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PA—08—2024

FACULTY OF SCIENCE

B.Sc. (Second Year) (Third Semester) EXAMINATION

APRIL/MAY, 2024

(New Course)

CHEMISTRY

Paper–VI

(Organic and Inorganic Chemistry)

(Saturday, 6-4-2024) **Time : 2.00 p.m. to 4.00 p.m.**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— Attempt *all* questions.

1. Solve any *three* of the following : 3×5=15

   (*a*) Why water is known as universal solvent ? Explain the dipole moment property of solvent.

   (*b*) Explain the role of the following organic reagents in qualitative analysis :

   (*i*) 8-hydroxy quinoline

   (*ii*) Dimethyl glyoxime.

   (*c*) Discuss the acid-base reaction in liq. NH_3 and liq. SO_2.

   (*d*) What are interfering radicals ? Explain the removal of borate.

   (*e*) Define common ion effect. Explain the application of common ion effect in separation of II and III B group basic radicals in qualitative analysis.

P.T.O.

2. Solve any *three* of the following : 3×5=15

(*a*) Explain Aldol condensation reaction with mechanism.

(*b*) How will you prepare benzene sulphonic acid from benzene ? Explain with mechanism.

(*c*) What are organomagnesium compounds ? How will you obtain the following from CH_3MgBr :

(*i*) 2-Propanone

(*ii*) Ethanoic acid.

(*d*) Explain Meerwein-Pondorf-Verley reduction with mechanism.

(*e*) How will you prepare ethyl acetoacetate by Claisen-condensation reaction ? Explain with mechanism.

3. Solve any *two* of the following : 2×5=10

(*a*) Explain Baeyer-Villiger oxidation reaction with mechanism.

(*b*) Write notes on :

(*i*) Hydrolysis of oils and fats

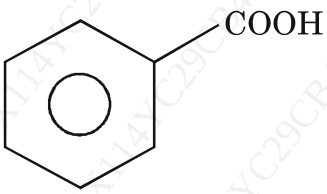
(*ii*) Saponification value.

(*c*) What are synthetic detergents ? Explain different types of detergents.

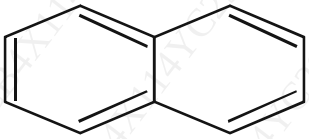
(*d*) Predict 'X' in the following reactions :

(*i*) $CH_3-\overset{\overset{O}{\|}}{C}-CH_3 + H-\overset{\overset{O}{\|}}{C}-H + HN(CH_3)_2 \xrightarrow{HCl}$ 'X'

(*ii*) $CH_3-NO_2 \xrightarrow{\text{'X'}} CH_3-NH_2$

(*iii*)  + Conc . $HNO_3 \xrightarrow[\Delta]{\text{Conc . } H_2SO_4}$ 'X'

(*iv*) $CH_3-\overset{\overset{O}{\|}}{C}-Cl + \text{'X'} \xrightarrow{\Delta} CH_3-\overset{\overset{O}{\|}}{C}-CH_2-CH_3 + C_2H_5ZnCl$

(*v*)  $\xrightarrow[(ii)\ NaOH\ (iii)\ HCl]{(i)\ O_2/V_2O_5,\ \Delta}$ 'X'