

MODEL QUARTERLY EXAMINATION 2022-2023

Std 12
Chemistry

Max.Mark:70
Time: 3:00

I. Choose the correct answer

15 X 1 = 15

- Which of the metal is extracted by Hall-Heroult process?
a) Al
b) Ni
c) Cu
d) Zn
- The basic structural unit of silicates is
a) $(\text{SiO}_3)^{2-}$
b) $(\text{SiO}_4)^{2-}$
c) $(\text{SiO})^-$
d) $(\text{SiO}_4)^{4-}$
- Which one of the following allotropic forms of carbon is isomorphous with crystalline silicon?
a) Graphite
b) Coal
c) Coke
d) Diamond
- Which one of the following statements about the zeolites is false ?
a) They are used as cation exchangers
b) They have open structure which enables them to take up small molecules
c) Zeolites are aluminosilicates having three dimensional network
d) None of the above
- Which one of the following compounds is not formed?
a) XeOF_4
b) XeO_3
c) XeF_2
d) NeF_2
- In acid medium, potassium permanganate oxidizes oxalic acid to
a) oxalate
b) carbon dioxide
c) acetate
d) acetic acid
- The actinoid elements which show the highest oxidation state of +7 are
a) Np, Pu, Am
b) U, Fm, Th
c) U, Th, Md
d) Es, No, Lr
- In which of the following arrangements octahedral voids are formed ?
(i) *hcp* (ii) *bcc* (iii) simple cubic (iv) *fcc*
a) (i), (ii)
b) (i), (iv)
c) (iii)
d) (ii), (iv)
- An increase in the concentration of the reactants of a reaction leads to change in :
a) collision frequency
b) activation energy
c) heat of reaction
d) threshold energy
- Which of the following fluoro compounds is most likely to behave as a Lewis base?
a) BF_3
b) PF_3
c) CF_4
d) SiF_4

11. Which one of the following will react with phenol to give salicylaldehyde after hydrolysis
- a) Dichloro methane
b) trichloroethane
c) trichloro methan
d) phenylacetic acid
12. Ethane-1,2-diol on heating with periodic acid gives
- a) methanoic acid
b) glyoxal
c) methanal
d) CO₂
13. Which one of the following reduces Tollens' reagent
- a) formic acid
b) acetic acid
c) benzophenone
d) none of these
14. Reaction between benzaldehyde and acetophenone in presence of dilute NaOH is known as
- a) Cross Aldol condensation
b) Aldol condensation
c) Cannizzaro's reaction
d) Cross Cannizzaro's reaction
15. **Assertion:** 2,2-dimethyl propanoic acid does not give HVZ reaction
Reason: 2,2-dimethyl propanoic acid does not have α -hydrogen atom
- a) if both assertion and reason are true and reason is the correct explanation of assertion
b) if 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

II. Answer any six questions. But question no 24 is compulsory

6 X 2 = 12

16. What is anode mud?
17. What is catenation?
18. What are interhalogen compounds?
19. What are interstitial compounds?
20. Write Arrhenius equation and explain the terms involved
21. Explain common ion effect with an example
22. Define Saytzeff's rule
23. Formic acid reduces Tollens' reagent, while acetic acid does not why?
24. KF crystallizes in fcc structure like sodium chloride. Calculate the distance between K⁺ and F⁻ in KF. (given : density of KF is 248. g cm⁻³)

III. Answer any six questions. But question no 33 is compulsory

6 X 3 = 18

25. Explain the Froth flotation process.
26. How will you prepare inorganic benzene from diborane
27. Give the balanced equation for the reaction between chlorine with cold & hot NaOH
28. What is meant by the term coordination number? What is the coordination number of atoms in a BCC structure?
29. Define solubility product.

30. Calculate the number of unpaired electrons in Ti^{3+} , Mn^{2+} and calculate the spin only magnetic moment
31. How is phenolphthalein prepared?
32. Write three tests for carboxylic acids?
33. The time for half change in a first order decomposition of a substance A is 60 seconds. Calculate the rate constant. How much of A will be left after 180 seconds?

IV. Answer all the questions

5 X 5 = 25

34.a. Explain zone refining process with an example

Or

b. i. Discuss the structure of diborane.

ii. Explain the structure of graphite.

35.a.i. Write the molecular formula and draw the structure of sulphurous acid and Marshall's acid

ii. What is Holsen's signal? Explain

Or

b. Write the preparation of potassium dichromate?

36.a i. Calculate the percentage of packing efficiency of body centred cubic crystal

ii. Write a note on Frenkel defect.

Or

b.i. Derive the first order rate constant

ii. Give the differences between order and molecularity of a reaction.

37.a. Derive the expression for pH of the hydrolysis of the salt of a strong base and a weak acid

Or

b. i. How will you distinguish 1° , 2° , 3° alcohols by Victor Meyer's test

ii. How will you prepare phenolphthalein from phenol

38.a.i. Write the mechanism of Cannizzaro reaction.

ii. Write the transesterification reaction

Or

b. i. A hydrocarbon A (molecular formula C_8H_{10}) on ozonolysis gives B ($C_4H_6O_2$) only. Compound C (C_3H_5Br) on treatment with magnesium in dry ether gives (D) which on treatment with CO_2 followed by acidification gives (C). Identify A, B and C.

ii. How will you convert benzaldehyde into α -hydroxyphenylacetic acid.

PREPARE BY

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