

ASTU M.Ph. 07.06.14 (Reg)

Total No. of printed pages = 6

**PY134202**

Roll No. of candidate

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2014

(Even Semester)

**NOVEL DRUG DELIVERY SYSTEMS**

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

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

1. Multiple choice questions :  $1 \times 10 = 10$

(i) Drugs that are lipophilic and with molecular weight in the range of 100-400 prefer

(a) Passive diffusion

(b) Pore transport

(c) Ion-pair transport

(d) Endocytosis

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(ii) \_\_\_\_\_ is a problem in brain drug delivery.

(a) Permeability results only at sub therapeutic conc in most cases

(b) Protein binding

(c) All of the above

(d) None of the above

(iii) \_\_\_\_\_ is expected while formulating a controlled release system.

(a) Kinetic predictability

(b) Batch reproducibility

(c) All of the above

(d) None of the above

(iv) The role of impregnating agent in ion activated drug delivery systems is to

(a) increase the rate of swelling

(b) decrease the rate of swelling

(c) All of the above

(d) None of the above

(v) Mucociliary action affects the \_\_\_\_\_ of mucoadhesive preparations in the \_\_\_\_\_

- (a) mucoadhesion, vaginal cavity
- (b) residence time, nasal cavity
- (c) mucoadhesion, GI tract
- (d) residence time, Buccal cavity

(vi) If the local pH increases above the pKa of the polymer, it results in \_\_\_\_\_

- (a) ionization
- (b) unionization
- (c) no significant change
- (d) neutralization

(vii) \_\_\_\_\_ is a way to make a delivery system reside in stomach for longer period.

- (a) Use of high density particles / materials
- (b) Use of carbon dioxide releasing composition
- (c) Modification of size / shape
- (d) All of the above

(viii) The contraceptive activity by copper medicated intrauterine device is due to

- (a) Oxidation of copper in body fluid
- (b) The shape of the IUD
- (c) The surface area of the copper wire
- (d) The ability of IUD to be in position

(ix) \_\_\_\_\_ is TRUE

- (a) Vegetable oils produce more stable multiple emulsions than mineral oils
- (b) Too much emulsifier can cause destabilization
- (c) All of the above
- (d) None of the above

(x) Hydrogels may exhibit volume changes in response to external stimuli as

- (a) Temperature
- (b) Electric field
- (c) All of the above
- (d) None of the above.

2. Answer any *ten* questions : 4×10=40

- (a) Describe in short any two methods employed in preparation of hydrogels in drug delivery.
- (b) List out the possible mechanisms that lead to instability of w/o/w emulsions.
- (c) Write a short note on copper IUDs'.
- (d) List out the advantages of monoclonal antibodies.
- (e) Limitations / disadvantages of nanoparticles.
- (f) Write a short note on the pharmacokinetics involved in protein drug delivery systems.
- (g) Write a short note on Pilocarpine ocuserts.
- (h) How would you study the irritation that could be caused by a mucosal drug delivery system ?
- (i) What are the factors that would favour the development of implantable drug delivery systems ?
- (j) Write short notes on pressure sensitive adhesives employed in the formulation of transdermal drug delivery systems.

- (k) List out the various techniques employed in the design of gastro retentive drug delivery systems.
- (l) Describe the preparation of microspheres by ionic-gelation method.

3. Answer any *five* questions : 10×5=50

- (a) Write about the various evaluation tests that could be performed for transdermal drug delivery systems.
- (b) Write in detail about the various techniques employed in the preparation of liposomes.
- (c) Discuss in detail about vaginal drug delivery systems.
- (d) Discuss about the biopharmaceutical factors to be considered in the design of per oral controlled release drug delivery systems.
- (e) Write a detailed note on preparation of nanoparticles.
- (f) Write detailed notes on preparation methods and formulation considerations for preparing multiple emulsions.\*
- (g) Discuss in detail about injectable controlled release formulations.