**A** **Reg. No. :** | | | | | | | | | | |

## Question Paper Code: 99B07

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Elective

Biomedical Engineering

19UBM907- Drug Delivery Systems

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

| | | |
|---|---|---|
| 1. | Define bioavailability of drugs. | CO1- U |
| 2. | Define half -life of a drug. | CO1- U |
| 3. | Define total capacity of ion exchange resins. | CO2- U |
| 4. | Analyze the major routes in which the drug is delivered through muco adhesive systems. | CO3- Ana |
| 5. | Define a parental system. | CO1- U |
| 6. | Mention the application of polymeric microspheres. | CO1- U |
| 7. | Mention the applications of transdermal patches. | CO1- U |
| 8. | Define permeation enhancers. | CO1- U |
| 9. | Analyze the advantages of pulmonary drug- delivery system. | CO3- Ana |
| 10. | Compare targeted drug delivery with conventional drug delivery. | CO3- Ana |

PART – C (5 x 16= 80 Marks)

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|---|---|---|---|---|
| 11. | (a) | Analyze the biological and physiochemical properties of drug molecule influencing the design of controlled release drug delivery system. | CO3- Ana | (16) |
| | | Or | | |
| | (b) | You are a scientist and have decided to formulate a controlled drug for a chronic disease. Discuss the considerations and predict the approaches that you will follow in designing a drug and the methods to examine bioavailability. | CO3- Ana | (16) |

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|---|---|---|---|---|
| 12. | (a) | Illustrate the role of osmosis in Osmotic controlled oral drug delivery system and elucidate the types, formulation and factors to be considered in designing Osmotic pressure-controlled DDS. | CO2- U | (16) |
| | | Or | | |
| | (b) | Illustrate the mechanism, classification and methods of preparation of diffusion and dissolution controlled oral drug delivery systems. | CO2- U | (16) |
| 13. | (a) | Classify polymers and predict the applications of polymers in controlled drug delivery systems. Elucidate the features of biodegradable and natural polymers. | CO1- U | (16) |
| | | Or | | |
| | (b) | Explain the approaches and applications of implantable drug delivery systems. | CO1- U | (16) |
| 14. | (a) | Sujan is a scientist and he is planning to design a controlled drug whose dosage delivery is not affected even if the person vomits or has diarrhea. Assume yourself as a junior scientist, help him in writing a report analyzing the factors and approaches for designing such drugs. | CO3- Ana | (16) |
| | | Or | | |
| | (b) | Adhithi has designed a drug that be delivered with the aid of electric voltage and ultra sound transdermally. Analyze all possible approaches, mode of action, application, advantage and dis-advantage of the drug that she has formulated. | CO3- Ana | (16) |
| 15 | (a) | Illustrate the mechanism and approaches for targeted drug delivery. | CO2- App | (16) |
| | | Or | | |
| | (b) | Illustrate the mechanism and features of targeted drug delivery in liver. | CO2- App | (16) |