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Question Paper Code: 99B07

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

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)

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)

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)