The Hong Kong College of Anaesthesiologists

Intermediate Fellowship Examination

Written Paper in Pharmacology

24 July 2020 (Friday)

14:00 - 16:00 hours

Instructions:

a. There are twelve pre-labelled answer books. Please make sure you answer the questions in the respective answer book.
b. Write your candidate number on the cover of each answer book.
c. Use ink or ball-point pen.
d. 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. What is stereoisomerism? (50%) Using bupivacaine and levobupivacaine as examples, explain the effects of stereoisomerism on cardiotoxicity. (50%)

2. Outline the pharmacodynamic properties of dexmedetomidine in the central nervous, respiratory and cardiovascular systems.

3. Outline the concerns associated with the use of opioids for acute postoperative pain relief in older (>70 years) patients? In your answer, please include changes of pharmacokinetic and pharmacodynamic of opioids in these patients.

4. What is "volume of distribution" of a drug? (40%) Describe the features of a drug that will influence its volume of distribution. (60%)

5. Compare and contrast the side effects of aspirin and celecoxib.

6. Outline mechanism(s) of action of suxamethonium (20%) and discuss its potential adverse effect(s), including their mechanisms and clinical significance (80%).

7. Describe the adverse effects resulting from toxic products produced during the administration of inhalational anaesthetics.

8. Classify drugs that are used in the management of postoperative nausea and vomiting. Include their mechanisms of action, where known, in your answer.

9. Compare and contrast the mechanism(s) of action and biochemical effect(s) of thiazide and frusemide.

10. Compare and contrast the pharmacology of atropine and glycopyrrolate in term of their pharmacokinetic properties (30%), pharmcodynamic effects (40%) and clinical use. (30%)

11. Describe the features of normal distribution. Illustrate with the concept of minimal alveolar concentration (MAC) of volatile. In a patient receiving 1.96 MAC of desflurane, what percentage of patients are likely to respond to verbal command? Explain your answer.

12. Explain, with examples, the characteristics of competitive and non-competitive antagonists. (50%) Using a dose-response curve, explain how these antagonists affect the potency of a pure agonist. (50%)

- END -