98	% on room air

Initially she is alert and oriented in the emergency department, but then deteriorates to have a GCS of 11.

Her CT scan is on the following page.

Question 9



Question 9

- i. What is the radiological diagnosis and a likely cause?

Diagnosis: _____

Cause: _____

_____ / 2

- ii. Give four (4) radiological parameters that are used to indicate severity in this condition, stating whether they are present or absent.

	Radiological parameter	Present	Absent
1			
2			
3			
4			

_____ / 8

Question 9

iii. List four (4) poor prognostic indicators in this woman.

1. _____

2. _____

3. _____

4. _____

_____ / 4

Question 10

You have successfully intubated a 48 year old male using rapid sequence induction. The ETT is confirmed to be in the correct place. You are asked for the ventilator settings.

- i. List the initial settings for a patient with pneumonia (lung protective strategy) and asthma using the following table.

Settings	Pneumonia	Asthma
Ventilator mode		
Tidal volume		
Resp rate		
P(insp) – if PCV		
PEEP		
FiO₂		
I:E ratio		

_____ / 14

Question 10

- ii. Twenty (20) minutes later you are called to the patient because their oxygen saturation has fallen to 85%. What are six (6) immediate actions you will take?

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

_____ / 6

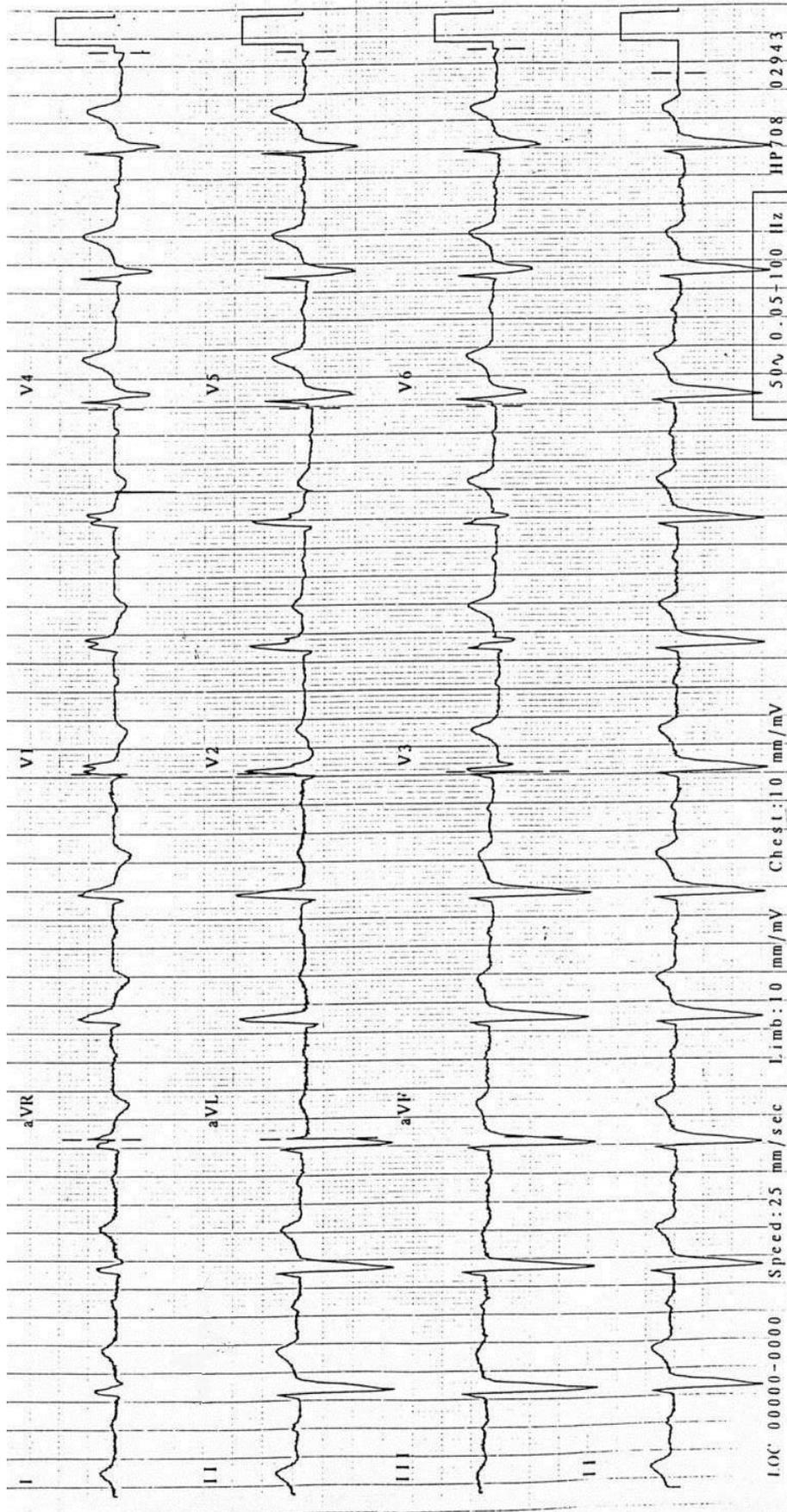
Question 11

A 71 year old woman presents to your emergency department following a collapse.

The attached ECG was taken on arrival in the emergency department.

Her ECG is on the following page.

Question 11



Question 11

i. List three (3) features on history that are required for the diagnosis of syncope.

1. _____

2. _____

3. _____

_____ / 3

ii. List three (3) abnormalities on the ECG and a unifying diagnosis.

1. _____

2. _____

3. _____

Unifying diagnosis: _____

_____ / 4

iii. Give one (1) potential complication of the ECG changes.

_____ / 1

Question 11

iv. Provide four (4) relevant management decisions based on your answer to questions (ii) and (iii).

1. _____

2. _____

3. _____

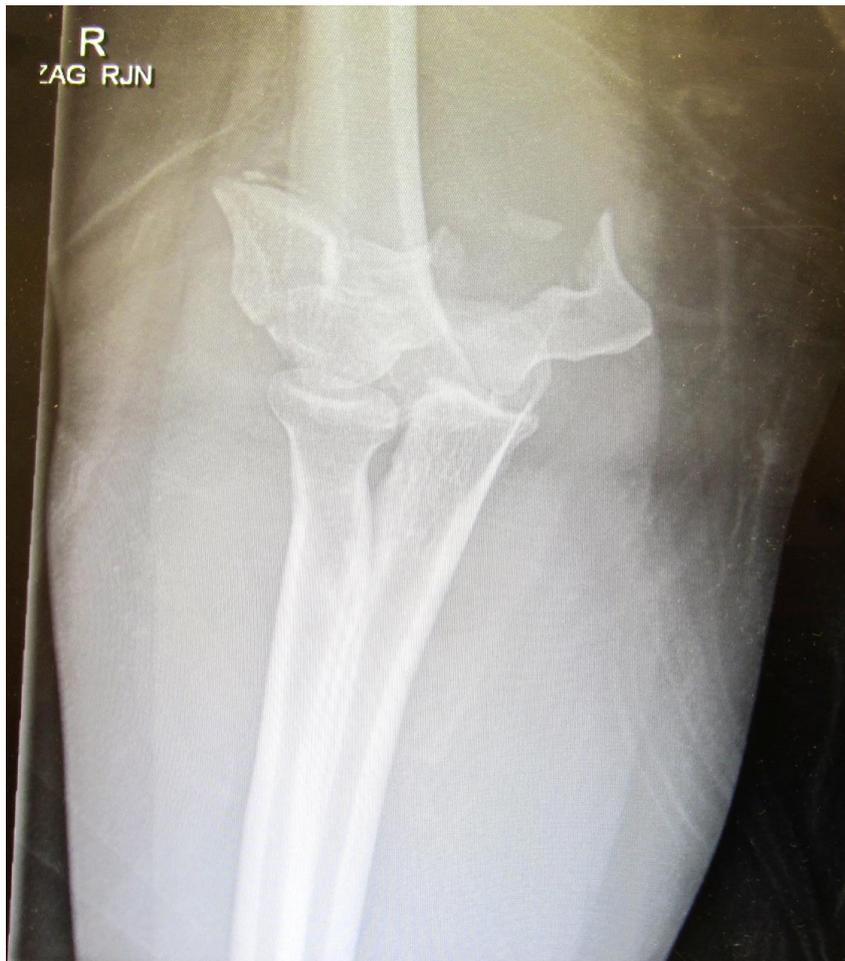
4. _____

_____ / 4

Question 12

A 40 year old female has fallen from her bicycle and sustained the injury shown in the radiographs. There are no other injuries. Her vital signs are normal and she has no significant past medical history.

Her X-rays are below. There are two (2) images.



Question 12



Question 12

i. List four (4) features of these images.

1. _____

2. _____

3. _____

4. _____

____ / 4

ii. List four (4) early complications that would require urgent intervention.

1. _____

2. _____

3. _____

4. _____

____ / 4

Question 12

iii. List four (4) late complications of this injury.

1. _____

2. _____

3. _____

4. _____

_____ / 4

Question 13

A 55 year old man with a history of diabetes mellitus presents with a one day history of increasing right knee pain.

- i. Complete the reference table below regarding expected joint aspirate findings.

Lab findings	Normal	Infective	Inflammatory	Non-inflammatory
WBC/microliter	<200			
Neutrophils (%)	<25			
Microscopy	No abnormal features			
Causes (list 1 for each)	N/A			

_____ / 12

Question 13

- ii. List three (3) management options for this patient you undertake in the emergency department, with an example and rationale for each.

	Management option	Example	Rationale
1			
2			
3			

____ / 9

Question 14

A 6 month old boy is brought to the emergency department by his grandmother. Initial examination reveals bruising to the face, right buttock and right upper torso. The baby appears quiet and withdrawn. He cries upon handling and prefers to lie still in his grandmother's arms.

- i. Complete the following table listing four (4) potentially associated injuries for each region (face and torso) based on the initial examination.

	Face	Torso
1		
2		
3		
4		

_____ / 8

Question 14

ii. List and justify seven (7) separate investigations you would consider requesting.

	Investigations	Justifications
1		
2		
3		
4		
5		
6		
7		

_____ / 7

iii. List five (5) people/services you will consult about this presentation.

1. _____
2. _____
3. _____
4. _____
5. _____

_____ / 5

Question 15

A 6 year old girl is brought to the emergency department by her mother. She has had a cold for one week, and for the last 24 hours her right eyelids have become very red and swollen. She is not able to open her eye. Her relevant vitals are:

Temperature 39.4 °C

Weight 20 kg

- i. Using the table provided, list four (4) physical examination differences between pre-septal and orbital cellulitis.

	Physical sign	Pre-septal cellulitis	Orbital cellulitis
1			
2			
3			
4			

_____ / 12

Question 15

- ii. The patient has a CT. List four (4) findings that will confirm your diagnosis of orbital cellulitis or its complications.

1. _____

2. _____

3. _____

4. _____

_____ / 4

Question 15

- iii. List two (2) bacteria that can cause this presentation, and choose two (2) appropriate antibiotics (include route and dose) for each of those bacteria.

	Bacteria	Antibiotic 1 (route and dose)	Antibiotic 2 (route and dose)
1			
2			

_____ / 6

Question 15

- iv. List four (4) specialist services that should be consulted during the management of this patient.

1. _____

2. _____

3. _____

4. _____

_____ / 4

Question 16

A 54 year old man is brought to your emergency department after sustaining a low-speed motorbike accident. His only injury after his secondary survey is a painful, deformed right wrist. These are his X-rays.

His X-rays are below. There are two (2) images.



Question 16



Question 16

i. List three (3) abnormalities on these X-rays.

1. _____

2. _____

3. _____

_____ / 3

ii. A temporising reduction is to be performed in the emergency department. List five (5) treatments including doses to facilitate this procedure.

	Treatment	Drug dose
1		
2		
3		
4		
5		

_____ / 10

Question 16

iii. List three (3) elements of informed consent.

1. _____

2. _____

3. _____

_____ / 3

Question 17

A 55 year old female patient is brought in by ambulance to the emergency department after being involved in a high speed MVA. The pelvic X-ray from her trauma series is reproduced. The c-spine and chest X-rays are normal.

Her pelvic X-ray is below.



Question 17

i. List three (3) immediate treatment priorities in this case.

1. _____

2. _____

3. _____

_____ / 3

ii. What is the lethal triad in this patient?

1. _____

2. _____

3. _____

_____ / 3

iii. List five (5) factors that would predict the need for massive transfusion for this patient.

1. _____

2. _____

3. _____

4. _____

5. _____

_____ / 5

Question 18 (same patient as question 17)

A 55 year old female patient is brought in by ambulance to the emergency department after being involved in a high speed MVA. The pelvic X-ray from her trauma series is reproduced. The c-spine and chest X-rays are normal.

Massive transfusion has been administered while waiting for the retrieval team to provide transfer to the local level 1 trauma centre. An arterial blood gas has been performed.

pH	7.20	(7.35-7.45)
pCO ₂	30	(35-45)
pO ₂	58	(50% FiO ₂)
HCO ₃	14	(24-32)
Na ⁺	140	(135-145)
K ⁺	6.0	(3.5-5.0)
Cl ⁻	100	(95-110)

- i. Provide two (2) calculations to help you to interpret this gas result.

Derived value 1:

Derived value 2:

_____ / 2

Question 18 (same patient as question 17)

ii. Using this scenario and the derived values, list three (3) potential causes for the abnormal results.

1. _____

2. _____

3. _____

_____ / 3

iii. List six (6) therapeutic goals for resuscitation in the event of massive transfusion.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

_____ / 6

Question 19

A 70 year old woman is referred to the emergency department with abdominal pain and vomiting for the last 24 hours.

Her vital signs are:

BP	95/50	mmHg
HR	95	beats/min
RR	28	/min
Temperature	37.2	°C

Her abdominal and chest X-rays are below. There are two (2) images.



Question 19



Question 19

- i. What is the diagnosis based on this X-ray? List three (3) radiological features that support your diagnosis.

Diagnosis: _____

1. _____

2. _____

3. _____

_____ / 4

- ii. List three (3) risk factors that predispose to this condition.

1. _____

2. _____

3. _____

_____ / 3

- iii. List three (3) possible complications of this condition.

1. _____

2. _____

3. _____

_____ / 3

Question 19

- iv. Complete the following table which lists your three (3) management tasks and provide two (2) points to explain how and why you would achieve each of them.

	Management tasks	Method and rationale for achievement
1		1.
		2.
2		1.
		2.
3		1.
		2.

_____ / 9

Question 20

A 46 year old woman weighing 50kg presents to the emergency department 4 hours after ingesting 100 aspirin 300mg tablets. She has a past history of alcohol abuse and had been drinking heavily prior to ingesting the aspirin tablets. She is complaining of tinnitus but has no other symptoms at present.

On arrival her vital signs are:

HR	125	beats/min
RR	22	/min
BP	130/70	mmHg
O ₂ Saturation	95	% on room air
Temperature	37	°C

- i. List five (5) factors on history that form part of a toxicological risk assessment and give the specific examples in this patient's presentation.

	Risk	Example in this patient
1		
2		
3		
4		
5		

_____ / 10

Question 20

- ii. Using your risk assessment and the vital signs outline three (3) conclusions about this presentation.

1. _____

2. _____

3. _____

_____ / 3

Question 20

- iii. List two (2) factors that affect your management of this patient's airway and breathing. Provide your action to address each factor based on this patient's presentation.

	Factor	Action to address
1		
2		

Question 20

- iv.** List five (5) options for decontamination and/or enhanced elimination you could use in the management of this patient. Complete the table and provide a rationale for each option.

	Options for decontamination and/or enhanced elimination	Rationale
1		
2		
3		
4		
5		

_____ / 10

Question 21

You are the director of the emergency department and you receive a letter of complaint from a patient. It is alleged that one of your junior registrars prescribed penicillin despite the patient having a documented penicillin allergy. The patient had life-threatening anaphylaxis and was admitted to the intensive care unit.

i. What are five (5) elements of open disclosure?

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____

_____ / 5

ii. List three (3) steps that may be required to investigate this matter and one (1) option for achieving a resolution.

Investigation:

- 1. _____
- 2. _____
- 3. _____

Resolution:

_____ / 4

Question 21

iii. Identify five (5) ways to prevent a recurrence of this adverse event.

1. _____
2. _____
3. _____
4. _____
5. _____

_____ / 5

Question 22

A 25 year old patient is in the emergency department for 8 hours of observation following a polypharmacy ingestion. You have been asked to provide “medical clearance” prior to transfer of the patient for mental health assessment.

i. List three (3) factors that you would consider for this safe transfer.

1. _____

2. _____

3. _____

_____ / 3

Question 22

ii. Provide seven (7) factors that distinguish between a delirium and a psychosis.

	Delirium	Psychosis
1		
2		
3		
4		
5		
6		
7		

Question 23

A 30 year old man presents to the emergency department with new onset bilateral lower leg weakness. He denies any past medical history. His venous blood gas is reproduced here.

pH	7.399	(7.320-7.420)
pCO ₂	32.8 mmHg	(41.0-51.0)
pO ₂	56.0 mmHg	(20-40)
HCO ₃ ⁻	19.9 mmol/L	(21.0-30.0)
Base Excess	-4.1 mmol/L	(-3.0-3.0)
Na ⁺	143 mmol/L	(135-145)
K ⁺	1.5 mmol/L	(3.5-5.0)
Cl ⁻	113 mmol/L	(95-107)
Glucose	8.3 mmol/L	(3.0-10.0)
Lactate	2.3 mmol/L	
Creatinine	51 µmol/L	(50-120)

i. List three (3) abnormalities and explain their significance.

	Abnormalities	Significance
1		
2		
3		

_____ / 6

Question 23

ii. Calculate two (2) values and state how they contribute to your diagnosis.

1. _____

2. _____

_____ / 4

iii. List four (4) differential diagnoses for this patient's presentation.

1. _____

2. _____

3. _____

4. _____

_____ / 4

iv. List three (3) changes on an ECG that could be expected for this patient based on his blood results.

1. _____

2. _____

3. _____

_____ / 3

Question 24

A 14 year old girl self presents to the emergency department requesting the “morning after” pill. She states that she had unprotected consensual intercourse with an 18 year old boy while intoxicated the day prior to presentation. She informs you she is living with a “friend” after leaving school and moving away from her parents.

- i. List four (4) medical issues to be addressed with one (1) example of a medication regime (with doses) where applicable.

	Medical issue	Medication regime (with dose)
1		
2		
3		
4		

_____ / 8

Question 24

- ii. Complete the table below by listing three (3) non-clinical issues that need to be addressed with two (2) appropriate actions or interventions for each issue.

	Non-clinical issue	Actions or interventions
1		1.
		2.
2		1.
		2.
3		1.
		2.

_____ / 9

Question 25

A 27 year old usually fit and well woman at 31/40 gestation presents to the emergency department having had two witnessed seizures.

Her initial observations are:

GCS	13/15	E3, V4, M6
Temperature	37.8	°C
HR	120	beats/min
BP	190/122	mmHg
O ₂ Saturation	99 %	on 10L/min of oxygen via Hudson mask

i. What is the definition and/or diagnostic criteria for eclampsia and pre-eclampsia?

Eclampsia	
Pre-eclampsia	New onset hypertension:
	Pre-existing hypertension:

_____ / 3

ii. What are two (2) methods to treat/prevent further eclamptic seizures? Give brief details for one of your methods.

1. _____

2. _____

_____ / 3

Question 25

iii. List two (2) medications and the dosage that may be used to control hypertension, and the treatment endpoint.

1. _____

2. _____

Treatment endpoint:

_____ / 5

iv. Complete this table.

	Foetal complications of eclampsia [three (3) examples]	Maternal complications of eclampsia [three (3) examples]
1		
2		
3		

_____ / 6

Question 26

A 40 year old woman presents to your emergency department with right side abdominal pain.

Her relevant vital signs are:

HR	110	beats/min
BP	96/70	mmHg
Temperature	39	°C

Her abdominal CT scan is on the following page.

Question 26



Question 26

- i. What is the diagnosis? Provide two (2) radiological features to support your diagnosis.

Diagnosis:

1.

2.

_____ / 3

- ii. Name an incidental abnormality also on this abdominal CT.

_____ / 1

- iii. Name one (1) CT finding which, if present, would suggest the need for an emergent operation for this condition.

_____ / 1

Question 26

- iv. Complete the table below by listing four (4) important management tasks (specify details and drugs if appropriate).

	Management tasks	Details
1		
2		
3		
4		

_____ / 8

Question 27

You are the only consultant working a busy evening shift in the emergency department when the triage nurse tells you that 27 patients have self-presented to triage in the last five minutes with injuries from a fire in a nearby nightclub. Whilst the nurse is talking to you, you receive a call from an ambulance officer at the nightclub.

i. Define this situation.

_____ / 1

ii. List six (6) pieces of information you need from the ambulance officer to complete your assessment of the scene.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

_____ / 6

Question 27

iii. Outline eight (8) steps to prepare the emergency department.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

_____ / 8

iv. List five (5) other hospital areas or departments you need to notify in this situation.

1. _____
2. _____
3. _____
4. _____
5. _____

_____ / 5

Question 28

A 26 year old man, arriving from West Africa five days ago, is brought to the emergency department by his concerned relatives. He has a history of malaise, anorexia and a non-blanching rash.

His vital signs are:

HR	120	beats/min
BP	110/70	mmHg
RR	24	/min
O ₂ Saturation	98	% on room air
Temperature	38.5	°C

i. List your three (3) most important differential diagnoses.

- 1. _____
- 2. _____
- 3. _____

_____ / 3

Question 28

- ii. List three (3) key issues for your initial management in the emergency department, and two (2) details for how you would accomplish them.

	Key issue	Details of how to accomplish
1		1.
		2.
2		1.
		2.
3		1.
		2.

_____ / 9

Question 28

iii. List and justify your four (4) most important diagnostic investigations.

	Diagnostic investigation	Justification
1		
2		
3		
4		

_____ / 8

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Please continue to Question 29 on the following page

Question 29

A 23 year old man presents 15 minutes after being bitten on the left ankle by a snake.

i. List five (5) features on examination which support the diagnosis of envenomation.

1. _____

2. _____

3. _____

4. _____

5. _____

_____ / 5

ii. What five (5) actions are required for the specific treatment of a patient with a confirmed brown snake envenomation?

1. _____

2. _____

3. _____

4. _____

5. _____

_____ / 5

Question 29

iii. Briefly describe four (4) current controversies in snakebite envenomation management.

1. _____

2. _____

3. _____

4. _____

_____ / 4

Question 30

A 3 year old child presents to your mixed regional emergency department acutely unwell with a fever and rash (pictured).

There are two (2) images below.



Question 30

- i. List five (5) differential diagnoses and one (1) specific treatment for each of these.

	Differential diagnosis	Specific treatment
1		
2		
3		
4		
5		

_____ / 10

Question 30

- ii. Following an unsuccessful resuscitation, the child dies in the emergency department. Outline five (5) issues that need to be addressed.

1. _____

2. _____

3. _____

4. _____

5. _____

_____ / 5

End of Question 30

This is the end of the SAQ exam.