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

CLASS: MPHARM **SEMESTER : I**
BRANCH: PHARMACY **SESSION : MO/19**

SUBJECT: MPH102T DRUG DELIVERY SYSTEM

TIME:3hours **FULL MARKS: 75**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 15 marks and total 105 marks.
2. Candidates may attempt any 5 questions maximum of 75 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) Illustrating the mechanism of transdermal permeation, discuss the development of Transdermal Therapeutic System. [7]

Q.1(b) Enlist and discuss the parameters employed for the evaluation of transdermal patch. [8]

Q.2(a) Highlight the routes for delivery of Protein and Peptides, in short. [9]

Q.2(b) Summarize the need and types of vaccines and antigens. State the mechanism of vaccines. What do you mean by single shot vaccine? [6]

Q.3(a) Discuss the factors affecting mucoadhesion in oral cavity. [7]

Q.3(b) Summarize the various approaches of floating drug delivery systems. [8]

Q.4(a) Discuss the precorneal factors that influence the bioavailability of the topically applied ophthalmic drugs. [7]

Q.4(b) Discuss the various occular barriers preventing the absorption of drugs in detail. [8]

Q.5(a) Discuss the methods to increase drug delivery via buccal route. [7]

Q.5(b) Write in short about the following: [8]

i. Blood aqueous barrier
ii. Blood retinal barriers
iii. Methods of examining the Blood retinal barrier
iv. Role of Influx and efflux transporters in eye.

Q.6(a) Discuss the rationale for site specific controlled drug delivery systems. [7]

Q.6(b) i). Calculate the maintenance dose “Dm” for a drug, where the rate zero order rate constant “kr0” is 57mg/hr, average drug level constantly to be maintained for a period of time “(h-Tm)” is 8hours with bioavailability factor “F” is 0.83. [3+2+3=8]
ii). Calculate the bioavailability factor “F”, where the area under the curve for oral dose is 108.5 mg.hr/L and that for i.v dose are under the curve is 200mg.hr/L.
iii). Calculate the maintenance dose “Dm” of a drug, which shows zero order rate constant “kro” of 50mg/hr and the average drug level constantly to be maintained for a period of time “(h-Tm)” is 4 hours , with bioavailability factor “F” is 1.3.

Q.7(a) Differentiate between membrane permeation controlled delivery and matrix diffusion controlled delivery with proper equations and graphs, wherever required citing suitable representatives of such devices. [7]

Q.7(b) i). Discuss the mechanistic analysis of polymer membrane permeation drug delivery system. [5+3=8]
ii). Discuss the hydrodynamic pressure activated drug delivery system.

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