Name :	Ulledh
Roll No. :	An Annual Westminister Text Danisland
Invigilator's Signature :	

### CS/B.PHARM/SEM-2/PT-204/2013

# 2013

# 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 :

 $10 \times 1 = 10$ 

- i) What happens when *n*-hexane is treated with  $Cr_2O_2$ supported over alumina at 600°C ?
  - a) Benzene b) Toluene
  - c) Methane d) Ethane.

ii) In which reaction, catalyst is not required ?

- a) Aromatization b) Diels-Alder reaction
- c) Pyrolysis d) Isomerization.
- iii) Reduction of acid chloride yields
  - a) aldehydes b) ketones
    - c) ethers d) ester.

[ Turn over



iv) As the molecular weight of alkanes increases, how do the boiling point and melting point change ?

- a) Boiling point increases, melting point increases
- b) Boiling point decreases, melting point decreases
- c) Boiling point increases, melting point decreases
- d) Boiling point decreases, melting point increases.
- v) Which of the following compounds is nonpolar?
  - a)  $CO_2$  b)  $CH_3Cl$
  - c)  $CH_3OH$  d)  $CHCl_3$ .
- vi) Optically active compounds are the compounds that
  - a) rotate the sunlight
  - b) rotate the polarized light
  - c) rotate the plane polarized light
  - d) produce polarized light.
- vii) Tautomers are
  - a) resonance structure b) enol & keto structures
  - c) mirror images d) enantiomers.
- viii) If an ester undergoes alkaline degradation then the pH of the medium will
  - a) increase b) decrease
  - c) remain the same d) none of these.

2

- ix) Grignard reagent is
  - a) benzyl chloride
  - b) alkyl magnesium halide
  - c) alkyl magnesium sulphide
  - d) sodium sulphocyanide.

2110

CS/B.PHARM/SEM-2/PT-204/2013

# x) Vicinal dihalide means

- a) two halogen atoms in one carbon
- b) two halogen atoms on two adjacent carbons
- c) one halogen atom in one carbon
- d) two same halogen atoms on two adjacent carbons.
- xi) How many isomers are possible for hexane ?
  - a) 4 b) 5
  - c) 6 d) 7.
- xii) Which of the following rings has the minimum angle strain ?
  - a) Cyclopentane b) Cyclohexane
  - c) Cyclopropane d) Cyclobutane.

## GROUP – B

## (Short Answer Type Questions)

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

- 2. What is octane number ? What is its importance in the chemistry of alkanes ? What is TEL ?
- 3. What do you mean by cis-trans geometrical isomerism ?
- 4. In case of methyl cyclohexane, methyl group if present at equatorial position will be more stable than axially placed methyl group. Why ?
- 5. An organic compound (A)  $C_3H_8O$ , on dehydration produces (B). (B) on ozonolysis yields one molecule acetaldehyde and one molecule of formaldehyde and (A) responds to Iodoform test. Identify (A) and (B) with proper justifications.
- 6. Differentiate between (a) alcohol and ethers, (b) aldehyde and ketone.

3

2110

[ Turn over



 $3 \times 15$ 

45

 $5 \times 3$ 

=

## GROUP – C

( Long Answer Type Questions)

Answer any *three* of the following.

- 7. a) The boiling points of alcohols are more than their corresponding alkanes. Why ?
  - b) Explain the acidity of primary, secondary and tertiary alcohols.
  - c) Explain the basicity of primary, secondary and tertiary amines.
  - d) How can you separate a pure optically active isomer from its racemic mixture ?
    3 + 4 + 4 + 4
- 8. Prepare any *five* of the following :
  - i) Propanoic acid from acetic acid
  - ii) 1, 4 dioxane from ethylene
  - iii) Cyclobutane from *n*-butane
  - iv) Acetone from acetylene
  - v) Diethyl ether from ethyl chloride
  - vi) Isopropyl alcohol from propylene.
- Explain Saytzeft rule with example. What do you mean by cracking ? What is the importance of cracking in pharmacy ?
   Describe SN<sup>1</sup> and SN<sup>2</sup> reactions.
- 10. Describe LCAO method of molecular orbitals in brief. Define degenerate, antibonding, nonbonding and bonding orbitals. Differentiate between molecular orbital theory and hybridisation theory. Define bond order. 5 + 4 + 4 + 2
- 11. a) Write shortly on Huckel's rule of aromaticity.
  - b) Write on any two methods of preparation of arenes.
  - c) Illustrate with equations, the important chemical properties of benzene and its homologues. 2 + 4 + 9

\_\_\_\_\_

2110