MANIPAL UNIVERSITY

FIRST YEAR M. PHARM. DEGREE EXAMINATION - MAY 2017
SUBJECT: ADVANCED PHARMACEUTICS (PCE 601T)
(SPECIALIZATION: PHARMACEUTICS)
(2014 REGULATION)
Saturday, May 20, 2017 (10.00 - 13.00 Hrs.)

Marks: 100 **Duration: 180 mins.**

Answer ALL the questions.

1)	Explain the decision tree (with flow chart) for selection of most appropriate manufacturing platform according to dose for formulation of low dose drugs.	(10)
2)	Define Intellectual Property Rights. Explain in detail about the criteria for patentability.	(10)
3)	What is Product Recall? Explain with a case study. Discuss the various types of Recall and reasons for the same.	(10)
4)	Discuss methods of manufacturing ointments on a small scale as well as large scale.	(10)
5)	Explain the various types of water treatment processes.	(10)
6)	Explain four quality control tests for parenterals.	(10)
7)	Explain the various methods used for the preparation of microcapsules.	(10)
8)	Mention the packaging accessories and explain any three.	(10)

Write short notes:

9A)	Bar coding.	(5)
9B)	Co-Processed excipients.	(5)

Write briefly on the following:

10A)	Factors affecting material flow.	(5)
10B)	Characteristics of ideal Warehouses.	(5)

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FIRST YEAR M. PHARM. DEGREE EXAMINATION - MAY 2017
SUBJECT: BIOPHARMACEUTICS AND PHARMACOKINETICS (PCE 602T)
(SPECIALIZATION: PHARMACEUTICS/INDUSTRIAL PHARMACY/PHARM. QUALITY ASSURANCE)
(2014 REGULATION)
Tuesday, May 23, 2017 (10.00 - 13.00 Hrs.)

Marks: 100 **Duration: 180 mins.**

Answer ALL the questions.

1) Using the method of residuals, determine the absorption rate constant of drug in blood when administered by extravascular route assuming that it follows one compartment open model. (10)

2) Explain the determination of biological half-life and clearance for a drug in blood when administered as IV bolus assuming that it follows one compartment open model. (10)

3) Using Michaelis-Menton equation, explain the non-linear pharmacokinetics of drug when administered as IV bolus assuming that it follows one compartment open model. (10)

4) Discuss the applications of Pharmacokinetics in Therapeutic Drug Monitoring and Dosage form design. (10)

5) Discuss on protein binding of drugs and its clinical significance. Give examples. (10)

6) What are the objectives of Bioavailability studies? How the BA BE studies are established? (10)

7) Discuss on Hepatic clearance of drugs? (10)

8) What is apparent volume of distribution? What is its significance? How it can be determined? Support your answers with suitable equations and graphs. (10)

Write short notes:

9A) Compartmental modelling of drugs. (5)

9B) Renal clearance determination. (5)

Write briefly on the following:

10A) Effect of Food on drug absorption. (5)

10B) Determination of AUC. (5)

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FIRST YEAR M. PHARM. DEGREE EXAMINATION - MAY 2017
SUBJECT: ADVANCES IN DRUG DELIVERY SYSTEMS (PCE 603T)
(SPECIALIZATION: PHARMACEUTICS / INDUSTRIAL PHARMACY)
(2014 REGULATION)
Thursday, May 25, 2017 (10.00 - 13.00 Hrs.)

Marks: 100 **Duration: 180 mins.**

Answer ALL the questions.

1)	Explain different approaches to improve oral bioavailability of drugs in brief.	(10)
2)	What are different microencapsulation methods? Explain any ONE important method in detail.	(10)
3)	Classify injectable controlled release formulations and explain any THREE formulations.	(10)
4)	What are different types of pulmonary drug delivery systems? Explain any TWO important systems.	(10)
5)	Discuss the evaluation aspects of transdermal drug delivery systems.	(10)
6)	Discuss the theories of muco-adhesion in detail.	(10)
7)	Define microspheres. Mention different methods of preparation of microspheres and explain any TWO methods.	(10)
8)	Discuss the composition and principle of (i) expansive and (ii) effervescence based gastro-retentive dosage forms.	(10)

Write short notes:

9A)	Ocular drug delivery device. (Any one type)	(5)
9B)	Define and classify polymers with examples.	(5)

Write briefly on the following:

10A)	Any TWO approaches to deliver vaccine based formulations.	(5)
10B)	Definition and classification of liposomes.	(5)

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FIRST YEAR M. PHARM. DEGREE EXAMINATION - MAY 2017
SUBJECT: PHARMACEUTICAL PRODUCT DEVELOPMENT (PCE 604T)
(SPECIALIZATION: PHARMACEUTICS / INDUSTRIAL PHARMACY)
(2014 REGULATION)
Saturday, May 27, 2017 (10.00 - 13.00 Hrs.)

Marks: 100 **Duration: 180 mins.**

Answer ALL the questions.

1)	Explain the preliminary preformulation and molecular optimization with respect to stability of drug substance.	(10)
2)	Explain the importance of developing new pharmaceutical excipient and write a note on direct compression excipients. (6+4 = 10 marks)	(10)
3)	Discuss in detail the factors affecting solubility of drugs.	(10)
4)	Explain generic drug review process with the help of flowchart and write briefly about Hatch-Waxman Act. (6+4 = 10 marks)	(10)
5)	Explain in detail the dissolution apparatus as per IP.	(10)
6)	Enlist the chemical degradation pathways. Describe any two pathways with examples.	(10)
7)	Explain graphical representation of data and measures of central tendencies. (5+5 = 10 marks)	(10)
8)	Explain various stages in optimization methodology.	(10)

Write short notes:

9A)	Principle and applications of Thermo Gravimetric Analysis (TGA).	(5)
9B)	Quality by Design (QbD).	(5)

Write briefly on the following:

10A)	Effect of compression force on dissolution of drugs.	(5)
10B)	Types of Variables.	(5)