

M. PHARMACY FIRST YEAR SECOND SEMESTER EXAMINATION - 2025

Molecular Pharmaceutics (Nano Tech and Targeted DDS)

Time: Three hours

Full Marks: 75

Answer any five questions taking at least one from each group.

Group A

1. Write about central nervous system diseases. Draw a schematic diagram with discussion illustrating drug transport across the blood-brain barrier. Write about chemical delivery strategies used in brain-targeted drug delivery. 4+5+6=15
2. Define niosomes. Write about the advantages of niosomes. Discuss the types of niosomes. Explain the thin film hydration method used for the preparation of niosomes. Describe the dermal and transdermal applications of niosomes. 1+3+2+4+5=15

Group B

3. Write short notes on the following 5*3=15
 - a) Phytosome
 - b) Propellants in aerosol dosage form
 - c) Mechanisms of particle deposition in respiratory tract
4. a) Define DPI. Micronized drug in DPI formulations have poor flow properties. Discuss how to overcome the problem. Write notes on aerosolized emulsions. 1+2+4
b) What are nebulizers? What are the various types of nebulizers? Discuss pulmonary drug delivery to treat tuberculosis. 1+2+5

Group C

5. Define genetic engineering and recombinant DNA technology. What are the problems associated with gene therapy? What is antisense therapy? What are its advantages? How will you design an antisense oligomer? Describe the transcription process in details. 2+2+1+2+2+6=15
6. What is called biotransformation? How it is important industrially? How can you improve the process? Give an example of a biotransformation process used industrially for developing API. Define the terms cloning and transposon. Describe stepwise an ideal cloning procedure. 1+2+2+2+2+6=15

Group D

7. Write the advantages of microencapsulation. Write the types of micro encapsulation. Explain multi orifice centrifugal methods with diagram. 2+3+(5+5)=15
8. Write the strategies of drug targeting. Write in detail about evaluation of nanoparticles. 7+8=15
9. What is nanoparticle. Classify nanoparticle. Write in details about general preparation methods. 2+3+10=15