



# COLLEGE OF INTENSIVE CARE MEDICINE OF AUSTRALIA AND NEW ZEALAND

## FIRST PART EXAMINATION WEDNESDAY 6<sup>TH</sup> AUGUST 2025 MORNING PAPER

### **SHORT ANSWER QUESTIONS (SAQs)**

- (A) Write your answers in the booklets provided.
- (B) Each SAQ should be answered in a **separate** answer booklet.
- (C) You should aim to allocate **10 minutes** to answer each SAQ.
- (D) All SAQs are worth **equal** marks.
- (E) SAQs with more than one part have the proportion of marks indicated for each part.
- (F) Record your **candidate number** and **question number** on the cover of each book and page
- (G) Please **DO NOT** write in the blue margins of the answer booklets.

**At the end of the exam hand your answer booklets and question papers to the Invigilator.**

### **GLOSSARY OF TERMS**

- Classify: Divide into categories; organise, arrange
- Compare and contrast: Examine similarities and differences
- Define: Give the precise meaning
- Describe: Give a detailed account of
- Explain: Make plain or known in detail
- List: Provide a short note in point form
- Outline: Provide a summary of the important points

**PLEASE USE A SEPARATE BOOKLET TO WRITE YOUR ANSWER FOR EACH QUESTION**

**Question 1**

Describe how ligands binding to cell membrane receptors can cause a change within that cell.  
*Illustrate your answer with a detailed example for each method.*

**Question 2**

- (a) Define dead space and its components (15% of marks).
- (b) Describe the factors that affect each component (30% of marks).
- (c) Outline the physiological impact of increased dead space (15% of marks).
- (d) Describe methods of measurement of dead space (40% of marks).

**Question 3**

- (a) Describe the action potential of the following:
  - (i) the sinoatrial node (35% of marks)
  - (ii) the cardiac ventricular muscle cells (35% of marks)

*Include in your answer the phases and ionic events involved with each action potential.*

- (b) Explain the implications of the differences between these action potentials (30% of marks).

**Question 4**

Outline the physiological effects of end stage renal dysfunction.  
*Changes associated with dialysis as a therapy are **NOT** required.*

**Question 5**

- (a) Define pain (10% of marks).
- (b) Describe how pain is detected and modulated in response to a peripheral noxious stimulus (90% of marks).

**PLEASE USE A SEPARATE BOOKLET TO WRITE YOUR ANSWER FOR EACH QUESTION**

**Question 6**

Outline the potential adverse consequences of blood product transfusion including the underlying mechanisms.

**Question 7**

- (a) Describe the functions of the placenta (80% of marks).
- (b) Outline utero-placental blood flow and its determinants (20% of marks).

**Question 8**

Describe the anatomy relevant to performing a lumbar puncture.

*Paediatric **OR** adult descriptions are acceptable.*

*Descriptions of the procedure are **NOT** required.*

**Question 9**

Compare and contrast the following pharmacology of sodium nitroprusside and glyceryl trinitrate;

- (a) mechanism of action (25% of marks)
- (b) pharmacodynamics and toxicity (75% of marks).

*Treatment of toxicity is **NOT** required.*

**Question 10**

Describe the following pharmacology of meropenem:

- (a) class and mechanism of action (25% of marks).
- (b) spectrum of activity (20% of marks).
- (c) indications for use (20% of marks).
- (d) pharmacokinetic and dosing considerations in critically ill patients (35% of marks).