



The Hong Kong College of Anaesthesiologists

Intermediate Fellowship Examination

Written Paper in Pharmacology

14 February 2025 (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 Phase I and Phase II reactions in drug metabolism. (67%)

Illustrate your answer using the following examples – morphine, tramadol, propofol. (33%)

2. Describe the components of the structure of a local anaesthetic. (20%)

Explain the significance of each component of structure to its function(s). (80%) (Drawing of structure is not required)

3. Describe the mechanisms of type B adverse drug reaction (drug idiosyncrasy).

4. Describe the mechanisms of action of different classes of antidepressants. Please give one example for each class. (30%)

Outline the effect and mechanism of their interactions with commonly used drugs during the perioperative period. (70%)

5. Why is fentanyl more suitable for transdermal administration compared to oral route? (50%)

What are the advantages and disadvantages of using transdermal fentanyl patches for acute postoperative surgical pain? (50%)

6. Describe the mechanisms of action of non-steroidal anti-inflammatory drugs (NSAIDs). (50%)

Compare and contrast the effects of Non-selective and Cyclooxygenase-2 Specific NSAIDs on different organ systems when used in the adult non-pregnant patients. (50%)

- 7. Describe the mechanisms of action of apixaban, rivaroxaban and dabigatran. (30%)**
Discuss the pharmacokinetics and metabolism of the above drugs that account for their perioperative management before single-shot spinal anaesthesia (Please include the half-life of each drug in the answer). (70%)

- 8. Describe the pharmacodynamic properties of propofol other than that on the central nervous system (CNS). (70%)**
Describe how these properties influence clinical use. (30%)

- 9. Outline the mechanisms of action of digoxin in terms of its therapeutic effect and toxic effect. (75%)**
What are the risk factors that precipitate digoxin toxicity? (25%)

- 10. Explain the mechanism of action of neostigmine and sugammadex for reversal of neuromuscular blockade. (35%)**
Discuss the advantages and disadvantages of using sugammadex compared to neostigmine perioperatively. (65%)

- 11. Discuss the effects of inhalational anaesthetic agents on central nervous system.**

- 12. In a clinical trial, why is adequate power important? (50%)**
What factors affect the determination of an adequate sample size? (50%)

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