CHEMISTRY 2019

Time: 2 Hours 40 Minutes Marks: 68

SECTION 'B' (SHORT-ANSWER QUESTIONS) (40)

NOTE: Answer 10 questions in all. Select five part question from Inorganic Chemistry and five part questions from Organic Chemistry

INORGANIC CHEMISTRY

2.(i) (a) State the following laws:
* Dobereiner's law of Triads
* Newlands law of Octaves

(b) Identify the group, period and block of elements having atomic no: * Z = 36 * Z = 24

(ii) Write two methods for the separation of Hydrogen from Water gas. Give the reactions of Atomic hydrogen with he following: * Phosphorus * Cupric oxide

(iii) Refer to the list of the given table:

Compound	A	B	C	D
Specific Name	Carnallite	Water glass	Corundum	Lunar Caustic

* Write the formulae of A and C.
* Write the equation for the proparation of B.
* Write the equation for the reaction of D to heat at 450°C.
* Give any one use of D.

(iv) Give scientific reasons for any four of the following:
* Boric acid is weak monobasic acid.
* Alkali metals form cations easily.
* Plastic sulphur is elastic.
* Graphite conducts electricity parallel to the plane.
* Transition metals form non-stoichiometric compounds.

(v) Give complete and balanced equation for any Four of the following:
* Saturated solution of Soda ash treated with Carbon dioxide.
* Action of superhested Water on Boron nitride.
* Reduction of Sulphuric acid with Hydrogen sulphide.
* Reation of Sulphur dioxide with Chlorine gas.
* Blue vitriol heated to 230°C.

(vi) Write the I.U.P.A.C. names of the following complexes:
* $[Co(en)_3](NO_3)_3$ * $[Cu(NH_3)_4]^{2+}$
* $[Au\ Cl_4]^{-1}$ * $Na_3[Fe(CN)_5NO]$

(vii) Describe the refining of Copper by electrolysis of blister copper.

(viii) Write about the manufacturing of Chlorine gas by Nelson cell.

ORGANIC CHEMISTRY

(ix) Define the following: * Homologous series
* Metamerism * Peptide bond * Rancidification

(x) Write the classification of Organic compounds with examples.

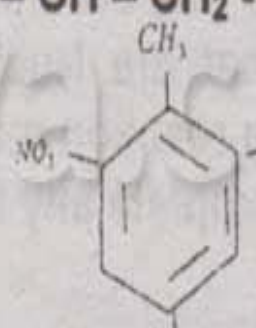
(xi) Define Free radical. Give stepwise mechanism for the chlorination of Methane.

(xii) Draw the orbital structure of Ethylene and give equations for the formation of the following from Ethene:
* Mustard gas * Glycol

(xiii) Why does Benzene give electrophilic substitution reactions? Give stepwise mechanism of nitration and chlorination in Benzene.

(xiv) Write the I.U.P.A.C. names for any four of the following:

* $CH_3 - \underset{\displaystyle ON}{\underset{|}{CH}} - CH = CH_2$ * $CH_3 - CH_2 - \underset{\displaystyle OH}{\underset{|}{CH}} - CH_2 \cdot COOH$
* $C_2H_5 - CH_2 - \overset{\displaystyle O}{\overset{\|}{C}} - OCH(CH_3)_2$ *
* $C_2H_5 - O - CH_2 - C(CH_3)_3$



(xv) What is organometallic compound? How is it prepared? Starting from CH_3MgI, prepare the following:
* Ethane * Ethanoic acid * Ter-butyl alcohol

(xvi) Write equations for the preparation of any four of the following compounds:
* Oxime from Formaldehyde * Phenol from Chlorobenzen
* Diethyl ether from Chloroethane
* Acetic anhydride from Sodium ethanoatee
* Red solid from Acetylene

SECTION'C' (DETAILED- ANSWER QUESTIONS) (28)

Note: Attempt any two questions – One from Inorganic Chemistry and one from Organic Chemistry.

INORGANIC CHEMISTRY

3.(a) Describe the extraction of 99.99% pure Alumunium from Bauxite ore containing excess of Ferric oxide.

(b) Complete and balance the following equations:
* $Cu + H_2SO_4 \xrightarrow{Hat\ /\ conc.}$ * $K_2MnO_4 + Cl_2 \rightarrow$
* $HCOOH + H_2SO_4 \xrightarrow{conc.}$ * $K_2Cr_2O_7 + KOH \rightarrow$
* $CuFeS_2 + O_2 \rightarrow$