

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

CLASS: MPHARM
BRANCH: PHARMACY

SEMESTER : II
SESSION : SP/18

SUBJECT: MPH2001 MOLECULAR PHARMACEUTICS (NT & TD)
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.
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- Q.1(a) Discuss the rationale for targeted delivery systems. Discuss the goals of personalized medicine in drug development. [6]
- Q.1(b) Discuss in details the rationale for site specific delivery. [6]
- Q.2(a) What is the EPR-effect? Discuss the following EPR techniques related to abnormalities of tumor vasculature: [2+2+2]
- I. Rise of blood pressure by use of angiotensin
 - II. The vasodilation effect of NO
 - III. The use of Photosensitizer
- Q.2(b) Explain the use of PEGylation technique for nanoparticulate systems in the tumor therapy. What are the different types of PEGylation techniques? How will you determine the overall targeting efficiency for a delivery system? [3x2]
- Q.3(a) Discuss the general methods of preparation of liposomes. Give reasons why following method of preparation of Liposomes are more advantageous: [6]
- i. Freeze thawing method more advantageous than lipid hand shaking method.
 - ii. Reverse Phase evaporation method more efficient than Sonication method.
- Q.3(b) What is active drug loading in liposomes? Discuss the parameters used for characterization of liposomes. [6]
- Q.4(a) What are Lipoplexes composed of? When was the first cationic polyplex proposed? Discuss the method for preparation of tumor targeted lipoplexes for delivery of Small interfering RNAs(SiRNAs). What is the size range of Lipoplex? What are Dendrosomes? [6]
- Q.4(b) Discuss the Sonoporation & Hydrodynamic based transfection approaches used for targeted gene delivery. Discuss the advantages and limitations of the following routes for targeted gene delivery below: [6]
- i. Oral route
 - ii. Intravenous
 - iii. Intraperitoneal
 - iv. Direct injection
- Q.5(a) Enlisting the applications, describe the preparation of monoclonal antibodies. [6]
- Q.5(b) Discuss the factors affecting drug absorption through intranasal drug delivery system. [6]
- Q.6(a) Discuss in detail about preparation, evaluation and application of microcapsules. [6]
- Q.6(b) Write a note on evaluation of aerosol package. [6]
- Q.7(a) Define Phytosome. Write a detailed note on preparation and characterization of Phytosome. [6]
- Q.7(b) What is Aquasome? Write down the composition, properties, advantages and application of Aquasomes. [6]

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