

[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1948

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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

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. There are **six** questions. Attempt any **four** questions. **All** questions carry equal marks. Question no. **1** is compulsory.

Q1. A. Comment on the following statements

- i. Taking a salicylate based drug 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. Long term use of NSAIDs has the side effect of gastric irritation and gastric ulcers.
- v. Double blind studies are recommended during clinical trials for new drugs.
- vi. Acid blocker Omeprazole is considered as a prodrug.

B. Define

- i. Bioavailability
- ii. Bioaccumulation
- iii. Lead molecule
- iv. Xenobiotics
- v. Toxin

(10,5)

Q2 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. Mr. Iyer, aged 72, is diagnosed with Alzheimer's disease and prescribed Rivastigmine, a cholinergic drug to improve memory and cognitive function. His family observes mild improvement in memory but also mild nausea during initial days of treatment. Why are cholinergic drugs useful in Alzheimer's disease? Mention the reason for the side effect observed due to cholinergic therapy.

(5,5,5)

P.T.O.

Q3. Differentiate between

- i. Affinity and Avidity
- ii. Agonist and antagonists
- iii. Loop diuretics and thiazides
- iv. Pharmacokinetics and pharmacodynamics.

(3,3,4,5)

Q4 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.

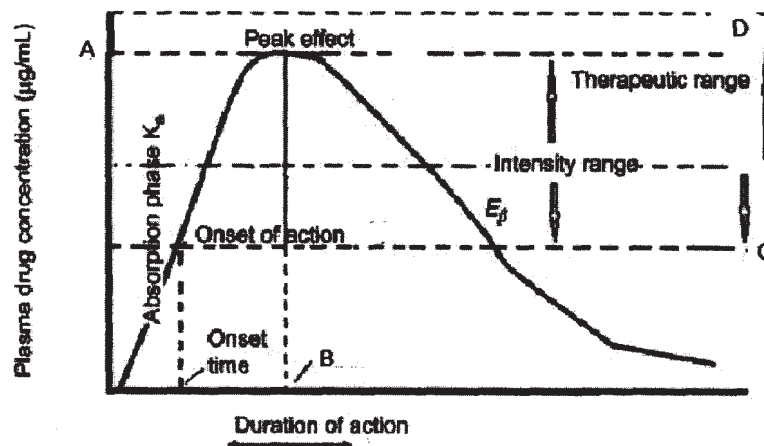
D. What is the therapeutic index of a drug. Why is a drug with higher therapeutic index preferred?

(3,5,4,2)

Q5 A. What is QASR? Elaborate. How does it improve the efficiency in commercial output of a new drug?

B. C. How are drugs eliminated from the body? Explain

C. 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 intra muscularly, what would be a preferred mode of administration of the drug?



(5,5,5)

Q6 A Explain the biochemical basis for the action of the following drugs

(15)

- i. Cimetidine
- ii. PPAR alpha inhibitors
- iii. Digitalis
- iv. Anti-epileptic drugs
- v. Ibuprofen

(200)