Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/M.Pharm/SEM-2/MPT-203(1)/2011
2011
ADVANCED PHARMACEUTICAL CHEMISTRY – III

Time Allotted : 3 Hours   *Full Marks :* 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

   i)   van der Waals volume (V_W) is expressed in

       a) $cm^3 / mole$ b) $cm^2 / mole / molecule$

       c) $\sqrt{cm^3 / mole^2}$ d)   none of these.

    ii)   Hammett equation accounts for which of the following effects that influences the reaction rates ?

       a)   Field effect   b)   Inductive effect

       c)   Resonance effect   d)   All of these.

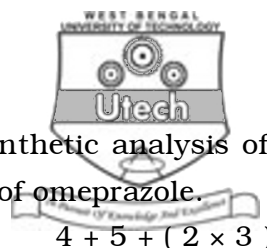   iii)   The antihypertensive drug with a tetrazole nucleus is

       a)   dioxide   b)   valsartan

       c)   toludipine   d)   fosinopril.

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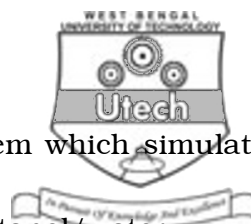
iv) In Hansch analysis, the solvent system which simulate biological environment is

    a) acetone/water   b) *n*-octanol/water

    c) *n*-butanol/water   d) ether/water.

v) The naturally occurring lead compound lovastatin is obtained from

    a) plant kingdom   b) microbial world

    c) marine world   d) animal sources.

vi) Conformational analysis involves all of the following *except*

    a) Local and Global energy minima

    b) Molecular dynamics

    c) Monte Carlo simulations

    d) Pharmacophore mapping.

vii) A proton pump inhibitor which contains fluorine in its structure is

    a) Tenatoprazole   b) Esomeprazole

    c) Pantoprazole   d) Rabeprazole.

viii) Extrathermodynamic equation is also known as

    a) Hansch equation

    b) Free Wilson equation

    c) Hammett equation

    d) Schrödinger's equation.

ix) Famofidine contains

    a) Furan ring   b) Imidazole ring

    c) Thiazole ring   d) Pyrrole ring.

x) The M.O.A. of rosiglitazone is

    a) Insulin releasing agent

    b) PPAR, agonist

    c) Increased cellular uptake of glucose

    d) Reduced release of insulin.

xi) Meer-Wein alkylation is involved in the synthesis of

    a) Glipizide   b) Nateglinide

    c) Ciglitazone   d) Tolazamide.

xii) Which of the following is not based on Force field model ?

    a) MMFF94   b) Sybyl

    c) PCMODEL   d) DOCK.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.   3 × 5 = 15

2. Write a note on electronic and steric parameters used in Hansch analysis.

3. Write shortly on the articipated benefits of pharmacogenomic study.

4. Esomeprazole is a beautiful example of 'chiral switch'. Explain.

5. Write a note on energy minimization technique.

6. Enumerate briefly about alphaglucosidase inhibitors as novel antidiabetics.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.   3 × 15 = 45

7. Write the mechanism of action (M.O.A) of 'Sartans'. Describe the SAR of 1, 4-DHPCCBs. Give the synthesis of Diltiazem.   3 + 7 + 5

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8. Write the M.O.A. of PPIs. Give the retrosynthetic analysis of omeprazole. Write two synthetic pathways of omeprazole.

$$4 + 5 + (2 \times 3)$$

9. a) Derive Hammett equation and extend it to the biological field to obtain the famous Hansch equation.

b) Why is dose against fixed response (DFR) model preferred in QSAR study ?

c) Why ρ is treated as constant in Hansch model ?

$$10 + 3 + 2$$

10. a) What is the importance of molecular modelling in drug design ? Give some examples.

b) Write shortly on the involvement of molecular mechanics and quantum mechanics in molecular modelling. $7\frac{1}{2} + 7\frac{1}{2}$

11. a) What are the main objectives of QSAR ?

b) What are the hypotheses of Free-Wilson analysis ?

c) Point out the differences between Hansch model and Free-Wilson model.

d) What is π parameter ? How can you determine π parameter and ideal π valve ? $3 + 2 + 3 + 7$