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**SECOND REVISION TEST, JANUARY - 2020**

**THIRUNELVELI** **STANDARD - XII**

**DISTRICT**

**Time : 3.00 hrs**

**CHEMISTRY**

**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.

**Part - I**

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

**15×1=15**

- 1) Among the following which is not a allotrope of carbon,  
a) Beryl                      b) Fullarene                      c) diamond                      d) graphene
- 2) 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 and reason is not the correct explanation of assertion.  
c) Assertion is true but reason is false.  
d) Both assertion and reason are false.
- 3) The IUPAC name of the complex  $[\text{Co}(\text{en})_2(\text{ONO})\text{Cl}]$  is  
a) Chlorobis ethylenediaminenitrito cobalt (III) chloride  
b) Chloridobis (ethane-1,2-diamine) nitro K-O cobaltate (III) chloride  
c) Chloridobis (ethane-1,2-diamine) nitro K-O cobalt (II) chloride  
d) Chloridobis (ethane-1,2-diamine) nitroto K-O cobalt (III) chloride
- 4) Which one of the following ions has the number of unpaired electrons as present in  $\text{V}^{2+}$ ?  
a)  $\text{Ti}^{3+}$                       b)  $\text{Fe}^{2+}$                       c)  $\text{Ni}^{2+}$                       d)  $\text{Cr}^{3+}$
- 5) In metallurgy, in Ellingham graph T is plotted against \_\_\_\_\_  
a)  $\Delta G^\circ$  value for the formation of hydride  
b)  $\Delta H^\circ$  value for the formation of hydride  
c)  $\Delta G^\circ$  value for the formation of oxide

- d)  $\Delta H^\circ$  value for the formation of oxide
- 6) Rate of a reaction is  $6 \times 10^{-2} \text{ mol L}^{-1} \text{ S}^{-1}$  and the rate constant for the reaction at 300K is  $2 \times 10^{-1} \text{ S}^{-1}$ . Then what is the order of the reaction?  
 a) 0                      b) 1                      c) 2                      d) 3
- 7) Calculate the radius of an atom which crystallizes in fcc crystal lattice with unit length  $4.4 \times 10^{-8} \text{ cm}$ .  
 a)  $1.9 \times 10^{-10} \text{ mm}$     b)  $1.9 \times 10^{-10} \text{ pm}$     c)  $1.9 \times 10^{-10} \text{ cm}$     d)  $1.9 \times 10^{-10} \text{ m}$
- 8) While charging lead storage battery  
 a)  $\text{PbSO}_4$  on cathode is changed to Pb  
 b)  $\text{PbSO}_4$  on cathode is changed to  $\text{PbO}_2$   
 c)  $\text{PbSO}_4$  on cathode is changed to Pb  
 d)  $\text{PbSO}_4$  on cathode is changed to  $\text{PbO}_2$
- 9)  $P^H$  of 0.01M HCl is  
 a) 10                      b) 1                      c) 12                      d) 2
- 10) Which is correctly matched?  
 a. Emulsion            -            smoke  
 b. Gel                    -            butter  
 c. Foam                 -            mist  
 d. Whipped cream -            sol
- 11) Select the wrong statement:  
 a) Analgesics reduce the pain without causing impairment of consciousness.  
 b) Antiseptics stop the growth of micro organisms on living tissue.  
 c) Antacids remove all acids from stomach.  
 d) Antifertility drugs suppresses fertilization.
- 12) Glucose does not react with  
 a) Schiff's reagent    b) Tollen's reagent    c) Felling's reagent    d)  $\text{Br}_2/\text{H}_2\text{O}$
- 13)  $\text{C}_2\text{H}_5\text{Br} \xrightarrow[\Delta]{\text{aqNaOH}} \text{A} \xrightarrow{\text{KMnO}_4/\text{H}^+} \text{B} \xrightarrow[\Delta]{\text{NH}_3} \text{C} \xrightarrow{\text{Br}_2/\text{NaOH}} \text{D}$  in this reaction D is  
 a) Acetamide                                      b) Methanmine  
 c) Bromomethane                                d)  $\alpha$ -Bromo sodium acetate
- 14) Which of the following represents the correct order of acidity.  
 a)  $\text{CH}_3\text{COOH} > \text{ClCH}_2\text{COOH} > \text{FCH}_2\text{COOH} > \text{BrCH}_2\text{COOH}$   
 b)  $\text{FCH}_2\text{COOH} > \text{CH}_3\text{COOH} > \text{BrCH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$   
 c)  $\text{ClCH}_2\text{COOH} > \text{CH}_3\text{COOH} > \text{BrCH}_2\text{COOH} > \text{ICH}_2\text{COOH}$   
 d)  $\text{FCH}_2\text{COOH} > \text{ClCH}_2\text{COOH} > \text{BrCH}_2\text{COOH} > \text{CH}_3\text{COOH}$



- 15) Sodium methoxide + Butylbromide  $\rightarrow$
- 2-methyl-2-methoxy propane
  - 2-methyl-3-methoxy propane
  - 2-methyl Prop-1-ene
  - Methoxy butane

**Part - II**

**Answer any six questions. Q.No. 24 is compulsory:**

**6×2=12**

- 16) Give the uses of silicones.
- 17) What are interhalogen compounds? Give example.
- 18) Explain Solvate isomerism with examples.
- 19) Distinguish crystalline solids and amorphous solids.
- 20) The rate constant for a first order reaction is  $1.54 \times 10^{-2} \text{S}^{-1}$ . Calculate its half life time.
- 21) How can you convert phenol into a) Picric acid and b) Anisole
- 22) Arrange the following in their increasing order of basic strength
  - $\text{NH}_3$ ,  $\text{CH}_3\text{NH}_2$ ,  $(\text{CH}_3)_2\text{NH}$ ,  $(\text{CH}_3)_3\text{N}$ , (aq.solution)
  - $\text{NH}_3$ ,  $\text{C}_2\text{H}_5\text{NH}_2$ ,  $(\text{C}_2\text{H}_5)_2\text{NH}$ ,  $(\text{C}_2\text{H}_5)_3\text{N}$ , (aq.solution)
- 23) Write the structure of all possible dipeptides which can be obtained from glycine and alanine.
- 24) a)  $\text{CaSO}_4$                       b)  $\text{Na}_3\text{PO}_4$                       c)  $\text{AlCl}_3$   
Among the above which has more precipitate power to precipitate Ferric hydroxide sol. (Positively Charged)

**Part - III**

**Answer any six questions. Q.No. 33 is compulsory:-**

**6×3=18**

- 25) Explain froth flotation process. How can you depress ZnS present in galena in concentration of galena in this process.
- 26) Distinguish lanthanides and actinides.
- 27) For  $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$  ion the magnitude of octahedral field splitting energy is  $14,000 \text{cm}^{-1}$  and the mean pairing energy is  $30,000 \text{cm}^{-1}$ . Then calculate CFSE for low spin complex of the above complex.
- 28) Define a) Solubility Product                      b) Ionic product of water
- 29) Explain intermediate compound formation theory of catalysis with an example.
- 30) How Propanoic acid is prepared starting from
  - an alcohol
  - $\text{CO}_2$
  - an alkene
- 31) Write the following reactions:-
  - Gomperg reaction
  - Sandmeyer reaction
  - Thorpe nitrile condensation
- 32) Explain the mechanism of cleaning action of soaps.
- 33) The resistance of 0.15 M solution of an electrolyte is  $50 \Omega$ . The specific



conductance of the solution is  $2.4 \text{ sm}^{-1}$ . The resistance of 0.5 solution of the same electrolyte measured using the same cell is  $480 \Omega$ . Find the equivalent conductivity of 0.5N solution of the electrolyte.

Part - IV

5×5=25

Answer all the questions:-

- 34) a) Describe Mond process for refining nickel. (3)  
 b) Explain the equation for the basisty of Boric acid. (2) [or]  
 c) Complete the following reactions. (5)  
 (i)  $\text{Zn} + 2\text{HCl} \rightarrow$  (ii)  $\text{SiO}_2 + 4\text{HF} \rightarrow$  (iii)  $\text{Xe} + \text{F}_2 \xrightarrow{400^\circ\text{C}/\text{Ni}}$   
 (iv)  $\text{HCOOH} \xrightarrow{\text{conH}_2\text{SO}_4}$  (v)  $\text{Cu} + 4\text{HNO}_3 \rightarrow$
- 35) a) Describe the preparation of potassium dichromate. (3)  
 b) Explain the magnet character of  $[\text{Ni}(\text{CN})_4]^{2-}$  based on VB theory. (2) [or]  
 c) Explain Schottky defect (3)  
 d) Explain the effect of catalyst and concentration of the reactant on the reaction rate. (2)
- 36) a) Based on Lewis concept classify the following as acid and base.  
 i)  $\text{BeF}_2$  ii)  $\text{CH}_3\text{OH}$  iii)  $\text{CO}_2$  iv)  $\text{CH}=\text{CH}$  (2)  
 b) Explain any three factors affecting adsorption. (3) [or]  
 c) How can you convert Propane-1-ol to Propane-2-ol (2)  
 d) Complete the following reaction:  
 i) glycol  $\xrightarrow{\text{anhy. ZnCl}_2}$  ii) glycerol  $\xrightarrow{\text{KHSO}_4}$
- 37) a)  $\text{CH}_3\text{COOH} \xrightarrow{\text{SOCl}_2} \text{A} \xrightarrow{\text{Pd/BaSO}_4} \text{B} \xrightarrow{\text{NaOH}} \text{C}$  (3)  
 b) Write the electrolytic reduction reaction of nitro benzene. (2) [or]  
 c) How can you confirm the presence of aldehyde and hydroxyl groups present in glucose (2)  
 d) Write the reactions for the preparation of i) Buna-S ii) PHBV (3)
- 38) a) Write the expression for the solubility product of  $\text{Ca}_3(\text{PO}_4)_2$  (2)  
 b) Calculate the standard emf of the cell:  $\text{cd}/\text{Cd}^{2+} // \text{cu}^{2+}/\text{cu}$  and determine the cell reaction.  $E^\circ \text{Cu}^{2+}/\text{cu} = 0.34//$  and  $E^\circ \text{Cd}^{2+}/\text{Cd} = -0.40\text{v}$  (3) [or]  
 c) Compound 'A' having molecular formula  $\text{C}_6\text{H}_6\text{O}$  gives violet colour with natural  $\text{FeCl}_3$ . 'A' reacts with  $\text{NH}_3$  in the presence of any  $\text{ZnCl}_2$  to give compound 'B'. Compound A reacts with  $\text{CH}_3\text{COCl}$  in the presence of  $\text{NaOH}$  to give compound 'C' compound 'B' reacts with carbon-di-sulphide to give compound 'D'. Identity compounds A, B, C and D and write the reactions. (5)

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