Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.PHARM(NEW)/SEM-2/PT-204/2012

2012

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) Molecule where the distance between two adjacent carbon atoms is maximum is

a) Ethane b) Ethyne

c) Benzene d) Ethene.

ii) Which one of the following reactions is a convenient method for the preparation of primary amine ?

a) Hofmann's reaction

b) acid hydrolysis of acetamide

c) reduction of the acid chlorides

d) Bayer-Villiger Oxidation.

iii) The Claisen condensation reaction between methyl formate and methyl acetate gives a / an

a) diketone b) diester

c) ketoester d) aldoester.

iv) A molecule is said to be chiral

a) if it contains plane of symmetry

b) if it contains centre of symmetry

c) if it cannot be superimposed on its mirror image

d) if it can be superimposed on its mirror image.

v) It is possible to distinguish between optical isomers

a) by using chemical test

b) by mass spectrometry

c) by IR spectroscopy

d) by polarimetry.

vi) Propene on reaction with Chlorine at 400°C produces

a) 1, 2-Dichloro propene

b) 2, 2-Dichloro propene

c) 2-Dichloro propene

d) 3-Chloro prop-1-ene.

vii) Alcoholic KOH is an example of

a) Oxidising agent b) Eliminating agent

c) Reducing agent d) Dehydrating agent.

viii) Synthetic rubber neoprene is prepared from

a) Chloroprene b) Butene

c) Acrylonitrile d) Ethylene.

ix) Brady's reagent is used for the detection of

a) Carbonyl group

b) Phenolic hydroxyl group

c) Alcololic hydroxyl group

d) None of these.

x) Acetylene (Ethyne) has

a) for σ and one π bonds

b) three σ and two π bonds

c) two σ and three π bonds

d) one σ and four π bonds.

xi) Which of the following items has the highest boiling point ?

a) Propane b) Dimethyl ether

c) Ethanol d) Water.

xii) In C-C, there is

a) sp^3 hybridization b) sp hybridization

c) sp^2 hybridization d) no hybridization.

GROUP – B

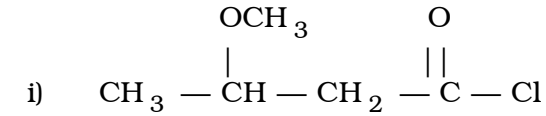
(Short Answer Type Questions)

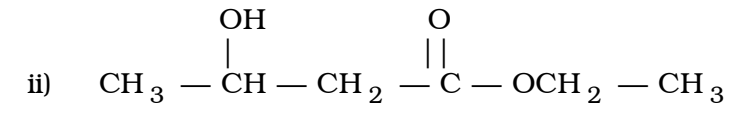
Answer any *three* of the following. $3 \times 5 = 15$

2. When alkanes are heated to high temperature then the carbon-carbon bonds break rather than carbon-hydrogen bonds. Explain why ?

3. How does TEL pollute the environment ?

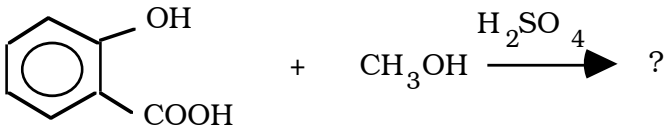
4. Write down the IUPAC name of the following compounds : $2\frac{1}{2} + 2\frac{1}{2}$

i) 

ii) 

5. Write down the Huckel rule for aromaticity.

6. Complete any *two* of the following reactions : $2\frac{1}{2} + 2\frac{1}{2}$

i) 

ii) $C_2H_5OH \xrightarrow[NaOH]{I_2} ?$

iii) $CH_3-\overset{O}{\overset{||}{C}}- + H-OC_2H_5 \longrightarrow ?$

GROUP – C

(Long Answer Type Questions)

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

7. a) Define hybridization and describe three hybridized states of carbon.

   b) Illustrate the formation of sigma bond and pi bond.

   c) Differentiate between bond energy and bond dissociation energy.

8. State a reaction via which you can get a single alkane using two different alkyl halide. Discuss Bayer's strain theory. Discuss about the nomenclature of Cycloalkanes and two synthetic procedures of the same. 2 + 3 + 4 + 6

9. a) An organic compound (A) C_4 H_9 Cl on reacting with aqueous KOH gives (B) and on reacting with alcoholic KOH produces (C) which also formed by passing the vapours of (B) over heated Cu. The compound (C) readily decolorizes bromine water. Ozonolysis of (C) gives (D) and (E). Compound (D) reacts with NH_2 OH to give (F) and the compound (E) reacts with NaOH to give alcohol (G) and sodium salt of (H) of an acid. (D) can also be prepared from progeny on treatment with water in presence of Hg^{++} and H_2 SO_4 . Identify (A) to (H).

b) Write on any two methods of preparation of arenes.

c) Illustrate with equations, the important chemical properties of benzene and its homologues. 6 + 4 + 5

10. Write down any *five* of the following reactions : 5 × 3 = 15

i) Mannich reaction

ii) Schmidt Reaction

iii) Knoevangel condensation

iv) Meerwein-Ponndorf-Verley's Reduction

v) Bayer-Villiger Oxidation

vi) Pinacol-pinacolone Rearrangement Reaction

vii) Rosenmund Reduction.

11. Define and classify isomerism with example. What do you mean by enantiomer, diastereomer, racemic mixture, optically active and meso compound ? What is absolute isomerism ? Define the Cahn-Ingold Prelog system for the R/S isomers. 6 + 5 + 4