

Question Paper

Exam Date & Time: 10-Jan-2024 (02:30 PM - 05:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

VII SEMESTER B.TECH END SEMESTER MAKE UP EXAMINATIONS, JAN 2024

DRUG DELIVERY [BME4063]

Marks: 50

Duration: 180 mins.

A

Answer all the questions.

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

- 1) Compare reversible and irreversible drug-receptor interactions in pharmacodynamics process. (4)
- A)
- B) Explain graphically, how you would determine the 'therapeutic range' of a drug. (3)
- C) Amiodarone has a volume of distribution of 4600L. If the plasma concentration is 1 mg/L, (3)
- (i) How much of drug is in the body?
- (ii) How much of drug is in the plasma? (assume that the volume of plasma is 3L)
- (iii) How much of drug is in the tissue?
- 2) Analyze and predict the feasibility of the type of passive diffusion possible for each drug based on the following data: (3)
- A)
- | Drug | Log P | Log $D_{6.0}$ |
|------------|-------|---------------|
| Atenolol | 0.10 | -2.74 |
| Famotidine | -0.40 | -2.06 |
| Ibuprofen | 3.72 | 2.12 |
- .
- B) How would you restrict the tubular reabsorption of the drug to enhance renal clearance in the following cases: (i) Acidic and basic drugs, (ii) less urine flow. Justify your views. (3)
- C) How would you measure the total body clearance (consider i.v administration of the drug)? (4)
- 3) Consider an extraction unit, where in $C_a=160\text{mg/L}$, $C_v=100\text{ mg/L}$, and $Q=2\text{L/h}$. Find out the rate of extraction, clearance and the fraction extracted. (4)
- A)
- B) Compare single layer drug in adhesive and multiple layer drug in adhesive transdermal patches. (3)
- C) Highlight the advantages of transdermal drug delivery system. (3)
- 4) Differentiate between active and passive immunity. (2)
- A)

- B) Analyse the steps involved in the preparation of small pox vaccine. (4)
- C) Discuss the general method of preparation of un-purified Diphtheria formol toxoid. Explain all methods associated with purification of formol toxoid (FT). (4)
- 5) Analyze the key features of passive drug targeting. (3)
- A)
- B) Analyze the role of EPR effect in passive drug targeting. (3)
- C) Explain different type of transport mechanism pertaining to transport of drug across blood brain barrier (BBB). (4)

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