

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : (i) Section A is compulsory consisting of TEN carrying TWO marks

(ii) Section B contains THREE questions carrying TEN marks each and students has to attempt any TWO long questions.

(iii) Section C contains NINE questions carrying FIVE marks each and students have to attempt any SEVEN short note questions.

SECTION - A

1. Explain:

- Facilitated diffusion
- Protein binding
- Pharmacokinetics
- MAT
- Bioavailability
- Bioequivalence

Differentiate between:

- Clearance and elimination
- Passive and active transport
- Why is V_D called apparent volume of distribution?
- If the drug has 0.5 mcg/hrs of elimination rate, what is its elimination half life? (10×2=20)

SECTION - B

- Explain one compartment model with oral administration from urine data.
- A new antibiotic drug was administered at a dose of 5mg/kg IV bolus to 10 healthy male adults ranging in age from 23 yrs to 38 yrs. A following equation that best fit the data obtained from the plasma level- time curve follows one compartment model is
 $C_p = 76 e^{-0.46t}$
Determine: a) $t_{1/2}$ b) V_D c) Plasma level of the drug after 3 hrs.
d) Amount of drug left after 5 hours (Log 76=1.880).
- Explain non linear pharmacokinetics that follows one compartment model. (2×10=20)

SECTION - C

- Explain drug distribution in the body.
- How are AUC, C_{max} , and $t_{1/2}$ determined.
- Explain Wagner Nelson method for the determination of absorption rate constant.
- A Drug eliminated from body by capacity limited pharmacokinetics has K_m of 100 mg and V_m of 50 mg/hr. If 300 mg of the drug is given to a patient by IV bolus injection, calculate the time for the drug to be 50 % eliminated (Given $\ln 2=0.693$)
- Write note on Clearance and Extraction ratio.
- Explain Bioequivalence study.
- How is Bioavailability study conducted?
- Explain mechanism of drug absorption through GIT.
- Explain two compartment open model. (5×7=35)