

Answer Each Question in a Separate Booklet



**COLLEGE OF INTENSIVE CARE MEDICINE
OF AUSTRALIA AND NEW ZEALAND**

**SECOND PART WRITTEN EXAMINATION
WEDNESDAY MARCH 11 2026
MORNING PAPER**

- (A) Write your answers in the blue books provided. **Each** question should be answered in a separate booklet. Please **DO NOT** write 2 short answer questions in the same booklet.
- (B) Start each answer on a **new booklet** and indicate the **question number**. It is not necessary to rewrite the question in your answer book.
- (C) You should aim to answer each question in **ten** minutes.
- (D) All questions are worth ten marks each in total.
- (E) Record your **candidate number** and each **question number** on the cover of each book, page, and hand in all books.

GLOSSARY OF TERMS

Assessment:	Generic term that implies determining an underlying diagnosis, encompassing; history, clinical examination, and relevant investigations.
Compare and contrast:	Provide a description of similarities and differences. You may tabulate your answer.
Critically evaluate:	Provide and explain the evidence available relating to a topic.
Define:	Provide the meaning of a requested topic
Discuss:	Explain the underlying key principles. Where appropriate, this may include controversies and/or advantages and disadvantages.
Explain:	Make plain or known in detail.
Illustrate:	Make clear by using specific example(s) or a diagram to demonstrate.
Interpret:	Provide the meaning of the given data/information.
Justify:	Provide a rationale to support your stated position. Where relevant give evidence.

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- List:** Provide a series of items or points, in bullet or numbered format
- Management:** Generic term that implies determining an overall management plan, encompassing; resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment.
- Outline:** Provide an organised overview of the important points.
- Summarise:** Condense relevant information into a systematic arrangement or classification.

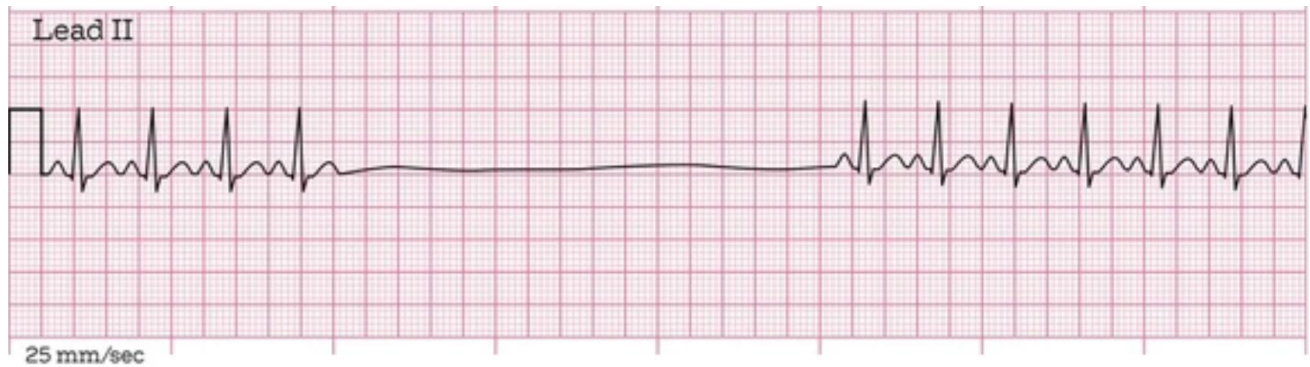
NOTE

Where laboratory values are provided, abnormal values are marked with an asterisk (*).

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Question 1

An 82-year-old patient is referred for management with the following ECG:



- Outline your assessment of the patient including your rationale for the investigations (6 marks)
- Discuss the specific management options of the arrhythmia in the first 24 hours if the patient becomes unstable (4 marks)

Question 2

Compare and contrast viral encephalitis and autoimmune encephalitis under the following headings:

- Common causes (2 marks)
- History (3 marks)
- Cerebrospinal fluid analysis (3 marks)
- Specific treatment of the encephalitis (2 marks)

Question 3

Your ICU's Standardised Mortality Ratio (SMR) over the last 12 months has been noted to be above the 95% confidence interval (CI) for comparable ICUs in the National database.

- Outline the limitations of SMR (3 marks)
- Outline your approach to investigating a high SMR (7 marks)

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Question 4

A 28-year-old patient presents to a regional hospital after-hours, following a penetrating gunshot wound (GSW) to the left anterior chest at the 4th intercostal space.

Admission observations

BP 100/54 mmHg

HR 110/min SR

Oxygen saturations of 93% on 4L/min nasal prong oxygen

- a) Based on the anatomical location of the GSW, list the critical injuries you would be concerned about

(2 marks)

While awaiting transfer for surgical exploration, the patient becomes critically hypotensive.

- b) Outline your assessment to determine the potential causes of hypotension in this patient.

(8 marks)

Question 5

- a) List **five** causes of an Addisonian crisis

(2.5 marks)

- b) List **five** laboratory abnormalities of an Addisonian crisis

(2.5 marks)

- c) Outline the principles of management of an Addisonian crisis

(5 marks)

Question 6

Draw and label the pressure – time waveform of the following modes of ventilation:

For each mode, explain the potential effects on the oxygenation and CO₂ clearance.

- a) Volume control ventilation (VCV)

(3 marks)

- b) Pressure control ventilation (PCV)

(3 marks)

- c) Airway pressure release ventilation (APRV)

(4 marks)

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Question 7

A 43-year-old previously well patient presents to the Emergency Department with 36 hours of intractable nausea, vomiting, diarrhoea, and diffuse crampy abdominal pain. Initial GCS is 15, however the patient becomes progressively drowsy and hypotensive during admission.

Serum paracetamol was below the detectable threshold and there is no history of regular paracetamol intake.

Laboratory investigations at admission and 12 hours post admission are given below.

Parameter	Patient value at admission	Patient value 12 hours post admission.	Adult normal range
FiO ₂	0.21	0.45	
pH	7.34*	7.29*	7.35 – 7.45
pO ₂	72 mmHg (kPa)	76 mmHg (kPa)	
pCO ₂	40 mmHg (kPa)	35 mmHg (kPa)	35.0 – 45.0 (4.6 – 6.0)
SpO ₂	98 %	96 %	
Bicarbonate	22 mmol/L	18 mmol/L*	22.0 – 26.0
Base Excess	-4 mmol/L*	-	-2.0 – +2.0
Lactate	1.6 mmol/L	2.8 mmol/L*	0.5 – 1.6
Sodium	136 mmol/L	145 mmol/L	135 – 145
Potassium	4.7 mmol/L	5.0 mmol/L	3.5 – 5.0
Chloride	100 mmol/L	113 mmol/L*	95 – 105
Glucose	7.3 mmol/L*	4.0 mmol/L	3.5 – 6.0
Parameter	Patient value at admission	Patient value 12 hrs post admission	Adult normal range
Urea	9.5 mmol/L*	7.0 mmol/L	3.0 – 8.0
Creatinine	115 µmol/L*	200 µmol/L*	45 – 90
Magnesium	0.75 mmol/L	-	0.75 – 0.95
Albumin	37 g/L	-	35 – 50
Protein	84 g/L*	-	60 – 80
Total bilirubin	36 µmol/L*	35.4 µmol/L*	< 26
Aspartate transferase (AST)	5,251 U/L*	13,622 U/L*	< 35
Alanine transferase (ALT)	6,236 U/L*	15,535 U/L*	< 35
Alkaline phosphatase (ALP)	76 U/L	70 U/L	30 – 110
Glutamyl transferase (GGT)	45 U/L*	86 U/L*	< 40
Ionised calcium	0.8 mmol/L*	1.1 mmol/L	1.10 – 1.35
Calcium corrected	1.77 mmol/L	-	2.12 – 2.62
Phosphate	0.62 mmol/L*	-	0.8 – 1.5
Creatinine Kinase	229 U/L*	713 U/L*	55 – 170
LDH	3397 U/L*	4000 U/L*	120–250
CRP	6.5 mg/L*	12 mg/L*	<5
Ammonia	36 µmol/L	78 µmol/L*	<50

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Parameter	Patient value	Patient value 12 hours post admission	Adult normal range
INR	1.8*	2.9*	0.9 – 1.3
APTT	40 sec*	40 sec*	27.0 – 38.5

Explain the pattern of liver injury demonstrated by the progression of laboratory values.

(2 marks)

- a) List **four** differential diagnoses for this clinical scenario

(2 marks)

- b) Outline your specific management of the liver injury. Include management of common complications of the liver injury in your answer

(6 marks)

Question 8

Compare and contrast the management of cardiac arrest (not in the setting of trauma) in the following age groups:

- a) 2-year-old child

(5 marks)

- b) 50-year-old adult

(5 marks)

Question 9

Regarding superior vena caval obstruction (SVC-O):

- a) Summarise the potential complications. In your answer, include challenges SVC-O might cause during the ICU stay

(7 marks)

- b) Outline the specific management options and supportive care required for the SVC-O

(3 marks)

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Question 10

With respect to the acute phase of 'short bowel syndrome' (SBS):

- a) Define SBS (2 marks)
- b) Outline the nutritional and metabolic consequences of SBS (4 marks)
- c) Outline the management principles in ICU (4 marks)

Question 11

A 48-year-old patient is admitted to the intensive care unit with severe community acquired pneumonia. Initial empiric antimicrobial therapy consists of intravenous piperacillin-tazobactam 4.5g by intermittent infusion every 6 hours and azithromycin 500mg intravenously once daily.

- a) Outline the factors that would necessitate escalation of antimicrobials in this situation. In your answer, explain any proposed antimicrobial changes you would make (6 marks)

The patient's clinical condition stabilises after 48 hours without the need for antimicrobial escalation.

- b) Justify an appropriate plan for de-escalation and discontinuation of antimicrobials in this patient (4 marks)

Question 12

Compare and contrast locked-in-syndrome and persistent post coma unresponsiveness (previously known as persistent vegetative state) under the following headings:

- a) Aetiology (2 marks)
- b) Clinical features and prognosis (6 marks)
- c) Relevant investigation findings (2 marks)

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Question 13

A 47-year-old patient presents with acute confusion.

The patient has a past medical history of haemorrhagic stroke requiring insertion of a ventriculoperitoneal shunt six months previously.

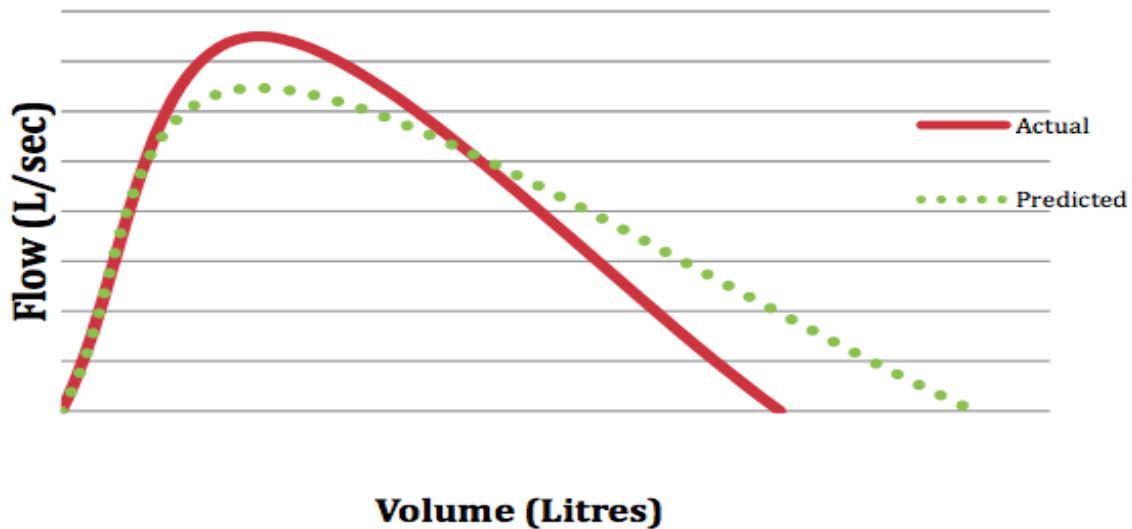
- a) List **four** potential shunt-related complications which could be causing the patients acute presentation (2 marks)
- b) Outline your assessment of this patient to differentiate between the possible causes you have listed (8 marks)

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Question 14.1

A 52-year-old patient with systemic lupus erythematosus (SLE) and worsening dyspnoea on exertion presents with the following respiratory function tests:

Test	Actual	Predicted
FEV1	1.96 litres	2.66 litres
FVC	2.52 litres	3.11 litres
FEV1/FVC	78%	85%
PEF	7.50 L/sec	6.47 L/sec
FRC	2.18 litres	2.77 litres
RV	1.08 litres	1.84 litres
TLC	3.64 litres	5.17 litres
DLco	10.4 ml/min/mmHg	24.7 ml/min/mmHg
KCO (DICO/VA)	2.85 ml/min/mmHg	4.77 1/min/mmHg



a) Describe and explain the results of the respiratory function tests

(4 marks)

b) List one possible diagnosis for the respiratory function tests

(1 mark)

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Question 14.2

You are asked to review a 44-year-old patient who is a known epileptic following a prolonged generalized tonic-clonic convulsion. The patient is intubated and ventilated. Arterial blood gas analysis is as follows:

Test	Value	Normal Range
FiO ₂	0.5	
pH	7.15*	7.35 – 7.45
pCO ₂	35 mmHg (4.6 kPa)	35 – 45 (4.6 – 6)
pO ₂	105 mmHg (14 kPa)*	75 – 98 (10 – 13)
HCO ₃	10.3 mmol/L*	22 – 26

- a) Explain the abnormalities on the blood gas (3 marks)
- b) List the most likely cause of the abnormalities (2 marks)

Question 15

A vascular access catheter has been placed in a patient for elective dialysis.

It is suspected, after suturing the line, that the catheter has been placed in the carotid artery. There is no evidence of airway obstruction.

- a) Outline your approach to confirm the malposition of the catheter (3 marks)
- b) Outline your management of the malpositioned catheter (3 marks)
- c) Outline the processes you would take to reduce the risk of similar events in the future (4 marks)

END OF MORNING PAPER