

QUARTERLY EXAMINATION - 2022

Register
Number

XII - CHEMISTRY

Time Allowed : 3.00 Hours

Maximum Marks : 70

- INSTRUCTIONS :** 1. Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
2. Use **Blue** or **Black** ink to write and underline and **Pencil** to draw diagrams.

Note : Draw diagrams and write equations wherever necessary.

PART - I

- Note** i) Answer **all** the questions. (15×1=15)
ii) Choose the most appropriate answer from the given **four** alternatives and write the option code and the corresponding answer.

- Roasting of sulphide ore gives the gas (A). (A) is a colourless gas. Aqueous solution of (A) is acidic. The gas (A) is
a) CO_2 b) SO_3 c) SO_2 d) H_2S
- The basic structural unit of silicates is
a) $(\text{SiO}_3)^{2-}$ b) $(\text{SiO}_4)^{2-}$ c) $(\text{SiO})^-$ d) $(\text{SiO}_4)^+$
- Which of the following is strongest acid among all?
a) HI b) HF c) HBr d) HCl
- Which one of the following compounds is not formed?
a) XeOF_4 b) XeO_3 c) XeF_2 d) NeF_2
- The number of moles of acidified KMnO_4 required to oxidize 1 mole of ferrous oxalate (FeC_2O_4) is
a) 5 b) 3 c) 0.6 d) 1.5
- Ziegler - Zatta catalyst is
a) $\text{CO}_2(\text{CO})_8$ b) $\text{TiCl}_4 + \text{Al}(\text{C}_2\text{H}_5)_3$ c) Rh/Ir complex d) TiCl_4
- Assertion :** Due to Frenkel defect, density of the crystalline solid decreases.
Reason : In Frenkel defect cation and anion leaves the crystal
a) Both assertion and reason are true and reason is the correct explanation of assertion.
b) Both assertion and reason are true but reason is not the correct explanation of assertion
c) Assertion is true but reason is false
d) Both assertion and reason are false
- The arrangement of crystallographic axes and angles respectively in hexagonal crystal system is
a) $a \neq b \neq c$, $\alpha = \beta = \gamma = 90^\circ$ b) $a = b \neq c$, $\alpha = \beta = \gamma = 90^\circ$
c) $a = b \neq c$, $\alpha = \beta = 90^\circ \neq \gamma = 120^\circ$ d) $a = b = c$, $\alpha \neq \beta \neq \gamma = 90^\circ$
- The half life period of a radioactive element is 140 days. After 560 days, 1g of element will be reduced to
a) (1/2)g b) (1/4)g c) (1/8)g d) (1/16)g
- Conjugate base for bronsted acids H_2O and HF are
a) OH^- and H_2F^+ , respectively b) H_3O^+ and F^- , respectively
c) OH^- and F^- , respectively d) H_3O^+ and H_2F^+ , respectively
- If the hydrogen ion concentration of a solution is 10^{-5} M , its pOH is
a) 5 b) 9 c) 14 d) 7
- Which one of the following is the strongest acid
a) 2-nitrophenol b) 4-Chlorophenol
c) 4-nitrophenol d) 3-nitrophenol
- On reacting with neutral ferric chloride, phenol gives
a) red colour b) Violet colour c) dark green colour d) no colouration
- Ethanoic acid $\xrightarrow{\text{P/Br}_2}$ 2-bromo ethanoic acid. This reaction is called
a) Finkelstein reaction b) Haloform reaction
c) Hell-Volhard - Zelinsky reaction d) None of these

15. In which of the following reactions new carbon-carbon bond is not formed?
- Aldol condensation
 - Friedal Craft reaction
 - Kalba's reaction
 - Wolf Kishnev reduction

PART - II

Answer any **six** questions. Question Number 24 is **compulsory**. (6x2=12)

- What are the differences between minerals and ores?
- Write a short note on anomalous, properties of the first elements of P-block.
- Write a note on chromyl chloride test.
- Classify the following solids.
 - P_4
 - Brass
 - diamond
 - NaCl
- Explain pseudo first order reaction with an example.
- What are Lewis acids and bases? Give two example for each.
- Explain Kolbe's reaction.
- Explain esterification reaction with example.
- Write IUPAC name for
 - C_6H_5CHO
 - $CH_3 - \underset{\substack{| \\ OH}}{CH} - CH_3$

PART - III

Answer any **six** questions. Question Number 33 is **compulsory**. (6x3=18)

- Write a note on Fisher tropesch synthesis.
- Calculate the number of unpaired electrons in Ti^{3+} , Mn^{2+} and calculate the spin only magnetic moment.
- Write a classification of point defect.
- Derive integrated rate law for a zero order reaction $A \rightarrow \text{product}$.
- Describe a method for refining nickel by mond process.
- Write the expression for the solubility product of $Ca_3(PO_4)_2$
- Write three uses of Diethyl ether.
- Write a note on Benzoin condensation.
- Calculate the pH of 0.4M HNO_3 solution [$\log 4 = 0.6021$]

PART - IV

Answer **all** the questions. Draw diagrams wherever necessary. (5x5=25)

- What is roasting? (2)
 - Explain cyanide leaching. (3)

(OR)

 - Give the structure of CO and CO_2 (2)
 - Give three uses of Silicones. (3)
 - Compare lanthanides and actinides. (5)

(OR)

 - What is F centers? (2)
 - What is meant by the term 'co ordination number'? What is the co-ordination number of atoms in a bcc structure? (3)
 - What is the order with respect to each of the reactant and overall order of the following reaction? $CH_3CHO_{(g)} \xrightarrow{\Delta} CH_{4(g)} + CO_{(g)}$ the experimental rate law is $\text{Rate} = K [CH_3CHO]^{3/2}$ (2)
 - Give example for first order reaction. (3)

(OR)

 - Explain Ostwald's dilution law. (5)
- Write any two test for phenol. (2)
 - Explain dehydration reaction of glycerol. (3)

(OR)

 - Explain mechanism of aldol condensation. (5)
 - Write Rosenmund reduction reaction. (3)
 - Write Williamsons synthesis reaction. (2)

(OR)

 - Explain common ion effect with an example. (2)
 - Derive the relation between pH and POH. (3)