BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BPHARM **SEMESTER : VIII**
BRANCH: PHARMACY **SESSION : SP/18**

SUBJECT: PS8403 DRUG DELIVERY SYSTEM

TIME: 3 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Discuss the advantages of Sustained delivery over Conventional delivery for a drug. [2]

Q.1(b) Justify with proper logic how the following are advantages for controlled delivery: [4]
a. Improved Stability
b. Improved bioavailability
c. Increased efficacy
d. Reduced doses

Q.1(c) Discuss the rationale for site specific delivery with proper justifications. [6]

Q.2(a) Discuss the three major parameters that are used to characterize drug pharmacokinetics. [2]

Q.2(b) What is the relation between initial loading dose and maintenance dose? Calculate the bioavailability factor, F, if AUC (i.v) is 40mg.hr/litre and AUC(oral) is 100mg.hr/litre. [4]

Q.2(c) Discuss the advantages and limitations of Sustained dosage forms. What should be the molecular weight and solubility of a drug that is to be considered as a candidate for sustained delivery. [6]

Q.3(a) Fill in the blanks [2]
i. Dm=Am/?
ii. Dm=kro(?)/F
iii. Kro=ke . ?
iv.Di=?/f.F

Q.3(b) Explain the reservoir type of device with its mechanism of action with proper graphical representation. [4]

Q.3(c) Explain Ion exchange resins systems with the help of proper diagram & Floating systems as drug delivery devices. [6]

Q.4(a) Discuss the advantages and disadvantages of Liposomes as drug delivery devices. [2]

Q.4(b) Discuss the factors affecting liposome preparation methods. [4]

Q.4(c) Discuss the advantages, limitations along with the method of preparation of the following techniques of liposome preparation: [6]
a. Sonication method
b. Freeze thawing cycle method
c. French Pressure Cell extrusion method

Q.5(a) Discuss the rationale for Polymer controlled drug delivery system. [2]

Q.5(b) Discuss the Osmotic controlled delivery system with proper diagrams of the device. [4]

Q.5(c) Explain the mechanisms of the following: [6]
(i) Vapour Pressure activated delivery device
(ii) Magnetism activated delivery
(iii) Hydration activated delivery systems

Q.6(a) What should be the ideal properties of smart drug delivery systems? [2]

Q.6(b) Discuss the different types of triggers for stimuli sensitivity. Explain with figures the three general categories of Polymeric systems employed for exhibiting stimuli responsiveness. [4]

Q.6(c) i. Discuss the factors responsible for stimuli responsiveness in a polymer. [6]
ii. Explain how you will carry out the evaluation tests for stimuli sensitive devices:
a. Swelling test
b. Dye absorption test
c. Oscillatory swelling test

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Q.7(a)	Discuss the six goals of personalized medicine in drug development.	[2]
Q.7(b)	What is targeted delivery? Discuss the rationale for targeted delivery. What is Active & Passive targeting?	[4]
Q.7(c)	What is the importance of receptor topography in targeting? Explain the Salting out method for nanoparticle preparation? Discuss the importance of prodrugs? Discuss the advantages of Resealed erythrocytes as delivery devices. What are cosmeceuticals?	[6]

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