Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. Pharm. – SEMESTER – II • EXAMINATION – SUMMER • 2015

Subject Code: 2920201 **Date: 16-05-2015**

Subject Name: Drug Design and Discovery

Time: 10:30 am - 01:30 pm **Total Marks: 80**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Discuss a path of new drug discovery by rational approach.	**06**
	(b)	Why new drug discovery is essential? Which are the constrains in new drug discovery?	**05**
	(c)	Discuss in detail about different approaches used in new drug discovery?	**05**
Q.2	**(a)**	What are the methods used for lead optimization? Give basic principle and requirements of two widely used methods.	**06**
	(b)	How stereochemistry influence biological response? Discuss in detail with suitable example.	**05**
	(c)	Write a note on molecular dynamics	**05**
Q.3	**(a)**	Which are the physicochemical parameters used in Hansch LFER model? Give examples of two representative of each parameter and method of determining them experimentally.	**06**
	(b)	How can we validate Hansch model?	**05**
	(c)	Write a note on importance of bioisosterism in lead modification.	**05**
Q.4	**(a)**	How drug acts in the body? How activity of drug is represented? Which method is most preferable? Why?	**06**
	(b)	Write a note on CoMFA.	**05**
	(c)	Interpret following equation obtained through Hansch technique and give your suggestion for further lead modification. $\text{Log } I_{50} = 1.04(\pm 0.23)\,\pi - 0.83(\pm 0.18)\,\sigma - 0.66(\pm 0.20)\,Es + 4.32(\pm 0.35)$ $n = 19,\quad r = 0.943\quad r^2 = 0.889,\ s = 0.34,\ F_{3,15} = 22.8$	**05**
Q.5	**(a)**	How can we optimize the pharmacokinetics of lead without altering parent structure of compound? Discuss different methods used for it with suitable example.	**06**
	(b)	Write in brief about methods used for ligand based drug design.	**05**
	(c)	Write a note on virtual screening.	**05**
Q. 6	**(a)**	Lead molecule active *in vitro* doesn't guarantee similar potency *in vivo*. – Justify	**06**
	(b)	Give detail account on designing enzyme inhibitors.	**05**
	(c)	What are the importance of molecular mechanics in de novo drug designing? Which are the different algorithms used for its calculations?	**05**
Q.7	**(a)**	Which technique is preferred for designing drug when target structure is known? Which are the steps involve in this technique? What are the requirements for this technique?	**06**
	(b)	How target structure is derived? How can we determine binding site in the target?	**05**
	(c)	Write in detail about methods used to identify hit molecule.	**05**

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