

Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS / B.PHARM (NEW) / SEM-2 / PT-204/ 2011**

**2011**

**PHARMACEUTICAL CHEMISTRY ( ORGANIC CHEMISTRY )**

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 × 1 = 10

- i) The shape of a *p* orbital is
- |              |                 |
|--------------|-----------------|
| a) oval      | b) spherical    |
| c) dumb-bell | d) rectangular. |
- ii) Which of the following substances is converted into a hydrocarbon on reaction with water ?
- |   |  |
|---|--|
| a) $\text{CH}_3\text{CH}_2\text{OMgBr}$ | b) $\text{CH}_3\text{CH}_2\text{NH}_2$ |
| c) $\text{CH}_3\text{CH}_2\text{MgBr}$  | d) $\text{CH}_3\text{COOCH}_3$ .       |

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- iii) Lindlar catalyst is
- a)  $\text{NaNH}_2$
  - b)  $\text{Li AlH}_4$
  - c)  $\text{Pd/BaSO}_4$  in quinoline
  - d)  $\text{Zn/Concentrated HCl}$ .
- iv) Which compound will show Iodoform test ?
- a) Ethanol
  - b) Methanol
  - c) Benzoic acid
  - d) Oxalic acid.
- v) Fehling's solution contains
- a) Na-K tartarate
  - b) Na-K-cuprate
  - c) Ammoniacal silver nitrate
  - d) Na-K oxalate.
- vi) Compound X reacts with sodium ethoxide to give diethyl ether. The compound X is
- a) Methyl bromide
  - b) Isopropyl bromide
  - c) Propyl bromide
  - d) Ethyl bromide.

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vii) Torsional strain in ethane is a result of

- a) repulsion between electrons in bonds
- b) repulsion between nonbonding electrons
- c) strain in bond angles
- d) molecules being forced too close together.

viii) Magnetic quantum numbers of orbitals indicates

- a) special orientation      b) shape
- c) size                              d) direction of spin.

ix) Total No. of electrons in a sub-shell is

- a) twice the No. of orbitals
- b) thrice the No. of orbitals
- c) equal to the No. of orbitals
- d) none of these.

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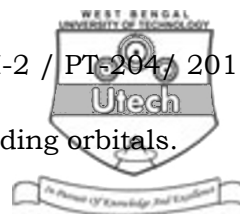
- x) Tautomers are
- a) resonance structures
  - b) enol and keto structures
  - c) mirror images
  - d) enantiomers.
- xi) Friedel-Crafts acylation reactions give
- a) monoalkylation
  - b) polyalkylation
  - c) monoacylation
  - d) polyacylation.
- xii) in,  $C \equiv N :$ , there is
- a)  $sp^3$  hybridisation
  - b)  $sp$  hybridisation
  - c)  $sp^2$  hybridisation
  - d) no hybridisation.

### GROUP - B

#### ( Short Answer Type Questions )

Answer any *three* of the following.  $3 \times 5 = 15$

2. Arrange the following compounds in order of decreasing activity towards  $S_N2$  reaction with proper explanation :
- Methyl chloride, t-butyl chloride, ethyl chloride, isopropyl chloride.



3. Differentiate between bonding and antibonding orbitals.
4. Explain why the melting point of ionic compounds is much higher than that of non-ionic compounds with proper example.
5. Compare the basicity of primary, secondary and tertiary amines.
6. Outline the Bayer strain theory.

**GROUP - C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. a) What are Epoxides ? Write down the I.U.P.A.C. system of nomenclature for Epoxides.
- b) Briefly explain the Huckel rule of aromaticity.
- c) i) Define & classify ethers with examples.  
ii) Describe the molecular structure of ether.

5 + 4 + 6

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8. a) Define and classify alcohols.
- b) Explain and compare the acidity of 1°, 2° and 3° alcohols.
- c) Why is alcohol highly soluble in water and solubility decreases with the increase of the length of alkyl chain ? Explain. 5 + 5 + 5
9. Prepare any *five* of the following : 5 × 3
- a) Propionic acid from acetic acid
- b) Allyl chloride from propane
- c) 2-Butanol from Acetylene.
- d) Acetone from Acetylene.
- e) 1, 4-Dioxane from ethylene
- f) Isopropyl alcohol from acetic acid.
10. Write down any *three* of the following reactions : 3 × 5
- a) Claisen-Schmidt reaction
- b)  $\alpha$ -Selenation
- c) Stork-Enamine reaction

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- d) Michael addition
- e) Mannich reaction
- f) Claisen condensation.

11. What is isomerism ? Classify it. Explain R, S system for determination of absolute configuration of asymmetric carbon. Write about the different elements of symmetry. What are enantiomer heptadiene and diastereomer ? Give example. Write the stereo-chemical structure of ( 2-E ), ( 5-Z )-heptadiene. 1 + 2 + 5 + 4 + 2 + 1

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