MP/1st Sem (ASTU) — 08/08/15

Total No. of printed pages = 5

PY 134106

Roll No. of candidate

2015

M. Pharm 1st Semester End-Term Examination

ADVANCED PHYSICAL PHARMACEUTICS

Full Marks –100 Pass Marks – 35 Time – Three hours

The figures in the margin indicate full marks for the questions.

PART – I

1. Answer any *fifteen* questions from the following : 2×15=30

(a) Describe two roles of DSC studies in preformulation trials.

(b) Define % compressibility.

(c) Why determination of pKa is important in preformulation trials ?

(d) Write the advantage of basket type over paddle type for the dissolution of drugs.

(e) Explain the concept of sink conditions in dissolution.

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(f) According to pH partition theory, wherefrom will a weekly acidic drug most likely be absorbed and why ?

(g) Write one application of Fick's law of diffusion.

(h) Give two reasons for making stability studies mandatory by Drug Control Organisation.

(i) Define molecularity of reaction.

(j) The time required for the complete degradation of in solution is a finite value. What will be the order of reaction and why ?

(k) Name four bio-polymers used in NDDS preparation.

(l) Mention two applications of polymers in pharmacy.

(m) What is the importance of Hixon-Crowel cube root law in pharmaceutical sciences ?

(n) Why activation energy important to study shelf-life of the drug ?

(o) Give two examples of role of pro-drug in enhancing bioavailability of drug.

(p) Knowledge of a balanced equation is important to determine the order of the reaction. True or false. Explain.

(q) A crystalline form of a drug shows better biological activity than amorphous form of a drug. True or false. Explain.

PART – II

Answer any *eight* questions. 5×8=40

2. Describe method of determination of solubility of a drug in any buffer solution. Why determination of solubility is considered as an important tool in preformulation trial ?

3. Describe two methods of solubilisation.

4. Describe the mechanism and model for in-vitro drug release from a monolithic polymer matrix.

5. Deduce an equation for determining the specific reaction rate constant of a first order reaction.

6. What are the ICH guidelines for stability testing of tablet dosage form ?

7. What are the limitations of accelerated stability testing ?

8. Write a note on bioavailability enhancer with suitable examples.

9. What are hydrogels ? Describe any two methods of evaluation of any hydrogel formulations.

10. Describe the role of diffusion coefficient in drug absorption.

11. Write a method to determine particle size of particles by measuring its surface area.

PART – III

Answer any *three* questions. 10×3=30

12. Define intrinsic dissolution rate. Why is it important to determine intrinsic dissolution rate in preformulation trial ? Describe a method to determine intrinsic dissoultion rate. 2+3+5=10

13. Describe the methods of stabilization of drugs with suitable examples. 10

14. Describe the factors related to dosage form can influence dissolution of drugs in the medium. 10

15. Write short notes on : 10

(i) Physics of tablet compression.

(ii) Type 4 USP dissolution rate test apparatus.

16. (a) Write a note on X-ray diffraction studies in preformulation trial.

(b) Explain steady state diffusion. 10