COLLEGE OF INTENSIVE CARE MEDICINE
OF AUSTRALIA AND NEW ZEALAND

SECOND PART WRITTEN EXAMINATION

Wednesday 12th March 2025

AFTERNOON PAPER

(A) Write your answers in the blue books provided. **Each** question should be answered in a separate booklet. Please ***DO NOT*** write two 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 booklets.

GLOSSARY OF TERMS

Critically evaluate:	Provide and explain the evidence available relating to a topic.
Outline:	Provide a summary of the important points.
List:	Provide a list.
Compare and contrast:	Provide a description of similarities and differences. You may tabulate your answer.
Assessment:	Generic term that implies determining an underlying diagnosis, encompassing; history, clinical examination, and relevant investigations.
Management:	Generic term that implies determining an overall management plan, encompassing; resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment.
Discuss:	Explain the underlying key principles. Where appropriate, this should include controversies and/or advantages and disadvantages.
Explain:	Make plain or known in detail.

NOTE

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

Answer Each Question in a Separate Booklet

Question 16

With respect to posterior reversible encephalopathy syndrome (PRES):

a) List **four** risk factors

(2 marks)

b) Outline the clinical features and radiological findings on presentation

(4 marks)

c) Outline the management principles of PRES

(4 marks)

Question 17

Define the following terms and outline the key differences for each pair. You may choose to illustrate your answer with clinical examples.

a) Cultural safety and cultural competence

(4 marks)

b) Health equality and health equity

(2 marks)

c) Diversity and inclusivity

(4 marks)

Question 18

A 45-year-old patient has been admitted to your ICU with community acquired pneumonia.

During a drug infusion they develop wide-spread urticaria, severe wheeze and marked swelling of the face and tongue.

All signs and symptoms are rapidly worsening despite 0.5 mg IM adrenaline and 100mg IV hydrocortisone. Assume the specific management of anaphylaxis is correct and ongoing.

Outline your plan for intubation in this patient.

(10 marks)

Answer Each Question in a Separate Booklet

Question 19

a) Outline the rationale for a transjugular intrahepatic portosystemic shunt (TIPS)

(1 mark)

b) List **four** contraindications for TIPS

(2 marks)

c) Outline the systemic complications of TIPS
In your answer, include risk factors which would increase the likelihood of developing each complication

(7 marks)

Question 20

Discuss the potential mechanical strategies for supporting myocardial function in a 58-year-old patient presenting with cardiogenic shock post-revascularisation for an acute anterior myocardial infarction.

In your answer, include the physiological rationale for each strategy.

(10 marks)

Answer Each Question in a Separate Booklet

Question 21

21.1 An elderly patient with a recently normal echocardiogram is admitted to hospital for investigation of falls and progressive functional decline. Two days later the patient is referred to the ICU with hypoxia, tachypnoea and clinical features of congestive cardiac failure.

The biochemistry is as follows:

Parameter	Patient	Reference
Sodium	144 mmol/L	135 – 145
Potassium	**3.1 mmol/L ***	3.5 – 5.0
Chloride	102 mmol/L	95 – 105
Bicarbonate	**21 mmol/L ***	22.0 – 26.0
Glucose	3.9 mmol/L	3.5 – 6.0
Urea	**1.4 mmol/L ***	3.0 – 8.0
Creatinine	**29 µmol/L ***	45 – 90
Magnesium	**0.65 mmol/L ***	0.75 – 0.95
Albumin	**14 g/L ***	35 – 50
Protein	**59 g/L ***	60 – 80
Total bilirubin	4 µmol/L	< 26
Aspartate transferase (AST)	**41 U/L ***	< 35
Alanine transferase (ALT)	**55 U/L ***	< 35
Alkaline phosphatase (ALP)	**135 U/L ***	30 – 110
Gamma Glutamyl transferase (GGT)	**61 U/L ***	< 40
Ionised calcium	**1.31 mmol/L ***	1.10 – 1.35
Calcium corrected	2.32 mmol/L	2.12 – 2.62
Phosphate	**<0.10 mmol/L ***	0.8 – 1.5
Creatine Kinase	**15 U/L ***	55 – 170
High sensitivity Troponin T	**11 ng/L ***	<10 ng/L

a) List the biochemical abnormalities and explain their significance.

(2.5 marks)

b) List **five** most likely causes for the hypophosphataemia.

(2.5 marks)

QUESTION 21 Continued on Next Page

QUESTION 21 Continued

21.2 A patient recently discharged from hospital following a long admission for management of variceal bleeding and decompensated alcoholic cardiomyopathy is referred to the ICU. They have presented to the emergency department with refractory seizures and hypotension.

The biochemistry is as follows:

Parameter	Patient	Reference
Sodium	140 mmol/L	135 – 145
Potassium	**5.1 mmol/L ***	3.5 – 5.0
Chloride	102 mmol/L	95 – 105
Bicarbonate	**20 mmol/L ***	22.0 – 26.0
Glucose	5.5 mmol/L	3.5 – 6.0
Urea	**9.4 mmol/L ***	3.0 – 8.0
Creatinine	**145 µmol/L ***	45 – 90
Albumin	**19 g/L ***	35 – 50
Protein	**75 g/L ***	60 – 80
Total bilirubin	24 µmol/L	< 26
Aspartate transferase (AST)	**71 U/L ***	< 35
Alanine transferase (ALT)	**67 U/L ***	< 35
Alkaline phosphatase (ALP)	**156 U/L ***	30 – 110
Gamma Glutamyl transferase (GGT)	**72 U/L ***	< 40
Ionised calcium	**0.61 mmol/L ***	1.10– 1.20

a) List **five** possible causes of these biochemical abnormalities

(2.5 marks)

b) List **five** investigations which would help discriminate between these causes

(2.5 marks)

Question 22

A 38-year-old patient has been admitted to the ICU after a workplace accident. The patient was walking at ground level carrying a metal ladder that accidentally crossed high voltage power lines. CPR was commenced and the patient was intubated on ambulance arrival.

Outline the likely potential injuries and the corresponding examination findings you would expect on admission.

(10 marks)

Answer Each Question in a Separate Booklet

Question 23

A critically unwell 68-year-old patient is severely hypoxic post intubation. You perform a lung ultrasound at the bedside.

a) Outline the lung ultrasound findings that help you to differentiate between potential causes of hypoxia in this patient

(5 marks)

b) Outline the advantages and disadvantages of lung ultrasound in ICU

(5 marks)

Question 24

Discuss the role of decompressive hemicraniectomy following a middle cerebral artery infarction.

In your answer, include the evidence for this practice.

(10 marks)

Answer Each Question in a Separate Booklet

Question 25

With respect to Therapeutic Plasma Exchange (TPE):

a) List **four** indications and explain the rationale for each indication

(4 marks)

b) List the significant complications of TPE (excluding vascular access issues) and outline the strategies utilised to address them.

(6 marks)

Question 26

Discuss the use of inhaled pulmonary vasodilators in critically ill adult patients.

(10 marks)

Question 27

With regard to necrotising fasciitis:

a) List the empirical antibiotics and provide a rationale

(4 marks)

b) Outline the role of:

i. Surgery
ii. Intravenous immunoglobulin
iii. Hyperbaric oxygen therapy

(6 marks)

Answer Each Question in a Separate Booklet

Question 28

With regard to long term, conscious intensive care patients who have a tracheostomy:

a) Discuss the consequences of inadequate communication between staff and these patients

(4 marks)

b) Outline techniques to improve communication in these patients

(6 marks)

Question 29

Discuss early active mobilisation in the general intensive care unit.

(10 marks)

Question 30

30.1 A 40-year-old previously well patient presents with a ruptured appendix and associated peritonitis. They return to theatre day 3 with ischaemic colitis requiring a right hemicolectomy. At laparotomy, there is extensive thrombosis in the superior mesenteric vein and portal vein. Attempts to anticoagulate the patient with heparin day 5 onwards have been unsuccessful.

The post-operative haematology results are as follows:

	Day 0	Day 1	Day 3	Day 5	Day 7	Day 9	Reference
INR	1.2	1.7	1.8	1.6			0.8 – 1.3 seconds
APTT	36	38	36	**28***	**31***	**37***	24 – 35 seconds
Fibrinogen	5.8	1.8	1.4	1.7			2.0 – 5.0 g/L
INR mix		1.9					0.8 – 1.3 seconds
APTT mix		32.5					30 – 40 seconds
D dimer		>4.0					< 0.5 mg/L

* On I.V. heparin
APTT therapeutic range for I.V. heparin therapy: 60 – 90 seconds

Additional tests performed on Day 7:

- Tests of hypercoagulability (plasma)

  Antithrombin (functional) 20% (Reference: 80 – 120%)

- Factor assays (plasma)

  Factor VIII 4.10 IU/ml (Reference: 0.5 – 1.5)

- Anti-Factor Xa assay (plasma)

  Anti-Factor Xa 0 IU/ml (Reference for IV heparin therapy: 0.3 – 0.7)

a) List the possible factors preventing therapeutic anticoagulation in this patient

(2 marks)

b) List **two** strategies to achieve anticoagulation with intravenous heparin

(2 marks)

QUESTION 30 Continued on Next Page

QUESTION 30 Continued

30.2 A 28-year-old patient presented with a persistent epistaxis to the Emergency Department.

The coagulation profile was as follows:

Parameter	Patient	Reference
INR	1.2	0.8 – 1.2
APTT*	50 seconds	25 – 39
Platelets	250 X 10^9 / L	150 – 350
Bleeding time*	16 minutes	2 – 8
Fibrinogen	3 g/L	1.5 – 4
FDPs	< 10 mg/L	0 – 10
Thrombin clotting time	15 seconds	12 – 17

a) Give the most likely diagnosis

(1 mark)

b) List **two** investigations to confirm the diagnosis

(2 marks)

30.3 A 50-year-old patient with a right deep vein thrombosis and haemoptysis.

These blood results are from admission:

Parameter	Patient	Reference
PT	12 seconds	12 – 14
APTT*	69 seconds	34 – 38
Thrombin time	16 seconds	14 – 18
APTT mixing test	60 seconds	

Explain the APTT mixing test and outline its significance in this patient

(3 marks)

End of Afternoon Paper