Q.P. Code: 36885

Time: 3 hours **Marks: 70**

Please check whether you have got the right question paper.

N.B: (1) All questions are **compulsory**.
(2) Figures to the right indicate **full marks**.
(3) **Use of scientific calculator is permitted.**

Q.1		Answer the following:	
	a.	Define Bioavailability and Bioequivalence.	**2**
	b.	Drug absorption from the nasal mucosa is as rapid as observed after parenteral administration. Explain.	**2**
	c.	Chloroquine has a Volume of distribution of approximately 15000 litres. Give reasons.	**1**
	d.	What is auto-induction?	**2**
	e.	What is the cause for a bitter after-taste in the mouth after certain medications?	**2**
	f.	Formulation of which BCS class drug is the most challenging?	**2**
	g.	What do you understand by compartment modelling?	**2**
	h.	Give the difference between absolute and relative bioavailability	**2**
Q.2	a.	Discuss passive diffusion of drug absorption.	**4**
	b.	How do polymorphism and amorphism properties affect the solubility and dissolution rate of drugs?	**4**
	c.	Explain how gastrointestinal pH affects drug absorption.	**3**
Q.3	a.	How do surfactants affect drug absorption?	**3**
	b.	Enlist the physiological barriers to the distribution of drugs. Discuss any one.	**4**
	c.	What are the causes of non-linearity in drug metabolism and excretion?	**4**
		OR	
		Discuss rate of excretion method for determining K_E.	**4**
Q.4	a.	Describe the biotransformation of drugs by oxidative reactions.	**4**
	b.	Discuss hepatic blood-flow rate limited clearance.	**3**
	c.	How do the physicochemical properties of drugs affect renal excretion?	**4**
Q.5	a.	What is modified Noyes Whitney equation? Explain how the various parameters affect the dissolution of drugs.	**4**
	b.	Explain the Dissolution Apparatus I as per I.P.	**3**
	c.	Discuss any one type of bioequivalence experimental study design.	**4**
		OR	
		Discuss any four methods for enhancement of drug solubility and dissolution rate.	**4**

Q.6 a. How will you determine absorption rate constant by method of residuals? **4**

OR

Explain the pharmacokinetic parameters following IV bolus administration. **4**

b. An intravenous bolus dose of 50 mg of a drug following one compartment kinetics has a half-life of 8 hours and volume of distribution of 44 litres. Calculate :

i.) Concentration at zero hours, elimination rate constant **01**

ii.) Clearance, AUC (zero to infinity) **01**

iii.) The plasma drug concentration after 14 hours of drug administration **01**

iv.) The percent dose remaining in the body after 20 hours **02**

v.) Time required to eliminate 55% of the dose **02**
