05/12/14 (Reg)

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PY 134106

Roll No. of candidate | | | | | | | | | | |

2014

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.

1. (a) Write two techniques to characterize drug-excipient interactions. 10×1=10

   (b) Write the biodegradable product from poly (lactide-co-glycolide) polymer.

   (c) Write the mathematical equation of Higuchi model.

   (d) How you can define the term 'NDDS' ?

   (e) Name two directly compressible tablet excipients.

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(f) Define the term 'order of a reactions'.

(g) What is the principle involved in hydrogel NDDS ?

(h) What is steady state diffusion ?

(i) Write the Fick's law of diffusion.

(j) Define bioavailability.

2. (a) Derive the first order reaction rate equation for $t_{½}$. 10×2=20

(b) How can you measure the flow property of powders ?

(c) Elaborate the role of pH on drug absorption.

(d) Compare between active and passive absorptions.

(e) Enumerate the kinetics of drug release from polymer matrices.

(f) How can you relate the diffusity of a drug with its molecular size ?

(g) Enumerate the properties of tablet influenced by compression.

(h) Write two rate limiting steps in drug absorption. Which rate limiting step can be manipulated by the pharmacists to enhance the bioavailability of a drug (BCS II) ?

(i) What is the prodrug of Aspirin ? Name one biodegradable hydrophilic polymer ?

(j) Compare and contrast between 'controlled release', 'sustained release' and 'extended release' formulation of drugs.

3. (a) Enumerate the properties required to design NDDS. 3×10=30

(b) Derive the equation to describe the dissolution of drug.

(c) Give the relation between dissolution rate and absorption of drug.

(d) How pharmaceuticals are stabilized against hydrolysis and oxidation ?

(e) Derive the first order reaction rate equation for $t_{90\%}$ value.

(f) Write the mechanism of solubilization.

(g) Explain the role of micellar solubilization in enhancing solubility of poorly water soluble drugs.

(h) Explain the application of chromatography.

(i) Elaborate role of shape and surface area in preformulation.

(j) Differentiate between steady state diffusion and non-steady state diffusion.

4. (a) Explain the importance of organoleptic properties and purity in designing of dosage forms. 4×5=20

(b) Explain the application of starch polymer in pharmaceutical formulation.

(c) How can you determine drug release mechanism from polymer matrix ?

(d) Give the application of inclusion complexes in enhancement of solubility.

(e) Design a protocol for accelerated stability testing of pharmaceutical formulation.

5. (a) Detail the design aspects of membrane controlled drug delivery devices with mathematical equation. 4×5=20

(b) Describe the procedure used to study the dissolution of a drug from solid dosage form.

(c) Explain the different kinetic equation and their application in pharmacy.

(d) Explain the role of Arrhenius theory in the prediction of drug stability.