ACTC CHEMISTRY TUITION CENTRE, 41/1-PWD ROAD, NAGERCOIL 9940847892

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+2 CHEMISTRY

40 DAYS PLAN &

27 days QUESTION PAPER

PUBLIC EXAM 2024

AIM: CENTUM MARKS

2023-24   XII ART (ANNUAL REVISION TEST Time table)

DON'T STRESS!   DO YOUR BEST!!   FORGET   THE REST!!!

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ART	DATE	DAY	LESSON	QUESTION MARK	MARKS	MARK	SIGN
				ANNUAL PUBLIC REVISION EXAM-2024			
1			1	FULL	50		
2			2	FULL	50		
3			3	FULL	50		
4			4	FULL	50		
5			5	FULL	50		

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6			IOC	MODEL	70		
7			6	FULL	50		
8.			7	FULL	50		
9.			8	FULL	50		
10.			9	FULL	50		
11	11-01-24	THURSDAY	*10*	*FULL*	50		
12	13-01-24	SATURDAY	6,7,8,9	PROBLEM	50		
13	16-01-24	TUESDAY	6-10	PHYSICAL MODEL	50		
14	18-01-24	THURSDAY	11	FULL	50		
15	20-01-24	SATURDAY	12	FULL	50		
16	21-01-24	SUNDAY	13	FULL	50		
17	23-01-24	TUESDAY	14	FULL	50		
18	25-01-24	THURSDAY	15	FULL	50		
19	26-01-24	FRIDAY	OC	*11-15 MODEL*	70		
20	27-01-24	SATURDAY	11, 12, 13	NAME REACTION	100		
21	30-01-24	TUESDAY	IOC 1-5	One mark add	50		
22	01-02-24	THURSDAY	PC 6-10	ONE MARK ADD	50		
23	03-02-24	SATURDAY	IOC	2 MARK	70		
24	04-02-24	SUNDAY	1 -15	Difference	50		
25	06-02-24	TUESDAY	1-15	Uses	50		
26	08-02-24	THURSDAY	ORGANIC	problem	50		
27	10-02-24	SATURDAY	FULL PORTION	MODEL EXAM 3 HOURS	110		
28	13-02-24	TUESDAY	FULL PORTION	MODEL EXAM 3 HOURS	110		

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29	15-02-24	THURSDAY	FULL PORTION	MODEL EXAM 2 1/2HOURS	110		
30	17-02-24	SATURDAY	FULL PORTION	MODEL EXAM 2 1/2HOURS	110		
31	18-02-24	SUNDAY	FULL PORTION	MODEL EXAM	110		
32	19-02-24	MONDAY	FULL PORTION	MODEL EXAM 2 HOURS	70		
33	20-02-24	TUESDAY	FULL PORTION	MODEL EXAM 2 HOURS	70		
34	21-02-24	WEDNESDAY	FULL PORTION	MODEL EXAM 2 HOURS	70		
35	22-02-24	THURSDAY	FULL PORTION	MODEL EXAM 2 HOURS	70		
36	23-02-24	FRIDAY	FULL PORTION	MODEL EXAM 2 HOURS	70		
37	24-02-24	SATURDAY	FULL PORTION	MODEL EXAM 2 HOURS	70		
38	25-02-24	SUNDAY	FULL PORTION	MODEL EXAM 2 HOURS	70		
39	05-03-24	TUESDAY	6-8	REVISION EX	50		
40	06-03-24	WEDNESDAY	1-5	MODEL	70		
41	07-03-24	THURSDAY	6-10	MODEL	70		

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| 42 | 08-03-24 | FRIDAY | 11-15 | MODEL | 70 | | |
| 43 | 09-03-24 | SATURDAY | MODEL | MODEL | 110 | | |

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"May God's guidance be with you during the Exam and may you be able to answer each question correctly. My prayers and Blessings are with you".- ACTC EMS

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DAY 1   ART 1   UNIT 1 METALLURGY   MARKS: 50

Answer the following   10x2=20

1. Write the ores of copper.

2. What are all the steps involving in metallurgical process?

3. Write note on gravity separation.

4. What is Acid leaching?

5. What is Ammonia leaching.

6. How will you manage sulphur dioxide produced during roasting process?

7. Give one example for (i) Acidic flux (ii) Basic flux (8)

8. How Cr_2O_3 is reduced to Cr by Al powder? (10)

9. Explain Auto reduction. (10)

10. Write note on Liquation. (15)

11. Explain Mond process.

12. Explain Van-Arkel method. (17)

Answer the following   5x3=15

13. Explain how gold ore is leached by cyanide process. (4)

14. Explain magnetic separation. (6)

15. Explain (i) Roasting (6) (ii) Calcination (7)

16. Explain extraction of copper from copper pyrites.(8)

17. Extraction of Aluminium-Hall -Herold process. (14)

18. Explain the principle of electrolytic refining with an example.

19. Application of Al.

Answer the following   3x5=15

20. Define, observation of Ellingham diagram.(13)
21. Application & Limitations of Ellingham diagram.(13)
22. Explain froth floatation. (6)
23. Explain zone refining process.(16)

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DAY 2   **ART 2**   **UNIT 2 p-block elements-I**   **MARKS: 50**

ANSWER THE FOLLOWING   **15x2=30**

1. Write note on metallic nature of p-block elements. (28)

2. What are the anomalous properties of the first elements of the p-block elements. (29)

3. There is only a marginal difference in decrease in ionization enthalpy from Aluminium to Thallium – Explain why?

4. What is inert pair effect. (30)

5. A hydride of 2nd period alkali metal (A) on reaction with compound of Boron (B) in the presence of ether to give a reducing agent (C). Identify A, B and C.

6. Uses of Boron. (22)

7. Preparation of Borax. (33)

8. How will you identify borate radical? Write the reactions involved.(35)

9. How will you convert Boric acid to boron nitride? (35)

10. What are the Uses of Boric acid. (35)

11. How will you prepare borazine? (37)

12. Write note on McAfee process (39)

13. Mention the uses of Aluminium chloride 39

14. What is catenation? Write the conditions for catenation property. (41)

15. Write note on fullerenes.(42)

16. Write note on Fischer Tropsch synthesis.

17. Write note on structure & uses of CO & CO_2

18. How does $SiCl_4$ react with alcohol & NH_3?

19. Write note on Inosilicates. (49)

20. Explain Zeolites. (50)

Answer the following   **4x5=20**

21. What are allotropes of carbon, difference between graphite & diamond. (41)

22. Explain structure and uses of diborane (37)

23. How to prepare potash alum, burnt alum & uses. (40)

24. Explain the preparation and uses of silicone. (47 & 48)

25. Explain types of silicates. (48)

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DAY 3   **ART 3**   **UNIT p-block elements-II**   **MARKS: 50**

Answer the following questions briefly: 20x2=40

1. Write note on Haber's process (58)

2. Write note on structure of ammonia. (60)

3. Write note on Ostwald process (59)

4. How does nitric acid act as nitrating agent?62

5. Draw the structure of N_2O, NO_2. (65)

6. Preparation of phosphine. (68)

7. What is Holmes signal and uses? (70)

8. Preparation of ozone. (74)

9. Uses of oxygen (75)

10. What are the allotropes of sulphur (77)

11. Give a reason to support that sulphuric acid is a dehydrating agent?(78)

12. H_2SO_4 is a dibasic acid. why? (78)

13. How is sulphate radical detected? (80)

14. Write note on Deacon process (83)

15. Draw the structure of Ozone, SO_2(81)

16. How is bleaching powder prepared?(85)

17. How is aqua regia obtained and uses of aqua regia? (86)

18. HF is not stored in glass bottles. Why? (88)

19. Mention the uses of Helium (93)

20. Mention the uses of Xenon & Radon (94)

Answer the following questions in detail :   2x5=10

21. Define, properties & structure of interhalogen compounds? (89)

22. Explain manufacture of sulphuric acid by contact process. (77)

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DAY 4   ART 4   **UNIT 4 Transition and Inner Transition elements**   MARKS: 50

Answer the following   20x2=40

1. How many series are in d-block elements? What are they?

2. Why there is a slight variation in the atomic radii from Cr to Cu?

3. Applying Aufbau principle, write down the electronic configuration of Cr^{3+} and Cu.

4. What are the metallic behavior of d-block elements.

5. Transition metals show high melting points. Why?

6. d-block elements have variable oxidation state. Why?

7. Write a note about oxidation state of 3d series.

8. Mn^{2+} is more stable than Mn^{4+}. Why?

9. Define – Standard electrode potential.

10. Write note on diamagnetic. Give example.

11. Write note on paramagnetic. Give example.

12. Calculate the magnetic moment of Ti^{3+} & V^{4+}.

13. Most of the transition metals act as catalyst. Justify this statement.

14. What is Zeigler – Natta catalyst? In which reaction it is used? Give equation.

15. Hume Rothery rule.

16. d-block elements readily form complexes. Give reason.

17. d-block elements formation of interstitial compounds.

18. What is the property of interstitial compounds?

19. Chromyl chloride test

20. Uses of potassium permanganate.

21. Position of lanthanoids in the periodic table.

22. Why Gd^{3+}, Lu^{3+} colourless why?

23. Oxidation state of actinoids.

Detail 4x5=20

24. Explain about the causes, consequence of lanthanoid contraction.

25. Differences between lanthanoids and actinoids.

26. Preparation of potassium dichromate from chromite ore.

27. Preparation of potassium permanganate from pyrolusite.

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DAY 5   ART 5   UNIT 5 Coordination chemistry   MARKS: 60

Answer the following questions   15x2=30

1. Difference between double salt and coordination compounds.(131)

2. Define central metal ion, ligand (133)

3. Write the IUPAC ligand name for the following: a)$C_2O_4^{2-}$ b) H_2O

4. Define coordination number.(134)

5. Write the following for the complex $[Ag(NH_3)_2]^+$.

   a)Ligand b) Central metal ion c) IUPAC Name

6. Explain Geometrical isomers (cis, trans isomer)(144,145)

7. Why tetrahedral complexes do not exhibit geometrical isomerism?(BB) (143)

8. Define mer, fac isomer. (145)

9. Explain optical isomerism of coordination compounds with an example. (146)

10. Write note on spectrochemical series (156)

11. Calculate the CFSE value of $[Fe(H_2O)_6]^{3+}$ in high spin and low spin complexes. (157)

12. Calculate the CFSE value of $[Fe(CN)_6]^{3-}$ in high spin and low spin complexes. (158)

13. $[Sc(H_2O)_6]^{3+}$ is colourless – Explain.

14. How is metal carbonyls classified based on the number of metal atom? (161)

15. How is metal carbonyls classified based on the structure? (161, 162)

16. How can the stability of coordination complexes be interpreted? (163)

17. Define Labile, inert complexes. (163)

     Answer the following questions   6x5=30

18. Explain Werner theory & limitation.(132)

19. Explain structural isomer. (coordination, Linkage, ionization, solvate isomers) (142)

20. Explain Valence Bond theory (VB Theory) & limitations. 149 &152)

21. Apply VB theory in $[Ni(CN)_4]^{2-}$, $[Co(F)_6]^{3-}$ (149-151)

22. Explain crystal field theory. In an Octahedral crystal field, draw the figure to show splitting of d orbitals (153, 154)

23. Explain the importance and application of coordination compounds (166)

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DAY 6   ART 6   INORGANIC MODEL UNIT 1-5   MARKS: 70

INORGANIC MODEL EXAM-2024

Answer the following   **15x2=30**

1.   How is bleaching powder prepared?

2.   Classify the following elements into d-block and f-block elements: i) Tungsten ii) Ruthenium iii) promethium iv) Einsteinium

3.   Write any two conditions for catenation.

4.   Write the molecular formula and draw the structure of sulphurous acid and Marshall's acid.

5.   Write the IUPAC name of the following: a)$[Ag(NH_3)_2]^+$ b) $[Co(NH_3)_5Cl]^{2+}$

6.   Explain the following terms with suitable example. A) gangue b)slag

7.   Give the uses of helium.

8.   What are Interstitial compounds?

9.   What are the factors responsible for the anomalous behavior of first element of the p-block?

10.   Which metal in the 3d series exhibits +1 oxidation state most frequently and why?

11.   What are the differences between minerals an ores?

12.   What is catenation? And properties.

13.   What is the role of limestone in the extraction of iron from of oxide Fe_2O_3?

14.   Which types of ores can be concentrated by froth floatation method? Give two examples.

15.   How is potash alum prepared?

16. What is inert pair effect?

17. Chromyl chloride test.

Answer the following   **5x3=15**

18.   There is only a marginal difference in decrease in ionization enthalpy from Aluminium to Thallium – Explain why?

19.   Calculate the magnetic moment and magnetic property of $[CoF_6]^{3-}$.

20.   Write the balanced equation for the overall reaction of chlorine with cold NaOH and hot NaOH.

21.   Give the difference between double salts and co-ordination compounds.

22.   What type of hybridisation is found in the following? (a) BrF (b) BrF_5(c) BrF_3

23.   Explain Deacon's process for manufacture of chlorine.

24.   Preparation of potassium dichromate.

Answer the following   **5x5=25**

25. Explain Zone – Refining.

26.   What is Lanthanide or Lanthanoid contraction? Explain its consequences.

27. Explain the types of silicones and USES.

28. Explain Electrolytic refining & Mond process.

29. Explain the Graphite and Diamond.

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30. Explain Werner theory.

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DAY 7   ART 7   UNIT 6 SOLID STATE   MARKS: 50

Answer the following   **15x2=30**

1. Write General characteristics of solids. (177)

2. Define Isotropy and anisotropy. (178)

3. What are covalent solids? (179)

4. What are Metallic solids? (180)

5. What is meant by term "Coordination Number"? What is the Coordination Number of atoms in a bcc structure? (180)

6. Explain briefly seven types of unit cell. (181)

7. Define the terms crystal lattice and unit cell. (180)

8. Write note on SC. (183)

9. Write note on BCC. (183)

10. Sketch Face Centered cubic unit cell(FCC) and Calculate the number of atoms present in it. (184)

11. What is Bragg's equation? (184)

12. How will you calculate the packing efficiency for simple cubic?(187

13. If the radius of the compound is between 0.155 – 0.225, find out the co-ordination number an structure of the compound. (192)

14. If the no. of close packed sphere is 6, calculate the number of Octahedral voids and Tetrahedral voids generated.

15. Write note on Impurity defect. (195)

16. What is piezoelectricity? (195)

   Answer the following in detail   **4x5=20**

17. Difference between crystalline solids and Amorphous solids.(178)

18. Explain Schottky defect & Frenkel defect. (Stoichiometric defects) (193)

19. Explain Metal excess defect, metal deficiency defect. (Non-Stoichiometric defects) (194)

20. Calculate the percentage efficiency of packing in face centered cubic system (192)

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21. Explain ionic solids. (Introduction, NaCl diagram, Characteristics) (179)

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| DAY 8 | ART 8 | UNIT 7 CHEMICAL KINETICS | MARKS: 50 |

ANSWER THE FOLLOWING   10x3=30

1. Define average rate and instantaneous rate. (BB)207

2. Give the difference between rate of a reaction and rate constant.(209)

3. Give the differences between order and molecularity of a reaction. (210)

4. Explain the rate determining step with an example. (210)

5. Explain pseudo first order reaction with an example. (214)

6. Define half-life period of reaction. Show that for a first order reaction half life period is independent of initial concentration. (215)

7. Calculate the half period for a zero order reaction.(215)

8. Write Arrhenius equation and explains the terms involved. (220)

9. Explain the effect of catalyst on reaction rate with an example. (222)

10. Powdered $CaCO_3$ reacts much faster with dilute HCl than with the same mass of $CaCO_3$ as marble. Give reason.

ANSWER THE FOLLOWING   4x5=20

11. What are the factors affecting the reaction rate? (222)

12. Derive integrated rate law for a first order reaction A → product. & describe the graphical representation of first order reaction, example.(212)

13. Derive integrated rate law for a zero order reaction A→product & Example (214)

14. Explain about collision theory (217, 218)

15. Derive Arrhenius equation to calculate activation energy from the rate constant k_1 and k_2 at temperature T_1 and T_2 respectively. (220,221)

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DAY 9 ART 9 UNIT 8 IONIC EQUILIBRIUM MARKS: 50

Answer the following questions 15x2=30

1. What are the limitations of Arrhenius concepts? (3)

2. Classify acid or base using Arrhenius concept. HNO_3, CH_3COOH, $Ba(OH)_2$, H_3PO_4(3)

3. Define Lowery - Bronsted concept of acids and bases (3)

4. Write a balanced equation for the dissociation of the following in water and identify the conjugate acid –base pairs.i) NH_4^+ii) H_2SO_4

5. Difference Lewis acids and bases? (5)

6. Identify the Lewis acid and Lewis base in the following reactions.(5) i) $CaO +CO_2 \rightarrow CaCO_3$

7. ii) $CH_3\text{-}O\text{-}CH_3 + AlCl_3 \rightarrow (CH_3)_2O \rightarrow AlCl_3$

8. How will you measure the strength of an acid? (6)

9. Define ionic product of water. Give its value at room temperature (7)

10. Derive the relationship between $_pH$ and $_pOH$ (9)

11. Define pH (9)

12. Define common Ion effect with an example (15)

13. What are buffer solutions? Mention its types (16)

14. Define Buffer capacity and buffer index. (18)

15. Define solubility product (25)

16. Give a condition for a compound to be precipitated (25)

17. How will you calculate solubility product from molar solubility? (26)

18. Write the expression for the solubility product of $Ca_3(PO_4)_2$, $BaSO_4$. (26)

Answer the following in detail 4x5=20

19. Derive expression for hydrolysis constant and pH of salt of weak acid and strong base. (21)

20. State Oswald's dilution law. Derive an expression Ostwald's dilution law. (12)

21. Derive Henderson-Hasselbalch equation (Derive Henderson equation) (18)

22. Derive expression for hydrolysis constant and pH of salt of strong acid and weak base. (22)

23. Explain buffer action. (16)

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DAY 10   ART 10   UNIT 9 ELECTROCHEMISTRY   MARKS: 50

ANSWER THE FOLLOWING   10X3=30

1. Define molar conductivity, Equivalent conductance. (37)

2. What are the factors affecting electrolytic conductance. (37)

3. Write Debye – Huckel and Onsager equation for a uni-univalent electrolyte. (41)

4. Explain Electrolytic cell and electrolysis. (53)

5. State Faraday's law of electrolysis First law, Second law. (54)

6. Write note on Leclanche cell. (56)

7. Write note on Mercury button cell. (57)

8. Write note on secondary batteries. (58)

9. Write note on fuel cell. (59)

10. Explain electrochemical mechanism of corrosion (60)

11. What are electrochemical series? How is it useful to predict corrosion? (62)

12. How are metals protected from corrosion by cathodic protection method? (61)

ANSWER THE FOLLOWING IN DETAIL   4X5=20

13. Explain variation of molar conductivity with concentration.(39)

14. State Kohlrausch's law and applications. (41)

15. Describe the construction of Daniel cell and write its cell reaction. **(45)**

16. Write note on standard hydrogen electrode (SHE). (48)

17. Derive Nernst equation. (51)

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DAY 11   ART 11   UNIT 10 SURFACE CHEMISTRY   MARKS: 50

ANSWER THE FOLLOWING   15x3=45

1. Explain Factors affecting adsorption. (72)

2. Explain Freundlich adsorption isotherm and limitations. (73)

3. Define homogenous catalysis, heterogeneous catalysis & example (77)

4. What are the characteristics of catalysis? (78)

5. Define promoters, catalytic poison with suitable example (79)

6. Explain Zeolite catalysis.(84)

7. What is Nano Catalysis? Give example.(86)

8. Define lyophilic colloids, lyophobic colloids & example (87)

9. Explain the classification of colloids based on the physical state.(87)

10. Write note on preparation of Colloids- electro dispersion.(89)

11. Define Brownian movement, Tyndal effect.(94)

12. Write note on Helmholtz double layer.(94)

13. Explain Electrophoresis. (94)

14. Define Gold number. (96), What is inversion of phase? Give an example. (98)

15. Explain intermediate compound formation theory & limitations.(80)

16. Explain adsorption theory of catalysis. (81)

Answer the following   4x5=20

17. Distinction between chemical and physical adsorption. (71)

18. Explain applications of adsorption. (75)

19. Define, Mechanism, characteristics of Enzyme Catalysis. (83)

20. Explain condensation methods of preparation of colloids. (Chemical method)

21. Explain various application of colloids (98)

ALL THE BEST SCORE CENTUM MARKS

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DAY 12   ART 12   PHYSICAL CHEMISTRY PROBLEM   MARKS: 50

1. Barium has a body centered cubic unit cell with a length of 508pm along an edge. What is the density of barium in g cm^{-3}? (185)

2. An element has a face centered cubic unit cell with a length of 352.4 pm along an edge. The density of the element is 8.9 gcm^{-3}. How many atoms are present in 100 g of an element. (186)

3. A face centred cubic solid of an element (atomic mass 60 $gmol^{-1}$) has a cube edge of 4A°. Calculate its density. (186)

4. Atoms X and Y form BCC crystalline structure. Atom X is present at the corners of the cube and Y is at the centre of the cube. What is the formula of the compound? (BB)

5. An atom crystallizes in FCC crystal lattice and has a density of $10gcm^{-3}$ with unit cell edge length of 100pm. Calculate the number of atoms present in 1g of crystal. ($BBQ_{21}201$)

6. Aluminium crystallizes in a cubic close packed structure. Is metallic radius is 125 pm. Calculate the edge length of unit cell. BB

7. Sodium metal crystallizes in BCC structure with the edge length of the unit cell 4.3 x 10^{-8} cm. Calculate the radius of sodium atom.

8. An element has BCC structure with a cell edge of 288 pm, the density of the element is 7.2 g cm^{-3}. How many atoms are present in 208 gram of the element?

9. If NaCl is dopped with 10^{-2} mol percentage of strancium chloride, what's the concentration of cation vacancy?

10. KF crystallizes fcc structure like sodium chloride. Calculate the distance between K^+ and F^- in KF (density of KF is $2.48gcm^{-3}$)

11. The rate of the reaction x + 2y → product is 4×10^{-3} mol $L^{-1}s^{-1}$, if [x] = [y] = 0.2M and rate constant at 400k is $2 \times 10^{-2}s^{-1}$, what is the overall order of the reaction?(211)

12. The rate constant for a first order reaction is 1.54x 10^{-3} s^{-1}. Calculate its half life time.(BB 231)

13. The rate of formation of dimer in a second order reaction is 7.5×10^{-3} mol $L^{-1}s^{-1}$ at 0.05 mol L^{-1} monomer concentration. Calculate the rate constant. (BB)

14. Zero order reaction is 20 percentage complete in 20 minutes. Calculate the rate constant in what time will the reaction be 80 percentage complete? (BB)

15. A first order reaction is 40% complete in 50 minutes. Calculate the value of the rate constant. In what time will the reaction be 80% complete? ($BBQ_{30}231$)

16. Calculate the concentration of OH^- in a fruit juice which contains 2 x 10^{-3}M, H_3O^+ ion. Identify the nature of the solution.(8)

17. Calculate the pH of 0.001M HCl.(11)

18. Calculate the pH of 10^{-7} M HCl.(11)

19. A solution of 0.10M of a weak electrolyte is found to be dissociated to the extent of 1.20% at 25^oC. Find the dissociation constant of the acid.(14)

20. Calculate the pH of 0.1M CH_3COOHsolution. Dissociation constant of acetic acid is 1.8×10^{-5}. (15)

21. Find the pH of a buffer solution containing 0.20 mole per litre sodium acetate and 0.18 mole per litre acetic acid. Ka for acetic acid 1.8 x 10^{-5}. (19)

22. What is the pH of an aqueous solution obtained by mixing 6 gram of acetic acid and 8.2 gram of sodium acetate and making the volume equal to 500ml. (given: Ka for acetic acid is $1.8x10^{-5}$) (20)

23. Calculate i) the hydrolysis constant ii) degree of hydrolysis and iii) the pH of 0.1M CH_3COONa solution (pKa for CH_3COOH is 4.74) (20)

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24. The K_a value of HCN is 10^{-9}. What is the pH of 0.4M HCN solution? (31)

25. A conductivity cell has platinum electrodes separated by a distance 1.5cm and the cross sectional area of each electrode is 4.5 sq cm. using this cell, the resistance of 0.5N electrolytic solution was measured as 15Ω. Find the specific conductance of the solution. (36)

26. A solution of silver nitrate is electrolyzed for 30 minutes with a current of 2 amperes. Calculate the mass of silver deposited at the cathode.(55) **ALL THE BEST SCORE CENTUM MARKS**

DAY 13   ART 13   PHYSICAL CHEMISTRY MODEL   MARKS: 75

Answer the following questions 5x5=25

1. Calculate the percentage efficiency of packing in body centred cubic crystal.

2. Derive Integrated rate law for a first order reaction and example for first order reaction.

3. Derive Henderson-Hasselbalch equation

4. Derive an expression for Ostwald's dilution law

5. Give the differences between physical

    adsorption and chemical adsorption.

Answer the following questions 10x2=20

6. What are the general characteristics of solids?

7. Write note on types of unit cell.

8. What is Arrhenius equation? Expand the terms

9. Explain common Ion effect with an example

10. What is inversion of phase? Give an ex.

11. Write the expression for the solubility product of $Ca_3(PO_4)_{2,}$ $BaSO_4$.

12. What is buffer index?

13. State Faraday's Laws of electrolysis

14. State Kohlraush's law.

15. Define promoters and example.

Answer the following questions 10x3=30

16. How will you calculate the packing efficiency for simple cubic?

17. Differentiate crystalline solids and amorphous solids.

18. What are the differences between rate and rate constant of a reaction?

19. What are the differences between order and molecularity?

20. Explain the buffer action of a solution

21. Calculate the pH of 0.04 M HNO_3 solution

22. Derive an expression for Nernst equation

23. Write short note on metal excess and metal deficiency defect with an example

24. Explain intermediate compound theory of homogeneous catalysis.

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25. Write note on electrophoresis.

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DAY 14   ART 14   UNIT 11 HYDROXY COMPOUNDS AND ALCOHOL

MARKS: 50

Answer the following   **25x2=50**

1. How does ethene react with alkaline $KMnO_4$? (110)

2. How does methanol react with thionyl chloride? (114)

3. Explain the dehydration of tertiary alcohol by E1 mechanism (115)

4. Explain Saytzeff's rule (116)

5. Swern oxidation (117)

6. How does 1°, 2°, 3° alcohol react with Cu at 573 K? (118)

7. How is oxirane prepared by ethane 1,2 diol? (119)

8. How will you prepare 1,4 dioxane? (120)

9. How is nitroglycerine prepared? (121)

10. How will you prepare acrolein? (121)

11. Mention the uses of glycol (122)

12. Note on Dow's process (126)

13. How will you prepare phenol from benzene? (126)

14. Note on Schotten-Baumann reaction (127)

15. Note on Willamson ether synthesis (127)

16. How does phenol react with acidified $K_2Cr_2O_7$? (128)

17. How will you prepare cyclohexanol from phenol? (128)

18. How will you prepare picric acid? (129)

19. How will you prepare 2,4,6 tribromo phenol? (130)

20. Riemer – Tiemann reaction (130)

21. Phthalein reaction (131)

22. Coupling reaction (131)

23. Test to differentiate alcohol and phenol (131)

24. How does ether react with HI ? Explain with mechanism (137)

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25. What is autooxidation? (137)

26. Friedel craft's reaction (138)

ALL THE BEST SCORE CENTUM MARKS

DAY 15   ART 15   UNIT 12 CARBONYL COMPOUNDS AND CARBOXYLIC ACID
                                                                   MARKS: 60

ANSWER THE FOLLOWING   **20x2=40**

1. Rosenmund reduction (151) Name the catalyst used in Rosenmund reduction and state its importance.(151)
2. How is the following conversion affected? Hex-4-enitrile → hex-4-enal (151)
3. Stephen's reaction (151)
4. Etard reaction (151)
5. Gattermann Koch reaction (151)
6. How are the following conversions affected?
   (X) Benzene → acetophenone   (153) (Y) Benzaldehyde → hydrobenzamide (159)
7. How will you prepare aldimine? (158)
8. What is Urotropine? How it is prepared? and uses (158)
9. Popoff's rule (159)
10. Clemmensen reduction (160), Wolf kishner reduction (161)
11. Haloform reaction (161)
12. Crossed aldol condensation (162)
13. Claisen Schmidt condensation (163)
14. Crossed cannizaro reaction (164)
15. Perkin's reaction (165)
16. Knoevenagal reaction (165)
17. Note on Schiff's base (165)
18. Explain Benedict's solution test. (167)
19. What is Formalin? What is its use? (167)
20. HVZ reaction (176)
21. uses of formic acid(188)
22. Test for carboxylic acid (177)
23. Complete the reaction.

(x) $CH_3 - CH = C - CH_3$ $\xrightarrow{(i)O_3 \ /(ii) \ Zn/H2O}$? **(149)** (y) CH_3COCH_3 $\xrightarrow{Mg-Hg/H2O}$? **(161)**

$\quad\quad\quad\quad\quad | $
$\quad\quad\quad\quad CH_3$
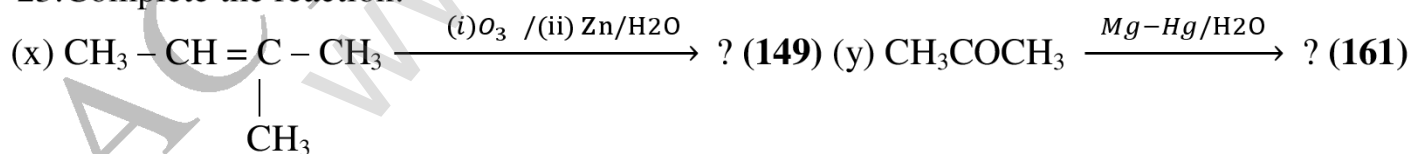
Answer the following   **4x5=20**

24. Explain Aldol condensation with mechanism (161)
25. Explain Cannizaro reaction with mechanism (163)
26. How will you convert benzaldehyde into the following compounds? (165)
    (i) Benzoin (ii) Cinnamic acid (iii) Malachite green
27. What happens when ethanoic acid reacts with ethanol in the presence of con H_2SO_4. Give its complete mechanism. (173)

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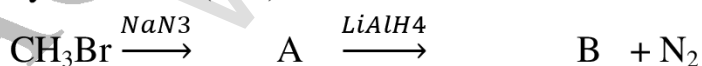ACTC CHEMISTRY TUITION CENTRE, 41/1-PWD ROAD, NAGERCOIL 9940847892

28. Formic acid reduces Tollen's reagent whereas acetic acid does not reduce. Explain. (177)

ALL THE BEST SCORE CENTUM MARKS

DAY 16   ART 16   UNIT 13 ORGANIC NITROGEN COMPOUNDS   MARKS: 50

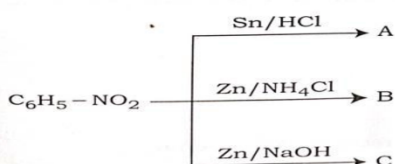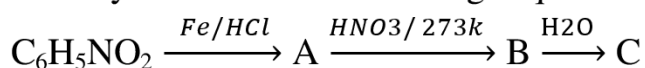**Answer the following**   **20x2=40**

1. Explain Isomerism of nitro compound?(199)
2. Acidic nature of nitro alkanes.(200)
3. How will you prepare oil of mirbane? (201)
4. Ethyl nitrite to ethanol.(202)
5. How is Chloropicrin prepared (203)
6. Hofmann's bromide reaction (209)
7. Gabriel phthalimide synthesis (209)
8. Hoffmann's ammonolysis (209)
9. Sabatier – Mailhe method (210)
10. Schotten – Baumann reaction (214)
11. Diazotisation (215)
12. Libermann's nitroso test. (215)
13. Carbylamine reaction (216)
14. Mustard oil reaction (216)
15. Hofmann-Mustard oil reaction. (216) (How will you prepare phenyl mustard oil?)
16. How does aniline react with Br_2/H_2O (Bromination of aniline)? (217)
17. Why aniline does not undergo Fridel Crafts reaction. (218)
18. Identify A and B. (208)

$$A \xrightarrow[4[H]]{Na(Hg)/C_2H_5OH} CH_3 - CH_2 - NH_2$$

$$B \xrightarrow[4[H]]{Na(Hg)/C_2H_5OH} CH_3 - NH - CH_3$$
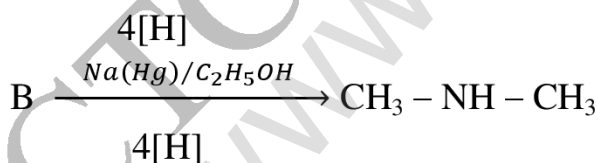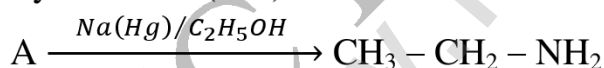
19. Identify A and B. (208)

$$CH_3Br \xrightarrow{NaN3} A \xrightarrow{LiAlH4} B + N_2$$

20. From the following reaction, identify A, B and C. (203)

21. Identify A to C in the following sequence? ($BBQ_{5i}233$)

$$C_6H_5NO_2 \xrightarrow{Fe/HCl} A \xrightarrow{HNO3/273k} B \xrightarrow{H2O} C$$

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Answer the following   **2x5=10**

22. How will you distinguish between primary secondary and tertiary aliphatic amines?

23. Name the reducing agent used in the reduction of nitrobenzene to the following compounds.
    (203)   (A) Aniline   (B) Phenyl hydroxylamine   (C) Nitrosobenzene

ALL THE BEST SCORE CENTUM MARKS

DAY 17   **ART 17**   **UNIT 14 BIOMOLECULES**   **MARKS: 50**

Answer the following   **10x3=30**

1. Explain Hormones (266).

2. Classification of protein. (253)

3. Explain structure of protein. (254)

4. Explain composition and structure of nucleic acids. (260)

5. Explain the structure of Fructose. (245)

6. Explain the structure of lactose (247)

7. Explain the structure of maltose (248)

8. Write the biological importance of proteins. (256)

9. Write the biological importance of lipids. (256)

10. Explain types of RNA molecules (264)

11. Give any four differences between DNA and RNA. (264)

Answer the following   **10x2=20**

12. Write note on DNA finger printing. (265)

13. Define anomer. Give example. (243)

14. Define mutarotation. (244)

15. What are epimers? Give an example. (244)

16. What happens when fructose is partially reduced with sodium amalgam and water? (245)

17. What is glycosidic linkage? (247)

18. Mention the importance of Carbohydrates (250)

19. Define isoelectric point (252)

20. What is Called Zwitter ion? Give Zwitter ion structure of alanine. (252)

21. Write a short note on peptide bond. (252)

22. Write a note on denaturation of proteins. (256)

23. How are vitamins classified based on their solubility. (258)

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24. Name the vitamins whose deficiency causes. (a) Rickets (b) Scurvy c) pellagra d) Beriberi (259)

ALL THE BEST SCORE IN CENTUM

DAY 18   ART 18   UNIT 15 CHEMISTRY IN EVERYDAY LIFE   MARKS: 50

Answer the following 25x2=50

1. Define medicine, chemotherapy.

2. What are i) antagonists ii) agonists.

3. What are antihistamines? Give example and mention its use.

4. What are antimicrobials? Give example and mention its use.

5. What are artificial sweetening agents? Give example.

6. What are antibiotics?

7. What are food preservatives? (283)

8. How is terylene prepared? (289)

9. Write a note on vulcanization rubber (292)

10. What are tranquilizers? (277)

11. Note on Analgesics (278)

12. Anesthetics (279)

13. Antacids (279)

14. Antioxidants (283)

15. Antiseptic (282)

16. What is TFM? (284)

17. How will you prepare Teflon? (288)

18. How will you prepare nylon 6, nylon 6,6? (289)

19. Mention the preparation of Bakelite (290)

20. How does Melamine undergo condensation polymerization? (291)

21. Mention the preparation of Neoprene (292)

22. How will you prepare Buna –N. & uses (292)

23. How will you prepare Buna –S. & uses

24. What is LDPE? Give its preparation and uses.

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25.How do antiseptics differ from disinfectants? (282)

26.Define food additives. (282) State any three advantages of food additives. (283)

ALL THE BEST SCORE CENTUM

DAY 19   ART 19   ORGANIC MODEL 11-15   MARKS: 70

Answer the following questions 4x5=20

1. Explain saytzeff rule with example.116

2. Difference between 1°, 2°, 3° amine.

3. Explain structure of glucose. 240

4. Victor meyer test.111

Answer the following questions 10x2=20

5. Preparation Dacron & uses289

6. Biological importance of lipids 258

7. Peptide bond? & example 252

8. Epimers and epimerization & ex244

9. Levine and hauser acetylation 225

10.Hafmann-Mustard oil reaction 216

11.Gabriel phthalimide synthesis 209

12. Test for carboxylic acid. 177

13. Write note on glacial acetic acid 172

14.Popoff rule & example 159

Answer the following questions 10x3=30

15.Preparation Nylon 6,6 and Nylon 6& uses 289

16. Write on anaesthetics. 279

17.Hormone classification & example 267

18.Difference between RNA and DNA 264

19.1°, 2°, 3° amine react with HNO_2 215

20.Reducing property of formic acid. 177

21.Mechanism of esterification.173

22.Mechanism of aldol. 162

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23.Mechanism of cannizaro reaction. 164

24.Uses of formaldehyde, benzaldehyde.167

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DAY 20   ART 20   ORGANIC NAME REACTION   MARKS: 100
NAME REACTION   50x2=100

1. Markonikoff's rule. (108)

2. Saponification(110)

3. Saytzeff's rule.(116)

4. Swern oxidation.(117)

5. Dows process(127)

6. Schotten- baumann(128)

7. Williamson ether (128)

8. Kolbe's schmit (131)

9. Riemer tiemann (131)

10.Phthalein reaction(132)

11.Coupling reaction(132)

12.Friedel craft's reacti(139)

13.Rosenmund reductio(151)

14.Stephen's reaction(151)

15.Etard Recation -151

16.Gattermann-koch (152)

17.Friedel crafts acylation (152)

18.Urotropine(158)

19.Popoff's rule (159)

20.Clemmensen (160)

21.Wolfkishner (161)

22.Haloform Reaction -161

23.Aldol condensation(162)

24.Crossed aldol (163)

25.Claisen-schmidt (163)

26.Cannizaro reaction(164)

27.Crossed cannizaro (164)

28.Benzoin condensation164)

29.Penkins reaction(165)

30.Knoevenagal reaction165)

31.Malachite green dye(165)

32.Esterification (173)

33.Kolbs electrolytic(175)

34.decaroxylation(175)

35.(HVZ) hell –Volhard Zelinsky 176

36.Trans esterification(185)

37.Claisen condensation(186)

38.Hoffmanns degradation(188)

39.Nef Carbonyl Synthes203.

40.Gabriel phthalimide (209)

41.Hoffmanns ammonolysis(209)

42.Sabatier –Mailhe m(210)

43.Schotten –baumann reaction(214,215)

44.Carbylamine reactio(216)

45.Mustard oil reaction(216)

46.Gattermann reaction(220)

47.sandmeyer reaction(220)

48.Baltz –schiemann (221)

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49.Gomberg reaction(221)   51.Libermanns nitroso test(215)

50.Levine and hauser acetylation(225)

ALL THE BEST

DAY 21   ART 21   UNIT 1-5 INORGANIC ONE MARK   MARKS: 50

1. Bauxite has the composition

    a) Al_2O_3 b) $Al_2O_3. nH_2O$ c) $Fe_2O_3.H_2O$ d)None of these

2. 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

3. The metal oxide which cannot be reduced to metal by carbon is

    a) PbO   b) Al_2O_3 c) ZnO   d) FeO

4. Which of the metal is extracted by Hall-Heroult process?

    a) Al   b) Ni   c) Cu   d) Zn

5. Electrochemical process is used to extract

    a) Iron   b) Lead   c) Sodium   d) silver

6. Flux is a substance which is used to convert

    a) Mineral into silicate   b) Infusible impurities to soluble impurities

    c) Soluble impurities to infusible impurities   d) All of these

7. Which one of the following ores is best concentrated by froth – floatation method?

    a) Magnetite   b) Hematite   c) Galena   d) Cassiterite

8. Zinc is obtained from ZnO by

    a) Carbon reduction   b) Reduction using silver   c) Electrochemical process   d) Acid leaching

9. Which of the following is used for concentrating ore in metallurgy?

    a) Leaching   b) Roasting   c) Froth floatation   d) Both (a) and (c)

10. The incorrect statement among the following is

    a) Nickel is refined by Mond's process b) Titanium is refined by Van Arkel's process c) Zinc blende is concentrated by froth floatation   d) In the metallurgy of gold, the metal is leached with dilute sodium chloride solution

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11. In the electrolytic refining of copper, which one of the following is used as anode?

   a) Pure copper   b) Impure copper   c) Carbon rod   d) Platinum electrode

12. Which of the following plot gives Ellingham diagram

   a) ΔS Vs T   b) ΔG^0 Vs T   c) ΔG^0 Vs $\frac{1}{T}$ d) ΔG^0 Vs T^2

13. An aqueous solution of borax is

          a) neutral b) acidic   c) basic   d) amphoteric

15. Boric acid is an acid because its molecule (NEET)

   a) contains replaceable H^+ ion   b) gives up a proton

   c) combines with proton to form water molecule   d) accepts OH- from water ,releasing

   proton.

16. Which among the following is not a borane?

   a) B_2H_6 b)B_3H_6 c)B_4H_{10} d) none of these

17. Which of the following metals has the largest abundance in the earth's crust?

   a) Aluminium   b) calcium   c) Magnesium   d) sodium

18. In diborane, the number of electrons that accounts for banana bonds is

   a) six   b) two   c) four   d) three

19. The element that does not show catenation among the following p-block elements is

   a) Carbon   b) silicon   c) Lead   d) germanium

20. Carbon atoms in fullerene with formula C_{60} have a) sp^3 hybridised   b)   sp   hybridised

      c) sp^2 hybridised   d) partially sp^2 and partially sp^3 hybridised

21. Oxidation state of carbon in its hydrides a) +4   b) -4   c) +3   d) +2

22. Which of these is not a monomer for a high molecular mass silicone polymer?

   a) Me_3SiCl b) $PhSiCl_3$ c) $MeSiCl_3$ d) Me_2SiCl_2

23. The compound that is used in nuclear reactors as protective shields and control rods is

   a) Metal borides   b) metal oxides   c) Metal carbonates   d) metal carbide

24. The stability of +1 oxidation state increases in the sequence

   a) Al < Ga < In < Tl   b) Tl < In < Ga < Al c) In < Tl < Ga < Al   d) Ga< In < Al < Tl

25. On hydrolysis, PCl_3 gives

   a) H_3PO_3 b) PH_3 c) H_3PO_4 d) $POCl_3$

26. P_4O_6 reacts with cold water to give

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a) H_3PO_3 b) $H_4P_2O_7$ c) HPO_3 d) H_3PO_4

27. The basicity of pyrophosphorous acid ($H_4P_2O_5$) is

a) 4   b) 2   c) 3   d) 5

28. The molarity of given orthophosphoric acid solution is 2M. its normality is

a) 6N   b) 4N   c) 2N   d) none of these

29. Assertion : bond dissociation energy of fluorine is greater than chlorine gas

Reason: chlorine has more electronic repulsion than fluorine

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.

30. Among the following, which is the strongest oxidizing agent?

a) Cl_2 b) F_2 c) Br_2 d) l_2

31. The correct order of the thermal stability of hydrogen halide is

a) HI > HBr > HCl > HF   b) HF > HCl > HBr > HI   c) HCl > HF > HBr > HI

d) HI > HCl > HF > HBr

32. Which one of the following compounds is not formed?

a) $XeOF_4$ b) XeO_3 c) XeF_2 d) NeF_2

33. Most easily liquefiable gas is

a) Ar   b) Ne   c) He   d) Kr

34. XeF_6 on complete hydrolysis produces

a) $XeOF_4$ b) XeO_2F_2 c) XeO_3 d) XeO_2

35. Which of the following is strongest acid among all?

a) HI   b) HF   c) HBr   d) HCl

36. When copper is heated with conc HNO_3 it produces

a) $Cu(NO_3)_2$, NO and NO_2 b) $Cu(NO_3)_2$ and N_2O c) $Cu(NO_3)_2$ and NO_2 d) $Cu(NO_3)_2$ and NO

37. Which of the following d block element has half filled penultimate d sub shell as well as half-filled valence sub shell?

a) Cr   b) Pd   c) Pt   d) none of these

38. The magnetic moment of Mn^{2+} ion is

a) 5.92BM   b) 2.80BM   c) 8.95BM   d) 3.90BM

39. 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

40. The correct order of increasing oxidizing power in the series

   a) $VO_2^+ < Cr_2O_7^{2-} < MnO_4^-$ b) $Cr_2O_7^{2-} < VO_2^+ < MnO_4^-$

   c) $Cr_2O_7^{2-} < MnO_4^- < VO_2^+$ d) $MnO_4^- < Cr_2O_7^{2-} < VO_2^+$

41. In acid medium, potassium permanganate oxidizes oxalic acid to

   a) oxalate b) Carbon dioxide   c) acetate   d) acetic acid

42. Which of the following oxidation states is most common among the lanthanoids?

   a) 4   b) 2   c) 5   d) 3

43. 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

44. Which one of the following is not correct?

   a) $La(OH)_2$ is less basic than $Lu(OH)_3$ b) In lanthanoid series ionic radius of Ln^{3+} ions decreases

   c) La is actually an element of transition metal series rather than lanthanide series

   d) Atomic radii of Zr and Hf are same because of lanthanide contraction

45. Which type of isomerism is exhibited by $[Pt(NH_3)_2Cl_2]$

   a) Coordination isomerism   b) Linkage isomerism

   c) Optical isomerism   d) Geometrical isomerism

46. Which one of the following complexes is not expected to exhibit isomerism?

a) $[Ni(NH_3)_4(H_2O)_2]^{2+}$ b) $[Fe(CO)_5]$ c) $[Co(NH_3)_5 SO_4]Cl$ d) $[Fe(en)_3]^{3+}$

47. A complex in which the oxidation number of the metal is zero is

a) $K_4[Fe(CN)_6]$ b) $[Fe(CN)_3(NH_3)_3]$ c) $[Fe(CO)_5]$ d) both (b) and (c)

48. Which of the following is paramagnetic in nature?

a) $[Zn(NH_3)_4]^{3+}$ b) $[Co(NH_3)_6]^{3+}$ c) $[Ni(H_2O)_6]^{2+}$ d) $[Ni(CN)_4]^{2-}$

49. Fac-mer isomerism is shown by

a) $[Co(en)_3]^{3+}$ b) $[Co(NH_3)_4(Cl)_2]^+$ c) $[Co(NH_3)_3(Cl)_3]$ d) $[Co(NH_3)_5Cl]SO_4$

50. Choose the correct statement.

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a) Square planar complexes are more stable than octahedral complexes

b) The spin only magnetic moment of $[Cu(Cl)4]^{2-}$ is 1.732 BM and it has square planar

structure. c) Crystal field splitting energy (Δ_0) of $[FeF_6]^{4-}$ is higher than the (Δ_0) of $[Fe(CN)_6]^{4-}$

d) crystal field stabilization energy of $[V(H_2O)_6]^{2+}$ is higher than the crystal field stabilization

of $[Ti(H_2O)_6]^{2+}$

ALL THE BEST
DAY 22   ART 22   PHYSICAL CHEMISTRY ONE MARK   MARKS: 50
Choose correct answer   **50x1=50**

1. Solid CO_2 is an example of
a) Covalent solid   b) metallic solid   c) molecular solid   d) ionic solid

2. Assertion : monoclinic sulphur is an example of monoclinic crystal system
Reason: for a monoclinic system, a≠b≠c and α = γ = 90°, β = 90°.
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.

3. In calcium fluoride, having the flurite 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

4. The number of unit cells in 8 gm of an element X (atomic mass 40) which crystallizes in
bcc pattern is (N_A is the Avogadro number)
a) 6.023×10^{23} b) 6.023×10^{22} c) 60.23×10^{23} d) $\left(\frac{6.023 \times 10^{23}}{8 \times 40}\right)$

5. The number of carbon atoms per unit cell of diamond is
a) 8   b) 6   c) 1   d) 4

6. The vacant space in bcc lattice unit cell is
a) 48%   b) 23%   c) 32%   d) 26%

7. if 'a' is the length of the side of the cube, the distance between the body centered atom and
one corner atom in the cube will be
a) $\left(\frac{2}{\sqrt{3}}\right)a$ b) $\left(\frac{4}{\sqrt{3}}\right)a$ c) $\left(\frac{\sqrt{3}}{4}\right)a$ d) $\left(\frac{\sqrt{3}}{2}\right)a$

8. Potassium has a bcc structure with nearest neighbor distance 4.52 A^0 . its atomic weight is
39. its density will be
a) 915 kg m^{-3} b) 2142 kg m^{-3} c) 452 kg m^{-3} d) 390 kg m^{-3}

9. Schottky defect in a crystal is observed when
a) unequal number of anions and anions are missing from the lattice
b) equal number of anions and anions are missing from the lattice
c) an ion leaves its normal site and occupies an interstitial site   d) no ion is missing from
its lattice.

10. The cation leaves its normal position in the crystal and moves to some interstitial position,
the defect in the crystal is known as

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a) Schottky defect   b) F center   c) Frenkel defect   d)   non-stoichiometric defect

11. 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

12. For a first order reaction A→B the rate constant is x min^{-1} . If the initial concentration of A is 0.01M , the concentration of A after one hour is given by the expression.

a) $0.01\ e^{-x}$ b) $1 \times 10^{-2}\ (1 - e^{-60x})$ c) $(1 \times 10^{-2})e^{-60x}$ d) none of these

13. A zero order reaction X→Product , with an initial concentration 0.02M has a half life of 10 min. if one starts with concentration 0.04M, then the half life is

a) 10 s   b) 5 min   c) 20 min   d) cannot be predicted using the given information

14. 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

15. For a first order reaction, the rate constant is 6.909 min^{-1}.the time taken for 75% conversion in minutes is

a) $\left(\frac{3}{2}\right)\log 2$ b) $\left(\frac{2}{3}\right)\log 2$ c) $\left(\frac{3}{2}\right)\log\left(\frac{3}{4}\right)$ d) $\left(\frac{2}{3}\right)\log\left(\frac{4}{3}\right)$

16. In a first order reaction $x \rightarrow y$; if k is the rate constant and the initial concentration of the reactant x is 0.1M, then, the half life is

a) $\left(\frac{\log 2}{k}\right)$ b) $\left(\frac{0.693}{(0.1)k}\right)$ c) $\left(\frac{\ln 2}{k}\right)$ d) none of these

17. For the reaction $N_2O_5(g) \rightarrow 2NO(g) + \frac{1}{2}O_2(g)$, the value of rate of disappearance of N_2O_5 is given as 6.5×10^{-2} mol L^{-1}s^{-1}. The rate of formation of NO_2 and O_2 is given respectively as

a) $(3.25 \times 10^{-2}$mol L^{-1}s$^{-1})$ and $(1.3 \times 10^{-2}$mol L^{-1}s$^{-1})$

b) $(1.3 \times 10^{-2}$mol L^{-1}s$^{-1})$ and $(3.25 \times 10^{-2}$mol L^{-1}s$^{-1})$

c) $(1.3 \times 10^{-1}$mol L^{-1}s$^{-1})$ and $(3.25 \times 10^{-2}$mol L^{-1}s^{-1} d) None of these

18. During the decomposition of H_2O_2 to give dioxygen, 48 g O_2 is formed per minute at certain point of time. The rate of formation of water at this point is

a) 0.75 mol min^{-1} b) 1.5 mol min^{-1} c) 2.25 mol min^{-1} d) 3.0 mol min^{-1}

19. 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

20. In a homogeneous reaction A→B + C + D , the initial pressure was P_0 and after time t it was P. expression for rate constant in terms of P_0 , P and t will be

a) $k = \left(\frac{2.303}{t}\right) \log\left(\frac{2p_0}{3p_0 - p}\right)$ b) $k = \left(\frac{2.303}{t}\right) \log\left(\frac{2p_0}{p_0 - p}\right)$

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c) $k = \left(\frac{2.303}{t}\right) \log \left(\frac{3p_0 - p}{2p_0}\right)$ d) $k = \left(\frac{2.303}{t}\right) \log \left(\frac{2p_0}{3p_0 - 2p}\right)$

21. Concentration of the Ag^+ ions in a saturated solution of $Ag_2C_2O_4$ is 2.24×10^{-4} mol L^{-1} solubility product of $Ag_2C_2O_4$ is (NEET – 2017)

a) 2.42×10^{-8} mol^{3}L^{-3} b) 2.66×10^{-12} mol^{3}L^{-3} c) 4.5×10^{-11} mol^{3}L^{-3} d) 5.619×10^{-12} mol^{3}L^{-3}

23. pH of a saturated solution of $Ca(OH)_2$ is 9. The Solubility product (K_{sp}) of $Ca(OH)_2$

a) 0.5×10^{-15} b) 0.25×10^{-10} c) 0.125×10^{-15} d) 0.5×10^{-10}

24. Conjugate base for bronsted acids H_2O and HF are

a) OH^- and H_2FH^+, respectively   b) H_3O^+ and F^-, respectively

c) OH^- and F^-, respectively   d) H_3O^+ and H_2F^+, respectively

25. Which of the following fluro – compounds is most likely to behave as a Lewis base?

a) BF_3 b) PF_3 C) CF_4 d) SiF_4

26. Which of these is not likely to act as Lewis base?

a) BF_3 b) PF_3 C) CO   d) F^-

27. If the solubility product of lead iodide is 3.2×10^{-8}, its solubility will be

a) 2×10^{-3}M   b) 4×10^{-4}M   c) 1.6×10^{-5}M   d) 1.8×10^{-5}M

28. The pH of 10^{-5} M KOH solution will be

a) 9   b) 5   c) 19   d) none of these

29. $H_2PO_4^{2-}$ the conjugate base of

a) PO_4^{3-} b) P_2O_5 c) H_3PO_4 d) HPO_4^{2-}

30. Which of the following can act as lowery – Bronsted acid well as base?

a) HCl   b) SO_4^{2-} c) HPO_4^{2-} d) Br^-

31. The pH of an aqueous solution is Zero. The solution is

a) slightly acidic   b) strongly acidic   c) neutral   d) basic

32. The hydrogen ion concentration of a buffer solution consisting of a weak acid and its salts is given by

a) $[H^+] = \frac{K_a[acid]}{[salt]}$ b) $[H^+] = K_a[salt]$ c) $[H^+] = K_a[acid]$ d) $[H^+] = \frac{K_a[salt]}{[acid]}$

33. The number of electrons that have a total charge of 9650 coulombs is

a) 6.22×10^{23} b) 6.022×10^{24} c) 6.022×10^{22} d) 6.022×10^{-34}

34. Faradays constant is defined as

a) charge carried by 1 electron   b) charge carried by one mole of electrons

c) charge required to deposit one mole of substance   d) charge carried by 6.22×10^{10} electrons.

35. While charging lead storage battery

a) $PbSO_4$ on cathode is reduced to Pb   b) $PbSO_4$ on anode is oxidised to PbO_2

c) $PbSO_4$ on anode is reduced to Pb   d) $PbSO_4$ on cathode is oxidised to Pb

36. Zinc can be coated on iron to produce galvanized iron but the reverse is not possible. It is because

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a) Zinc is lighter than iron   b) Zinc has lower melting point than iron c) Zinc has lower negative electrode potential than iron d) Zinc has higher negative electrode potential than iron

37. Assertion : pure iron when heated in dry air is converted with a layer of rust.

Reason : Rust has the composition Fe_3O_4

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.

38. For freudlich isotherm a graph of $\log \frac{m}{x}$ is plotted against log P. The slope of the line and its y − axis intercept respectively corresponds to

a) $\frac{1}{n}$, k   b) $\log \frac{1}{n}$, k   c) $\frac{1}{n}$, log k   d) $\log \frac{1}{n}$, log k

39. Which of the following is incorrect for physisorption?

a) reversible   b) increases with increase in temperature

c) low heat of adsorption   d) increases with increase in surface area

40. Which one of the following characteristics are associated with adsorption? (NEET)

a) ΔG and ΔH are negative but ΔS is positive   b) ΔG and ΔS are negative but ΔH is positive

c) ΔG is negative but ΔH and ΔS are positive   d) ΔG, ΔH and ΔS all are negative.

41. Fog is colloidal solution of

a) solid in gas   b) gas in gas   c) liquid in gas   d) gas in liquid

42. Assertion : Coagulation power of Al^{3+} is more than Na^+ .

Reason : greater the valency of the flocculating ion added, greater is its power to cause precipitation

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.

43. Statement : To stop bleeding from an injury, ferric chloride can be applied. Which comment about the statement is justified?

a) It is not true, ferric chloride is a poison.

b) It is true, Fe^{3+} ions coagulate blood which is a negatively charged sol

c) It is not true; ferric chloride is ionic and gets into the blood stream.

d) It is true, coagulation takes place because of formation of negatively charged sol with Cl^-.

44. Hair cream is

a) gel   b) emulsion   c) solid sol   d) sol.

8. Which one of the following is correctly matched?

a) Emulsion   –   Smoke

b) Gel   –   butter

c) foam   –   Mist

d) whipped cream   –   sol

45. The most effective electrolyte for the coagulation of AS_2S_3 Sol is

a) NaCl   b) $Ba(NO_3)_2$ c) $K_3[Fe(CN)_6]$ d) $Al_2(SO_4)_3$

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46. Which one of the is not a surfactant?

a) $CH_3 - (CH_2)_{15} - N^+ - (CH_3)_2 CH_2Br$ b) $CH_3 - (CH_2)_{15} - NH_2$

c) $CH_3 (CH_2)_{16} - CH_2OSO_2 - Na^+$ d) $OHC - (CH_2)_{14} - CH_2 - COO - Na^+$

47. The phenomenon observed when a beam of light is passed through a colloidal solution is

a) Cataphoresis   b) Electrophoresis   c) Coagulation   d) Tyndall effect

48. In an electrical field, the particles of a colloidal system move towards cathode. The coagulation of the same sol is studied using K_2SO_4 (i)Na_3PO_4 (ii)$K_4[Fe(CN)_6]$ (iii) and NaCl (iv) Their coagulating power should be

a) II > I>IV > III   b) III > II > I > IV   c) I > II > III > IV   d) none of these

49. Collodion is a 4% solution of which one of the following compounds in alcohol–ether mixture? a) Nitroglycerine b) Cellulose acetate   c) Glycol dinitrate   d) Nitrocellulose

50. Adsorption of a gas on solid metal surface is spontaneous and exothermic, then

a) ΔH increases   b) ΔS increases   c) ΔG increases   d) ΔS decreases

ALL THE BEST SCORE CENTUM MARKS

DAY 23   ART 23   INORGANIC SHORT ANSWER   MARKS: 70

Answer the following   35x2=70

1. What is the difference between minerals and ores?
2. Give the basic requirement for vapour phase refining?
3. What do you meant by cementation?
4. Explain about Van-Arkel method for refining zirconium/titanium:
5. Difference between calcination and roasting
6. Write a note on Fisher tropsch synthesis.
7. Write a short note on hydroboration
8. How will you identify presence of borate radical
9. What is burnt alum
10. What is inert pair effect
11. How will you prepare borax beads from borax
12. How is potash alum prepared?
13. What are inter halogen compounds? Give ex.
14. Fluorine is more reactive than other halogens?
15. Give a reason to support that sulphuric acid is a dehydrating agent.
16. Write the reason for the anamolous behaviour of Nitrogen.
17. What is Aquaregia?.Write down its use.
18. Explain about Holmes signal
19. Explain about Manufacture of sulphuric acid by contact process
20. How is nitric acid manufactured using Ostwald's process?
21. What are inner transition elements?
22. Describe the preparation of potassium dichromate

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23. What are interstitial compounds?

24. Calculate the number of unpaired electrons in Ti^{3+}, Mn^{2+} and calculate the spin only magnetic moment

25. Explain about Hume-Rothery rule to form a substitute alloy

26. What is Chromyl chloride test

27. What is linkage isomerism? Explain with an ex

28. What are hydrate isomers? Explain with an ex

29. What is crystal field stabilization energy (CFSE)

30. What are the limitations of VB theory?

31. Give characteristics of ionic crystals

32. Define unit cell.

33. Explain about impurity defect

34. Define average rate and instantaneous rate.

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DAY 24   ART 24   DIFFERENCE QUESTIONS   MARKS: 50

ANSWER THE FOLLOWING   15x3=45

1. Differentiate between minerals and ores.

2. What are the differences between white phosphorus and red phosphorus?

3. Differentiate between lanthanoids and actinoids.

4. Differentiate between double salts and co-ordination compounds.

5. Differentiate between crystalline and amorphous solids.

6. Differentiate between tetrahedral voids and octahedral voids.

7. Differentiate between rate of the reaction and rate constant of the reaction.

8. Distinction the order of the reaction and molecularity of a reaction.

9. Differences between Lewis acids and Lewis bases.

10. Differences between Physical and Chemical adsorption.

11. Differences between Homogeneous catalysis and heterogeneous catalysis.

12. What is the difference between a sol and a gel?

13. Differences between DNA and RNA.

14. Differences between Hormones and Vitamins.

15. Differences between Disinfectants and Antiseptics.

Answer in detail   1x5=5

16. Differences between Glucose and Fructose.

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DAY 25   ART 25   APPLICATION & USES   MARKS: 60

Answer the following   25x2=50

1. Applications of Aluminium.
2. Applications of Zinc.
3. Applications of Gold.
4. Applications of Iron.
5. Applications of Copper.
6. Uses of Boron.
7. Uses of Borax.
8. Uses of Boric acid
9. Uses of diborane & Boron trifluoride.
10. Uses of Aluminium chloride.
11. Uses of Alum.
12. Uses of CO and CO_2.
13. Uses of silicone.
14. Uses of Nitrogen, Nitric acid.
15. Uses of phosphorus and phosphine.
16. Uses of oxygen.
17. Uses of sulphur dioxide & sulphuric acid.
18. Uses of Chlorine and HCl.
19. Uses of Helium.
20. Uses of Neon, Argon, Krypton.
21. Uses of Xenon, Radon.
22. Uses of $K_2Cr_2O_7$
23. Uses of $KMnO_4$.
24. Medicinal uses of colloids.
25. Medicinal uses of co-ordination compounds.
26. Biological importance coordination compound.

Answer in detail: 2x5=10

27. Uses of Kohlraush's law.

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28. Applications of adsorptions.
29. Application of colloids.

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| DAY 26 | ART 26 | ORGANIC PROBLEM | MARKS: 50 |

ANSWER THE FOLLOWING   10X5=50

1. Compound A of molecular formula C_7H_6O reduces Tollen's reagent when A reacts with 50% NaOH gives compound B of molecular formula C_7H_8O and C of molecular formula $C_7H_5O_2Na$. compound C on treatment with dil HCl gives compound D of molecular formula $C_7H_6O_2$. When D is heated with soda lime gives compound E. identify A, B,C,D & E. Write the corresponding equations.

2. An organic compound (A) of molecular formula C_2H_6O on reaction with conc. H_2SO_4 at 443 k gives and unsaturated hydrocarbon (B) . (B) on reaction with Baeyer's reagent produces (C) of molecular formula $C_2H_6O_2$. (C) on reaction with anhydrous $ZnCl_2$ Produces (D) of molecular formula C_2H_4O. (D) reduces Tollen's reagent. Identify A,B,C and D and explain the reactions involved.

3. An organic compound (A) of molecular formula CH_4O on mild oxidation gives (B) of formula CH_2O that reduces Tollen's reagent. (B) on reaction with methyl magnesium bromide followed by acid hydrolysis will give (C). of molecular formula C_2H_6O which liberates H_2 gas with metallic sodium. Identify A,B,C, and explain the reactions involved.

4. An organic compound (A) of molecular formula C_2H_6O reacts with metallic Na and liberates H_2 gas (A) on mild oxidation with Cu at 573 k gives (B) of molecular formula C_2H_4O. (B) on reaction with methyl magnesium bromide followed by acid hydrolysis gives (C) of molecular formula C_3H_8O. (C) gives Blue colour in Victor Meyer's test. (C) on mild oxidation with Cu at 573 K gives (D) of formula C_3H_6O. Identify A,B,C,D and explain the reactions

5. An aromatic compound (A) of molecular formula C_6H_5Cl on reaction with aqueous NaOH gives (B) of formula C_6H_6O that give violet colouration with neutral $FeCl_3$.(B) on reaction with ammonia in presence of anhydrous $ZnCl_2$ gives (C) of formula C_6H_7N. Identify A,B,C and explain the reactions.

6. An organic compound (A) of molecular formula C_6H_5Cl on reaction with aqueous NaOH gives (B) of formula C_6H_6O. (B) on reaction with NaOH gives (C) of formula C_6H_5ONa. (C) on treatment with CO_2 followed by acid hydrolysis yield (D) of formula $C_7H_6O_3$ an aromatic hydroxyl acid. Identify A,B,C,D and explain the reactions involved.

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7. An organic compound (A) of molecular formula $C_6H_5N_2Cl$ on boiling with hot water gives (B) of molecular formula C_6H_6O. (B) on reaction with Zinc dust gives (C) a simplest aromatic hydrocarbon. (C) on reaction with methyl chloride in the presence of anhydrous $AlCl_3$ gives (D) of Molecular formula C_7H_8. Identify A,B,C,D and explain the reaction.

8. An organic compound (A) of molecular formula C_6H_6 reacts with propylene in the presence of H_3PO_4 at 532 K gives (B) formula $C_9H_{12}O_2$ as (C). (C) on acidification with H_2SO_4 gives (D) of formula C_6H_6O and (E) of formula C_3H_6O. Identify A,B,C,D and E and explain the reactions.

9. An organic compound (A) of molecular formula C_3H_8O an reaction P/I_2 gives C_3H_7I as (B). (B) on reaction with $AgNO_2$ produces (C) with formula $C_3H_7NO_2$. (C) on reaction with nitrous acid gives (D) of molecular formula $C_3H_6N_2O_3$. (D) on reaction with KOH produces blue colour. Identify A,B,C,D and explain the reaction.

10. An organic compound A (C_2H_6O) liberates hydrogen with sodium metal. A when heated with alumina at 620 K gives an alkene B which when passed through Bayer's reagent gives C($C_2H_6O_2$). C reacts with PI_3 and gives back B. Identify A, B and C. Write the reactions.

11. Compound (A) with molecular formula C_6H_6O gives violet colour with neutral $FeCl_3$, reacts with $CHCl_3$ and NaOH gives (B) with molecular formula $C_7H_6O_2$. Compound (A) reacts with Ammonia at 473 K in the presence of $ZnCl_2$ and gives compound (C) with molecular formula C_7H_7N. Compound (D) undergoes carbylamines test. Identify (A), (B), and (C). Explain the reactions.

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DAY 27   ART 27   FULL PORTION EXAM   MARKS: 70

+2 Chemistry MODEL Exam Question – FULL PORTION

Part I Choose the correct answer   15x1=15

1.   Glucose and Mannose are epimers at:

a)C_3 carbon   b) C_4 carbon   c) C_1 carbon   d) C_2 carbon

2. $C_6H_5 - N_2Cl \xrightarrow{Cu_2Cl_2/HCl} C_6H_5 - Cl + N_2$ this reaction is known as:

a)Gattermann reaction   b) Gomberg reaction

c) Schotten − Baumann reaction   d) Sandmeyer reaction

3. In $H_2 - O_2$ fuel cell, the reaction occurs at cathode is:

a) $2H_{2(g)} + O_{2(g)} \rightarrow 2H_2O_{(g)}$ b) $H^+ + e^- \rightarrow \frac{1}{2} H_2$

c) $O_{2(g)} + 2H_2O_{(l)} + 4e^- \rightarrow 4OH^-_{(aq)}$ d) $H^+_{(aq)} + OH^-_{(aq)} \rightarrow H_2O_{(l)}$

4. _____ is used in the manufacture of thermosoftening plastic Perspex

a) Benzaldehyde   b) Acetone   c) Acetaldehyde   d) Benzophenone

5. The P^H of an aqueous solution is zero. The solution is:

a) neutral   b) Basic   c) Slightly acidic   d) Strongly acidic

6. Inorganic benzene is:

a) B_2H_6 b) $B_3H_3H_6$ c) H_3BO_3 d) $H_2B_4O_7$

7. Extraction of gold involves leaching with cyanide ion. Gold is later recovered by:

a) Metal displacement with Zinc   b) Liquation

c) Distillation   d) Zone refining

8. Cold dilute alkaline $KMnO_4$ is known as:

a) Schiff's reagent   b) Fenton's reagent   c) Bayer's reagent   d) Nessler's reagent

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9. Amide-linked local anaesthetic is:

a) Ranitidine   b) Omeprazole   c) Procaine   d) Lidocaine

10. The formula used to identify density of the unit cell:

a) $\rho = a^3 N_A \times n\, M$ b) $a^3 N_A - n\, M$ c) $\rho = \dfrac{n\, M}{a^3 N_A}$ d) $\rho = \dfrac{a^3 N_A}{n\, M}$

11. The Oxidation state of chloride in Cl_2O_7 is: a) +6   b) +7   c) +4   d) +5

12. The common name of 1,2,3 trihydroxy benzene is:

a) Pyrogallol   b) Resorcinol   c) Hydroxyquinol   d) Phloroglucinol

13. Match the following :

    (1) $[Ni(CO)_4]$ (i) Trigonal bipyramidal

    (2) $[Pt(NH_3)_4]^{2+}$ (ii) Octahedral

    (3) $[Fe(CO)_5]$ (iii) Tetrahedral

    (4) $[Co(NH_3)_6]^{3+}$ (iv) Square planar

a) (1) – (ii); (2) – (iii); (3) – (iv); (4) – (i)   b) (1) – (iii); (2) – (i); (3) – (iv); (4) – (ii)

c) (1) – (iii); (2) – (iv); (3) – (i); (4) – (ii)   d) (1) – (iv); (2) – (i); (3) – (ii); (4) – (iii)

14. A magnetic moment of 1.73B will be shown by one among the following:

a) $[Cu(NH_3)_4]^{2+}$ b) $[Ni(CN)_4]^{2-}$ c) $TiCl_4$ d) $[CoCl_6]^{4-}$

15. The mechanism proposed for the enzyme catalysis reaction is:

a) $P + E \rightarrow E + S \rightleftharpoons ES$ b) $E + S \rightleftharpoons ES \rightarrow P + E$

c) $ES \rightleftharpoons P + E \rightarrow E + S$ d) $E + S \rightarrow ES \rightleftharpoons P + E$

Part II Answer any six Questions. Question No. 24 is Compulsory   6x2=12

16. What is the role of limestone in the extraction of iron from of oxide Fe_2O_3?

17. Give the difference between double salts and co-ordination compounds.

18. Define – Buffer action.

19. Define – Common ion effect.

20. Write a note on Tyndall Effect

21. What is Urotropine? How it is prepared?

22. Aniline does not undergo Friedal – Crafts reaction. Give reason.

23. Name the vitamins whose deficiency causes. (a) Rickets   (b) Scurvy

24. A hydride of 2nd period alkali metal (A) on reaction with compound of Boron (B) in the presence of ether to give a reducing agent (C). Identify A, B and C

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Part III Answer any six Questions. Question No. 33 is Compulsory   6x3=18

25. Which types of ores can be concentrated by froth floatation method? Give two examples.

26. What type of hybridisation is found in the following? (a) BrF (b) BrF_5 (c) BrF_3

27. In an octahedral crystal field, draw the figure to show splitting of d-orbitals.

28. Differentiate between crystalline solids and amorphous solids.

29. Derive an expression for Ostwald's dilution law.

30. Mention the mechanism in the following reactions:

    (a) One mole of HI reacts with methoxy ethane

    (b) One mole of HI reacts with 2-methoxy 2-methyl propane

31. Write the test for Carboxylic Acid group.

32. Give short note on Gabriel Phthalimide Synthesis

33. Powdered $CaCO_3$ reacts much faster with dilute HCl than with the same mass of $CaCO_3$ as marble. Give reason.

Part IV   Answer the following in detail   5x5=25

34. (a) i) How is potash alum prepared?

    ii) Indicate the possible type of Isomerism for the following complexes

        (A)$[Co(en)_3]^{3+}$ (B) $[Pt(NH_3)_2Cl_2]^{2+}$ (OR)

    (b) i) Explain Deacon's process for manufacture of chlorine.

    ii) Sulphuric Acid is a dibasic acid. Prove it.

35. (a) What is Lanthanide or Lanthanoid contraction? Explain its consequences.   (OR)

    (b) i) If the radius of the compound is between $0.155 - 0.225$, find out the co-ordination number an structure of the compound .

   ii) Arrange the following in the increasing order of relative reactivity of acid derivatives and mention the reason alone. $CH_3COOC_2H_5$, CH_3COCl, CH_3CONH_2, $CH_3COOCOCH_3$

36. (a) i) The rate constant for a first order reaction is 1.54×10^{-3} s^{-1}. Calculate its half life time.

(ii) Identify the conjugate Acid Base pair for the following reactions in aqueous solution.

(A) $HS^-_{(aq)} + HF \rightleftharpoons F^-_{(aq)} + H_2S_{(aq)}$

                        (B) $HPO_4^{2-} + SO_3^{2-} \rightleftharpoons PO_4^{3-} + HSO_3^-$ **(OR)**

    (b) State Kohlrausch's law and explain any one of the application.

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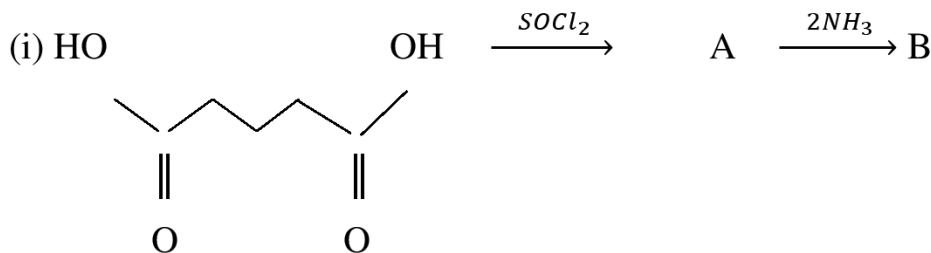
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37. (a) Write any five characteristics of Catalysts.   **(OR)**

(b) How to distinguish 1°, 2° and 3° alcohols by Victor Meyer's test.

38. (a) Identify A and B (by bond line structure)

(i) HO $\xrightarrow{\quad}$ OH $\xrightarrow{SOCl_2}$ A $\xrightarrow{2NH_3}$ B

(ii) How are RNA molecules classified? Explain.   **(OR)**

(b) i) Give a brief account on Antioxidants.

ii) How do you classify the following into various class of drugs?

(A) Milk of Magnesia   (B) Aspirin   (C) Penicillin   (D) Procaine

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