**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.**

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|---|---|---|---|
| Q.1 | | Answer the following: | |
| | a. | Define Distribution. | **2** |
| | b. | Comment on bioavailability from buccal route of drug absorption. | **2** |
| | c. | Give the reasons for a lower volume of distribution of a drug than volume of plasma. | **1** |
| | d. | Define enzyme inhibition with a suitable example. | **2** |
| | e. | What is enterohepatic cycling? | **2** |
| | f. | State the BCS Classification. | **2** |
| | g. | State disadvantages of compartment modelling. | **2** |
| | h. | Compare absolute and relative bioavailability. | **2** |
| Q.2 | a. | State the characteristics of primary active transport of drugs. | **4** |
| | b. | Explain in brief the pH partition hypothesis. What are assumptions on which it is based? | **4** |
| | c. | Discuss three significant factors that influence gastric emptying. | **3** |
| Q.3 | a. | How do the various types of tablet dosage forms influence drug bioavailability. | **3** |
| | b. | Write in detail binding of drugs to human serum albumin. | **4** |
| | c. | Write a short note on rate of excretion method for urine analysis after IV administration. | **4** |
| | | **OR** | |
| | | Elaborate on the causes of non-linearity in drug absorption and distribution. | **4** |
| Q.4 | a. | Describe Phase I reductive reactions. | **4** |
| | b. | Explain briefly concepts of clearance. | **3** |
| | c. | Discuss two important factors that affect renal excretion. | **4** |
| Q.5 | a. | Explain the Film theory for drug dissolution. | **4** |
| | b. | Enlist dissolution rate testing apparatus official in the USP with an example of dosage form to be evaluated in each of them. | **3** |
| | c. | Discuss any four methods of bioavailability enhancement by accelerating drug solubility and dissolution. | **4** |
| | | **OR** | |
| | | Describe Latin square design for crossover Bioequivalence studies. | **4** |



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Q.6 a. Draw the plasma concentration –time profile and discuss any three parameters. **4**

**OR**

How will you determine absorption rate constant by method of residuals? **4**

b. The pharmacokinetics of plasma drug concentration curve for drug A given by IV bolus (Dose = 200mg) fits one compartment open model. The equation of the curve that fits the data is :

**$C = 76\ e^{-0.46t}$**

Calculate the following:

i.) Half life and volume of distribution **01**

ii.) Clearance and AUC(0 to ∞) **01**

iii.) The plasma drug concentration after 7 hrs **01**

iv.) Time required to eliminate 75% of the dose **02**

v.) Amount remaining in the body after 3 hours **02**

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