The Hong Kong College of Anaesthesiologists

Intermediate Fellowship Examination

Written Paper in Pharmacology

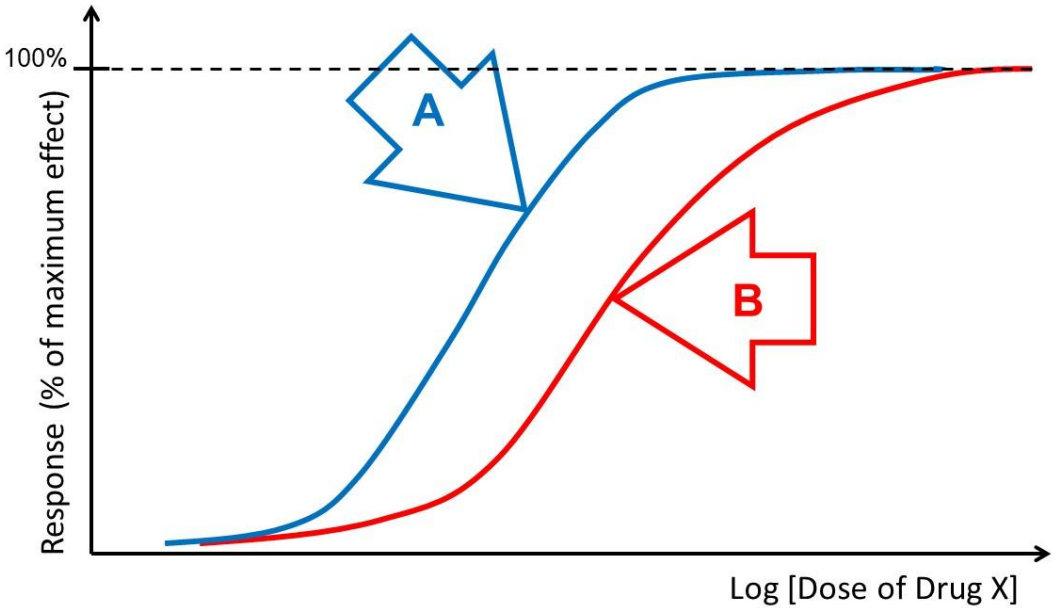
12 July 2019 (Friday)

14:00 - 16:00 hours

Instructions:

a. There are three 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. Refer to the graph below.



Curve A is the log dose-response curve of Drug X when it is used initially while curve B is the curve after prolong use of Drug X.

Discuss the different mechanisms by which this phenomenon can develop, giving examples where appropriate.

2. Why is fentanyl more suitable for transdermal administration instead of oral? (50%). What are some of the advantages and disadvantages of using transdermal fentanyl patches for acute post-surgical pain. (50%)

3. Describe, with examples, drugs that can be used to decrease either the volume or acidity of the gastric contents in the perioperative period.

4. Outline the pharmacology of dexmedetomidine as sedatives during monitored anaesthetic care (MAC).

5. **Explain the changes in plasma pH and potassium level induced by the use of thiazide diuretics, spironolactone and mannitol.**

6. **Describe the difference between case-controlled and cohort studies.**

7. **Compare and contrast the pharmacokinetic properties of pregabalin and gabapentin.**

8. **Describe the factors that influence the speed at which inhaled anaesthetics approach steady state. (60%) How does a right to left cardiac shunt affect this? (40%)**

9. **What is stereoisomerism? (50%) Describe the effect of stereoisomerism and cardiotoxicity of bupivacaine and levobupivacaine. (50%)**

10. **Compare and contrast the mechanism of action, clinical utility, adverse effects and pharmacokinetics of neostigmine and sugammadex for the reversal of neuromuscular blockade.**

11. **Compare and contrast the pharmacology of parecoxib and ketorolac.**

12. **Describe, with the underlying mechanism, three pharmacological and three physiological factors that affect the potency of muscle relaxants.**

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