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MODEL QUESTION PAPER-1
VOLUME I - FULL PORTION
CHEMISTRY

CLASS: XII

MAX: 70 MARKS
TIME: 2.30 HOURS

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 use pencil to draw diagrams.

Note: Draw diagrams and write equations wherever necessary.

PART-A

ANSWER THE FOLLOWING QUESTIONS

- In calcium fluoride, having the fluorite structure the coordination number of Ca^{2+} ion and F^- ion are
 a) 4 and 2 b) 6 and 6 c) 8 and 4 d) 4 and 8
- For a first order reaction, the rate constant is 6.909 min^{-1} . the time taken for 75% conversion in minutes is
 a) $(3/2) \log 2$ b) $(2/3) \log 2$ c) $(3/2) \log (3/4)$ d) $(2/3) \log (4/3)$
- Permanganate ion changes to _____ in acidic medium
 a) MnO_4^{2-} b) Mn^{2+} c) Mn^{3+} d) MnO_2
- The stability of +1 oxidation state increases in the sequence
 a) $\text{Al} < \text{Ga} < \text{In} < \text{Tl}$ b) $\text{Tl} < \text{In} < \text{Ga} < \text{Al}$
 c) $\text{In} < \text{Tl} < \text{Ga} < \text{Al}$ d) $\text{Ga} < \text{In} < \text{Al} < \text{Tl}$
- In the Ellingham diagram, for the formation of carbon monoxide
 a) $(\Delta S^\circ/\Delta T)$ is negative b) $(\Delta G^\circ/\Delta T)$ is positive
 c) $(\Delta G^\circ/\Delta T)$ is negative
 d) initially $(\Delta T/\Delta G^\circ)$ is positive, after 700°C , $(\Delta G^\circ/\Delta T)$ is negative
- The cation leaves its normal position in the crystal and moves to some interstitial position, the defect in the Crystal is known as
 a) Schottky defect b) F center
 c) Frenkel defect d) non-stoichiometric defect
- If the initial concentration of the reactant is doubled, the time for half reaction is also doubled. Then the order of the reaction is
 a) Zero b) one c) Fraction d) none
- Matte contains --- and ----
 a) Cu_2S & FeS b) ZnS & FeS c) PbS & CaO d) Cu_2S & ZnS
- Match the following:**

| | | | |
|-----|-----------------|---|--------------|
| i | Ortho silicate | a | Thortveitite |
| ii | Pyro silicate | b | Beryl |
| iii | Cyclic silicate | c | Quartz |
| iv | Tecto silicate | d | phenacite |

- A) (i)-d,(ii)-a,(iii)-b,(iv)-c B) (i)-b,(ii)-a,(iii)-d,(iv)-c
 C) (i)-b,(ii)-a,(iii)-d,(iv)-c D) (i)-c,(ii)-d,(iii)-b,(iv)-a
- Which of the following forms acidic halides?
 a) HF b) HCl c) HBr d) HI
 - The highest magnetic moment is shown by transition metal ions with outer electronic configuration
 a) $3d^5$ b) $3d^6$ c) $3d^7$ d) $3d^9$
 - If the complex have negative CFSE value indicate the complex is
 a) High spin complex b) neutral c) low spin complex d) none of these

12. Match the following:

| | | | |
|---|---|---|-------------------|
| A | NaCl | 1 | Molecular crystal |
| B | SiO ₂ | 2 | Metallic crystal |
| C | C ₆ H ₁₂ O ₆ | 3 | Ionic crystal |
| d | copper | 4 | Covalent crystal |

- a) a-3, b-1, c-2, d-4 b) a-3, b-2, c-1, d-2 c) a-3, b-1, c-4, d-2 d) a-2, b-1, c-4, d-3
13. Saponification of ester is an example of
a) 1st order reaction b) 2nd order reaction c) zero order reaction d) none of these
14. Bio availability of drugs within the body and this branch of study is called ----
a) Chemical kinetics b) pharmaco kinetics
c) Collision theory d) none of these
15. In acid medium, potassium permanganate oxidizes oxalic acid to
a) Oxalate b) Carbon dioxide c) acetate d) acetic acid

PART-B**Answer the following questions (any 6) Q.No : 24 is compulsory**

16. What is the role of limestone in the extraction of iron from its oxide Fe₂O₃?
17. Give the uses of silicones.
18. What are interhalogen compounds? Give Eg.
19. Out of Lu(OH)₃ and La(OH)₃ which is more basic and why?
20. What is crystal field stabilisation energy?
21. What are F-centres?
22. Define rate Law and rate constant.
23. Give any three characteristics of ionic crystals.
24. Give the test for sulphuric acid.

PART-C**Answer the following questions. (Any 6) (Q.NO: 33 is compulsory)**

25. Graphite is the most stable allotrope of carbon. Give reason.
26. How will you identify borate radical?
27. Give the structure of i) Nitrogen Pent oxide ii) Nitrous acid
28. What are interstitial compounds?
29. Define linkage Isomerism. Give xample.
30. Calculate the number of atoms per unit cell in FCC
31. What are the differences between order and molecularity of a reaction?
32. Classify the following solids a) brass b) diamond c) iodine
33. Barium has a body centred cubic unit cell with a length of 508pm along an edge. What is the density of barium in g cm⁻³?

PART - D**Answer the following questions briefly (any 5)****(5x5=25)**

34. Explain the electrometallurgy of aluminium.
35. Explain i) Fischer tropsch synthesis.
ii) Hydroboration.
36. Write notes on
i) Holme's signal ii)uses of argon
37. Explain the consequences of Lanthanide contraction.
38. Explain about schottky defect.
39. Derive rate equation for First order reaction.
40. Explain the postulates of Werner's theory.

ALL THE BEST

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MODEL QUESTION PAPER-2**VOLUME I - FULL PORTION****MAX: 70 MARKS****CLASS: XII****CHEMISTRY****TIME: 2.30 HOURS**

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 use pencil to draw diagrams.

Note: Draw diagrams and write equations wherever necessary.

PART-A**ANSWER THE FOLLOWING QUESTIONS**

- Cupellation is a process used for the refining of
a) Silver b) Lead c) Copper d) iron
- AlF_3 is soluble in HF only in the presence of KF. It is due to the formation of
a) $\text{K}_3[\text{AlF}_3\text{H}_3]$ b) $\text{K}_3[\text{AlF}_6]$ c) AlH_3 d) $\text{K}[\text{AlF}_3\text{H}]$
- The correct order of the thermal stability of hydrogen halide is
a) $\text{HI} > \text{HBr} > \text{HCl} > \text{HF}$ b) $\text{HF} > \text{HCl} > \text{HBr} > \text{HI}$
c) $\text{HCl} > \text{HF} > \text{HBr} > \text{HI}$ d) $\text{HI} > \text{HCl} > \text{HF} > \text{HBr}$
- The catalytic behaviour of transition metals and their compounds is ascribed mainly due to
a) their magnetic behaviour b) their unfilled d orbitals
c) their ability to adopt variable oxidation states d) their chemical reactivity
- CsCl has bcc arrangement, its unit cell edge length is 400pm, its inter atomic distance is
a) 400pm b) 800pm c) $\sqrt{3} \times 100\text{pm}$ d) $(\sqrt{3}/2) \times 400\text{pm}$
- The addition of a catalyst during a chemical reaction alters which of the following quantities?
a) Enthalpy b) Activation energy c) Entropy d) Internal energy
- In aluminothermic process, the ignition mixtures are---
a) $\text{MgO} + \text{BaO}$ b) MgO and Al c) Mg and BaO_2 d) MgO and Ba

8. Match the following:

| | | | |
|-----|-----------|---|--------------------|
| i | Graphene | a | Honeycomb crystal |
| ii | Diamond | b | Aromatic character |
| iii | Fullerene | c | Lubricant |
| iv | graphite | d | Very hard |

- A) (i)-c,(ii)-d,(iii)-b,(iv)-a B) (i)-d,(ii)-d,(iii)-a,(iv)-c
C) (i)-b,(ii)-c,(iii)-d,(iv)-a D) (i)-d,(ii)-c,(iii)-a,(iv)-b
- Which catalyst is used in the preparation of acetic acid from acetaldehyde.
 $\text{CH}_3\text{CHO} + \text{CO} \rightarrow \text{CH}_3\text{COOH}$
a) Rh/Mg complex b) Rh/Ir complex c) Rh/Ir complex d) none of these
 - Which kind of isomerism is possible for a complex $[\text{Co}(\text{NH}_3)_4\text{Br}_2]\text{Cl}$?
a) Geometrical and ionization b) geometrical and optical
c) optical and ionization d) geometrical only
 - Bragg's equation is -
a) $d = n\lambda/2\sin\theta$ b) $n = 2d\sin\theta$ c) $\sin\theta = 2d \times n$ d) $n\lambda = 2\sin\theta$
 - Collision theory is based on
a) Arrhenius theory b) valence bond theory c) kinetic theory d) VSEPR theory
 - Which complex is used for antitumor drug in cancer treatment?
a) cis platin b) trans platin c) EDTA d) $\text{Ni}(\text{DMG})$
 - For the reaction, $2\text{NH}_3 \rightarrow \text{N}_2 + 3\text{H}_2$, if $-\text{d}[\text{NH}_3]/\text{dt} = \text{K}_1[\text{NH}_3]$, $\text{d}[\text{N}_2]/\text{dt} = \text{K}_2[\text{NH}_3]$, $\text{d}[\text{H}_2]/\text{dt} = \text{K}_3[\text{NH}_3]$ then the relation between K_1 , K_2 and K_3 is
a) $\text{K}_1 = \text{K}_2 = \text{K}_3$ b) $\text{K}_1 = 3\text{K}_2 = 2\text{K}_3$ c) $1.5\text{K}_1 = 3\text{K}_2 = \text{K}_3$ d) $2\text{K}_1 = \text{K}_2 = 3\text{K}_3$
 - How many lone pair of electrons are present on Xe in XeOF_4 ?
a) 1 b) 2 c) 3 d) 4

PART-B

Answer the following questions. Q.No : 24 is compulsory (any 6) (6x2=12)

16. What are the differences between minerals and ores?
17. Give the uses of Borax.
18. What are inter halogen compounds. Give its example.
19. Which is more stable? Fe^{3+} (or) Fe^{2+} explain.
20. What is crystal field splitting energy?
21. Define radius ratio.
22. What are the difference between order and Molecularity? (Any 2).
23. Give any three characteristics for ionic crystals?
24. Give the test for sulphuric acid?

PART-C

Answer the following questions Q.No :33 is compulsory 6x3=18

25. Explain about Aluminothermic process.
26. Write a note on Fisher tropesch synthesis
27. Give the structure of
 - a) Nitrous acid
 - b) Nitrogen pent oxide
28. Write about chromyl chloride test.
29. Write a note on
 - a) Ligand
 - b) Oxidation number
 - c) Co-Ordination number
30. Distinguish between tetrahedral and octahedral voids (Any 3).
31. Define: Half life of a reaction. Show that for a first order reaction half life is independent of initial concentration.
32. Classify the following solids:
 - a) Iodine
 - b) Diamond
 - c) P_4
33. Barium has a body centered cubic unit cell with a length of 508 pm along an edge.
What is the density of Barium in gcm^{-3}

PART-D

Answer in Brief (Answer Any 5) 5x5=25

34. Write a short note on electrochemical principles of Metallurgy.
35. Explain the following.
 - A) Describe the structure of Diborane
 - B) Give the structure of Co and CO_2
36. Write notes on
 - a) Give the uses of Argon
 - b) Write about Home's signals
37. Write the differences between lanthanide and actinides
38. Write the IUPAC name for the following:
 - a) $\text{Na}_2 [\text{Ni} (\text{EDTA})]$
 - b) $[\text{Ag} (\text{CN})_2]$
 - c) $[\text{Co} (\text{en})_3]_2 (\text{SO}_4)_3$
 - d) $[\text{Co} (\text{ONO}) (\text{NH}_3)_5]^{2+}$
 - e) $[\text{Pt} (\text{NH}_3)_2 \text{Cl} (\text{NO}_2)]$
39. Explain about Frenkel defects.
40. Derive the integrated rate law for a zero order reaction.

ALL THE BEST

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