

This question paper contains 4 printed pages]

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S. No. of Question Paper : **5610**

Unique Paper Code : **6793010011**

Name of the Paper : **Pharmacology and Toxicology**

Name of the Course : **B.Sc. (Hons.) Biological Science**

Semester : **VI**

Duration : **2 Hours**

Maximum Marks : **60**

(Write your Roll No. on the top immediately on receipt of this question paper.)

There are *six* questions.

Attempt any *four* questions.

All questions carry equal marks.

Question No. 1 is compulsory.

1. (a) Comment on the following statements :

- (i) Taking a salicylate based drugs with antacids slows food absorption.
- (ii) Predicting how drug molecules bind to biological targets helps in drug designing
- (iii) Hypolipemic drugs target both cholesterol metabolism and absorption
- (iv) Simultaneous ingestion of 2 or more drugs can affect the effective dose of the drugs
- (v) Double blind studies are recommended during clinical trials.

P.T.O.

(b) Define :

(i) Bioavailability

(ii) Efficacy

(iii) Lead molecule

(iv) Xenobiotics

(v) Toxin.

10,5

2. (a) "All substances are poisons; there is none which is not a poison. The right dose differentiates a poison from a remedy". Discuss this statement with reference to ED50, ID50, LD50 and therapeutic index.

(b) Explain *two* approaches for drug design process through CADD technique. How does this help in formulation of a synthetic drug.

(c) What is NSAIDS ? Elaborate. Aspirin is an effective NSAID as well as an anti-thrombotic agent.

5,5,5

3. Differentiate between :

(i) Affinity and Avidity

(ii) Agonist and Antagonists

(iii) Metabotropic and Ionotropic receptors

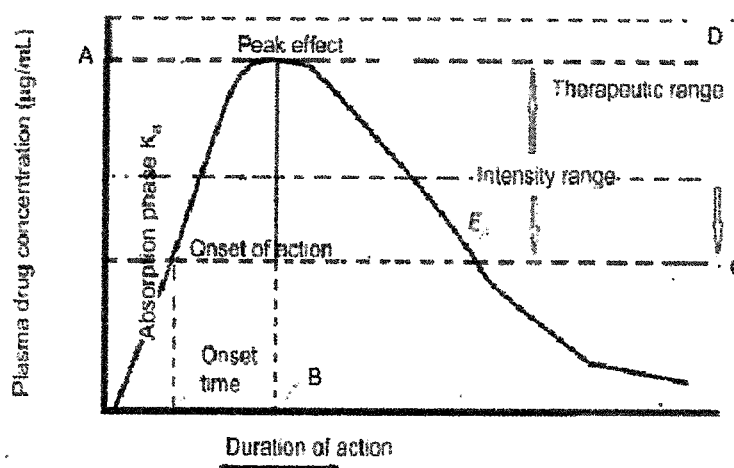
(iv) Loop diuretics and Thiazides

(v) Pharmacokinetics and Pharmacodynamics.

2,2,3,4,4

4. (a) A 17-month-old male presents to your emergency department with his parents after he was found eating small pellets in the neighbours' basement. The child is asymptomatic. The child's mother thinks the pellets are "some kind of super rat killer". What is the drug ingested by the child and why is it used as a rat poison ?

- (b) Explain the rule of five that covers effective absorption and distribution of a drug.
- (c) Name the different stages of drug discovery & development. What are the goals and limitations of pre-clinical toxicity studies ?
- (d) What is the therapeutic index of a drug. Why is a drug with higher therapeutic index preferred ? 3,5,4,3
5. (a) What is QASR ? Elaborate. How does it improve the efficiency in commercial output of a new drug ?
- (b) Acetylcholine esterase inhibitors are used a therapy for some Neurodegenerative and autoimmune conditions. Explain.
- (c) How are drugs eliminated from the body ? Explain.
- (d) Identify A, B, C, D in the graph of the orally ingested drug X shown below. What is the AUC in this graph ? If the AUC decreases when the drug is given intramuscularly, what would be a preferred mode of administration of the drug ?



4,4,4,3

P.T.O.

6. (a) Explain the biochemical basis for the action of the following drugs :
- (i) Cemitidine
 - (ii) PPAR alpha inhibitors
 - (iii) Digitalis
 - (iv) Beta blockers
 - (v) Anti-epileptic drugs
 - (vi) ACE inhibitors.
- (b) A 12-month-old male presents to the emergency department after ingesting a watch battery, which was left out on the counter. He has been drooling since the incident and refusing his bottle. He shows lack of coordination of arms and legs, muscle twitches and seizures. Discuss the condition.

12,3