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**CS/M.Pharm (Pharmaceutical Chemistry)/SEM-2/MPT-203(I)/09  
ADVANCED PHARMACEUTICAL CHEMISTRY – III  
SEMESTER – 2**



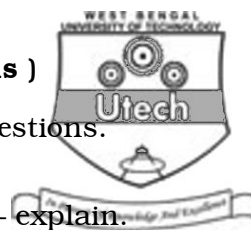
Time : 3 Hours ]

[ Full Marks : 70

**GROUP – A****( Multiple Choice Type Questions )**

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10
- i) The antihypertensive drug with a tetrazole nucleus is
- |               |                |                          |
|---------------|----------------|--------------------------|
| a) Diazoxide  | b) Valsartan   |                          |
| c) Toludipine | d) Fosinopril. | <input type="checkbox"/> |
- ii) The antihypertensive also useful topically to stimulate hair growth is
- |               |              |                          |
|---------------|--------------|--------------------------|
| a) losartan   | b) minoxidil |                          |
| c) nifedipine | d) esmolol.  | <input type="checkbox"/> |
- iii) Famotidine contains
- |                  |                   |                          |
|------------------|-------------------|--------------------------|
| a) furan ring    | b) imidazole ring |                          |
| c) thiazole ring | d) pyrrole ring.  | <input type="checkbox"/> |
- iv) For a molecule to exhibit antihistaminic activity the distance the aryl and aliphatic N should be
- |            |             |                          |
|------------|-------------|--------------------------|
| a) 5 — 6 Å | b) 4 — 5 Å  |                          |
| c) 3 — 4 Å | d) 6 — 7 Å. | <input type="checkbox"/> |
- v) Which of the following is not based on force field model ?
- |            |          |                          |
|------------|----------|--------------------------|
| a) MMFF94  | b) Sybyl |                          |
| c) PCMODEL | d) DOCK. | <input type="checkbox"/> |



**GROUP – B****( Short Answer Type Questions )**Answer any *three* of the following questions.

3 × 5 = 15

2. Esomeprazole is a beautiful example of 'chiral switch' — explain.
3.  $\beta$ -blockers should cause hypertension but these drugs reduce pressure — explain.
4. Write a note on 'predictive ADME' tools available and their importance in novel drug synthesis.
5. Explain briefly the main advantages of computational methods of drug discovery compared to laboratory experiments.
6. Describe the different force fields used in molecular modeling.

**GROUP – C****( Long Answer Type Questions )**Answer any *three* of the following questions.

3 × 15 = 45

7. Write the mechanism of action of 'Sartans'. Describe the SAR of 1, 4-DHP CCBs. Give the synthesis of diltiazem. 5 + 5 + 5
8. What is analog design ? Write the various strategies involved in analog design. Describe with an appropriate example, how fragments of lead molecule are designed. Write a note on natural sources of lead compounds. 1 + 3 + 6 + 5
9. Write down 'Schrödinger equation'. Explain how the 'quantum mechanics' is important for the field of molecular modelling of drugs with necessary derivations. What are the differences between MINDO and MNDO models ? 3 + 9 + 3
10. Write a brief explanatory note on the drug discovery process. 15



11. a) What are the main objectives of QSAR ? Point out the difference between the nature of parameters of De Novo model and Hansen model. Discuss the hypothesis behind the De Novo model.



b) Local anaesthetic activity of some procaine analogues are stated below :

| $R_1$                         | $R_2$                         | $R_3$                         | Biological activity |
|-------------------------------|-------------------------------|-------------------------------|---------------------|
| Cl                            | NO <sub>2</sub>               | CH <sub>3</sub>               | 25%                 |
| NO <sub>2</sub>               | Cl                            | C <sub>2</sub> H <sub>5</sub> | 52%                 |
| CH <sub>3</sub>               | C <sub>2</sub> H <sub>5</sub> | Cl                            | 20%                 |
| C <sub>2</sub> H <sub>5</sub> | CH <sub>3</sub>               | C <sub>2</sub> H <sub>5</sub> | 60%                 |
| H                             | Cl                            | H                             | 98%                 |
| C <sub>2</sub> H <sub>5</sub> | H                             | Cl                            | 70%                 |
| CH <sub>3</sub>               | CH <sub>3</sub>               | Cl                            | 55%                 |
| NO <sub>2</sub>               | H                             | H                             | 65%                 |
| Cl                            | Cl                            | H                             | 85%                 |

Apply the regression model on this set of data and state the resultant number of sets generated for solution ( matrix construction not needed ).

8 + 7

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END