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RN-6123

B. E. - II (Sem. III) (Chemical) Examination

May / June – 2010

Engg. Chemistry - II

(Organic Chemistry)

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. - 2 (Sem. 3) (Chemical)**

Name of the Subject :

☛ **Engg. Chemistry - 2**

☛ Subject Code No. : **6 1 2 3** ☛ Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Question 1 and 4 are **compulsory** and carries **20** marks each.

(3) Question 2, 3 and 5, 6 carries **15** marks each.

(4) Answer to the **two** sections should be written in **separate** answer books with figures and mechanism wherever necessary.

(5) At wts. H=1, C=12, N=14, O=16, S=32, Br=80, Cl=35.5, Na = 23, Ba = 137, Ag = 108.

SECTION - I

1 (a) Fill in the blanks : **10**

(i) The boiling point of an organic liquids if available in small quantity is usually determined by _____ method.

(ii) In copper wire test the halogens presence in an organic compound usually gives _____ colour flame.

(iii) The process of conversion of solid to gases directly on heating is called _____.

(iv) A molecule is said to be chiral if it cannot be _____ on it's mirror image.

(v) Diazotisation reaction can be effectively done with the help of _____ and _____ 0-5°C.

(vi) As per IUPAC name Acetamide is known as _____.

(vii) Sulphanilamide is used as a sulpha drug due to its_____ medicinal properties.

(viii) Criteria of purity of liquid is usually determined by its sharp _____.

(ix) _____ isomeric aromatic hydrocarbon are possible for C_2H_6O.

(b) Answer the following : **10**

(i) Explain in brief the combustion method for estimating carbon and hydrogen.

(ii) Explain Geometrical isomerism in detail.

2 Answer the following : (any **three**) **15**

(i) Show the optical isomerism in lactic and tartaric acid.

(ii) Explain :

(a) Vacuum distillation

(b) Sublimation.

(iii) Write the preparation, properties and uses of :

(a) Acetaldehyde

(b) Phenol.

(iv) Write in detail about primary, secondary and tertiary alcohols.

3 Answer the followings : (any **three**) **15**

(i) Write a note on :

(a) Steam distillation

(b) Fractional crystallisation.

(ii) Write the preparation, properties and uses of

(a) Citric acid

(b) α-naphthols.

(iii) Define isomerism. Write in detail about structural isomerism.

(iv) Explain the following qualitative test :

(a) Phthalic anhydride test for phenol

(b) Fehling test for aldehyde

(c) Mulikan barker test.

SECTION - II

4 (a) Fill in the blanks : **10**

(i) Covalent bonds are formed by mutual _____ of electrons.

(ii) Phenyl cyanide on acidic hydrolysis gives _____.

(iii) Cummene process is used to prepare _____.

(iv) Heterocyclic fission of an organic compound forms _____ and _____.

(v) As per IUPAC nomenclature the CH_3COCl is name as _____.

(vi) The full form of SN_1 reaction is _____.

(vii) In reaction mechanism the attacking reagents are named as a _____ and ____.

(viii) Organic compounds consisting hetero atoms other than carbon are known as _____ compounds.

(b) Answer the following : **10**

(i) Discuss the formation of Grignard Reagent and the precaution to be taken place within?

(ii) Explain electrophilic substitution reaction with mechanism.

5 Answer the following : (any **five**) **15**

(i) Explain nitration with mechanism.

(ii) Write the penetration, properties and uses of salicylic acid.

(iii) Discuss what is peroxide effect and explain its importance in organic reactions.

(iv) Toluene $\xrightarrow[\text{UV light}]{Cl_2}$ A $\xrightarrow{Cl_2}$ B $\xrightarrow{Cl_2}$ C

Identify product *A*, *B* and *C*.

(v) Classify the following groups as O/P or m-directing in an aromatic nitration reaction :

(i) $-CH_3$

(ii) $-NH_2$

(iii) $-Cl$

(iv) $-COOH$

(vi) Write the preparation, properties and uses of resorcinol.

(vii) Write the qualitative tests to detect the presence of acid and alcohol.

6 Answer the following : (any **three**) **15**

(i) Write the preparation (one), properties (two) and uses of (a) Cinnamaldehyde (b) Phloroglucinol.

(ii) Write a note on :

(a) Attacking reagent

(b) Mesomeric effect.

(iii) Write a note on different types of organic reactions.

(iv) Write the structural formula of the following :

(a) Citric acid

(b) Iodoform

(c) Acetophenone

(d) Thiophene

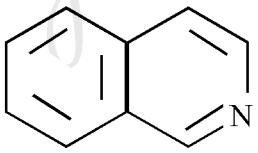
(e) Propyl methyl ether.

(v) Give the IUPAC nomenclature of the following structures :

(a) $HOH_2C - C \equiv C - CH_2OH$

(b) $H_2C = \underset{\displaystyle CH_3}{\underset{|}{C}} - CH = CH_2$

(c) $H_2C = CH - CO - CH_3$

(d) 

(e) $CH_3 - CH_2 - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}} - COOH$