Question Paper

Exam Date & Time: 05-Dec-2023 (02:30 PM - 05:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

VII SEMESTER B.TECH END SEMESTER EXAMINATIONS, NOV/DEC 2023

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)		Justify the pharmacodynamics behaviour of the following drugs: (i) Omeprazole (proton pump inhibitor), (ii) Calcium carbonate (antacid).	(4)
	A)		
	B)	100 mg of Cyclosporine, whose effective dose is 80 mg, is administered orally to a patient. Calculate the drug's bioavailability factor and the amount lost due to its first pass metabolism through liver.	(3)
	C)	Warfarin has a volume of distribution of 8L. If the plasma concentration of warfarin is 1mg/L: (i) How much drug is in the body? (ii) How much drug is in the plasma? [Assume that the volume of plasma (Vp) is 3L]. (iii) How much drug is in the tissue?	(3)
2)		How do you determine drug's partition coefficient? Explain.	(3)
	A)		
	B)	A drug Ciprofloxacin, which is 20% bound to proteins, has a renal clearance of 300mL/min. What are the relative values of active secretion and tubular resorption?	(3)
	C)	Analyze the role of the following in hepatic metabolism: (i) Phase-I and Phase-II processes, (ii) CYP system, (iii) Drug-Drug interaction.	(4)
3)		Infer, using a graph, the kinetics of drug metabolism [using Michaelis-Menton equation V= (Vmax* Cp)/ (Km+Cp)] at (i) low drug concentration (ii) high drug concentration.	(4)
	A)		
	B)	Explain how microneedle based approach in transdermal drug delivery achieves painless drug delivery system.	(2)
	C)	Compare different types of transdermal patches.	(4)
4)		Differentiate between exotoxin and endotoxin.	(2)
	A)		
	B)	Discuss the general method of preparing tetanus toxoid. Highlight the purpose of using Toxoid Antitoxin Floccules (T.A.F).	(4)

	C)	How do the "Schick Test Toxin" and "Schick Control" function?	(4)
5)		Highlight the key functions of targeted drug delivery system.	(3)
	A)		
	B)	Differentiate between antibody directed enzyme prodrug therapy(ADEPT) and gene directed enzyme prodrug therapy (GDEPT).	(3)
	C)	Analyse the role of monoclonal antibody, linker and drug in the targeted ADC therapy for the management of cancer.	(4)

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