



## The Hong Kong College of Anaesthesiologists

### Intermediate Fellowship Examination

#### Written Paper in Pharmacology

15 July 2022 (Friday)

14:00 - 16:00 hours

#### Instructions:

- There are twelve pre-labelled answer books. Please make sure you answer the questions in the respective answer book.
- Write your candidate number on the cover of each answer book.
- Use ink or ball-point pen.
- Answer ALL questions. They are worth equal marks and you should spend approximately **ten minutes** for each question. For questions with multiple parts, allocation of marks is indicated in the brackets.

#### 1. Describe naloxone on its:

- pharmacokinetic properties and mechanism of action (50%).
- indications and cautions in clinical use (50%).

#### 2. Define and explain the terms 'potency', 'efficacy', 'therapeutic index' and 'tolerance' with illustration by dose-response curves of opioid.

#### 3. Outline the metabolism of morphine (40%), pethidine (40%) and codeine (20%).

#### 4. Give an account on mechanisms of action of non-steroidal anti-inflammatory drugs (both non-selective and COX-2 selective) (25%).

Describe the common adverse effects associated with their use and explain how these occur (75%).

#### 5. Compare and contrast the pharmacology of sodium nitroprusside and glycerol trinitrate.

#### 6. Based on the 3-compartment pharmacokinetic model, explain the onset and offset of action after a single intravenous bolus administration of propofol. A schematic diagram may be used to illustrate your answer (50%).

Explain the factors that will affect the offset of propofol effect (50%).

#### 7. Compare and contrast the mechanism of action and pharmacokinetics of rocuronium and succinylcholine for rapid sequence induction (70%).

List the factors that affect your choice of drug in this situation (30%).

#### 8. Compare and contrast warfarin, dabigatran and rivaroxaban, in terms of their,

- mechanism of action (80%).
- monitoring of action (20%).

#### 9. Describe the pharmacodynamic effects of atropine.

#### 10. Discuss the factors affecting the duration of action of a local anaesthetic block to a major peripheral nerve.

- 11. Name 3 classes of antiemetic that you would use in your clinical practices (20%).  
In each class, give an example and describe the mechanism of action and side effects (80%).**
- 12. Define minimum alveolar concentration (MAC) of an inhaled anaesthetic agent (20%).  
What are the physiological, pharmacological and pathological factors that may affect MAC (80%)?**

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