

M. PHARMACY FIRST YEAR SECOND SEMESTER - 2024**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. What is hnRNA? How are they synthesized in a system? How is it separated from DNA? How are mRNA formed? Provide the detailed process of protection of 5' end of mRNA after the synthesis. While moving to a single direction, how DNA polymerase III synthesizes two strands of DNA in two different directions? What is called DNA melting? 1+3+1+2+3+3+2 = 15

2. Define the terms genetic engineering and recombinant DNA technology. What are vectors? Give the characteristics of an ideal vector. Describe how a gene is cloned in *E. coli* competent cells. What are antisense therapies? Write its advantages over conventional gene therapy. (1^{1/2} x 2)3+1+3+3+2+3= 15

Group B

3. What is the need for microencapsulation. Write the types of micro encapsulation. Explain any two methods with diagram. 4+3+(4+4)=15

4. Write the strategies of drug targeting. Write in detail about evaluation of nanoparticles. 7+8=15

5. What is liposome. Write advantage and disadvantage. Write in details about general preparation method and evaluation of liposome. 2+2+2+9=15

Group C

6. Define aerosols. What is aerodynamic diameter? What is its significance? Discuss formulation aspects of aerosol? Write the quality control tests of aerosol formulations. (2+2+3+5+3)

7. Write short notes on any two of the following: (7.5*2)

a) Formulation of DPI. b) Phytosomes c) Pulmonary drug delivery for treatment of tuberculosis.

Group D

8. Define magic Bullet. Write about the discovery of first magic Bullet-Salvarsan. What is targeted drug delivery system? Write about the prodrug approach for the delivery of the drug to the brain. 2+5+2+6=15

9. What is Aquasome? What are the rationale behind the development of Aquasome? What are the compositions of Aquasome? Write about the role of disaccharide in Aquasome. 2+5+4+4=15