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## COMMON SECOND REVISION TEST - 2020

## STANDARD - XII

Time : 3 hrs

Chemistry

Marks: 70

Part - I

Note: i) Answer all questions. ii) Choose the correct answer and write the option code and the corresponding answer: 15 x 1 = 15

- Extraction of gold and silver involves leaching with cyanide ion, silver is latter recovered by  
a) Distillation      b) Zone refining      c) liquation      d) Displacement with zinc
- Which of the following is not  $sp^2$  hybridised?  
a) Graphite      b) Dry ice      c) Fullerene      d) Graphene
- In which of the following  $NH_3$  is not used?  
a) Nessler's reagent      b) Tollen's reagent  
c) Reagent for the analysis of IV group basic radical  
d) Reagent for the analysis of III group basic radical
- Which one of the following ions has the same number of unpaired electrons as present in  $V^{3+}$ ?  
a)  $Ti^{3+}$       b)  $Fe^{3+}$       c)  $Ni^{2+}$       d)  $Cr^{3+}$
- Which one of the following pairs represents linkage isomers?  
a)  $[Cu(NH_3)_4][PtCl_4]$  and  $[Pt(NH_3)_4][CuCl_4]$       b)  $[Co(NH_3)_5NO_3]SO_4$  and  $[Co(NH_3)_5ONO]SO_4$   
c)  $[CO(NH_3)_4(NCS)_{22}]Cl$  and  $[CO(NH_3)_4(SCN)_2]Cl$       d) both b and c
- The yellow colour in  $NaCl$  crystal is due to  
a) excitation of electrons in 'F' centres      b) reflection of light from  $Cl^-$  ion on the surface  
c) Reflection of light from  $Na^+$  ion      d) all the above
- The addition of a catalys during a chemical reaction alters which of the following quantities?  
a) Enthalpy      b) Entropy      c) Activation energy      d) Internal energy
- the aqueous solutions of sodium formate, anilinium chloride, and potassium cyanide are respectively  
a) acidic, acidic, basic      b) basic, acid, basic      c) basic, neutral, basic      d) none of these
- During electrolysis of molten sodium chloride, the time required to produce 0.1 mole of chlorine gas using a current of 3A is  
a) 55min      b) 107.2 min      c) 220 min      d) 330min
- Which one of the following is correctly matched  
a) Emulsion - smoke  
b) Gel - ink  
c) Foam - whipped cream  
d) Sol - milk
- $(CH_3)_3 - C - CH(OH) - CH_3 \xrightarrow[H_2SO_4]{Con} X$  (Major product)  
a)  $(CH_3)_3 - C - CH = CH_2$       b)  $(CH_3)_2 - C = C - (CH_3)_2$   
c)  $CH_2 = C(CH_3) - CH_2 - CH_2 - CH_3$       d)  $CH_2 = CH - CH_2 - CH_2 - CH_3$
- In which of the following reactions new carbon bond in not formed?  
a) Aldol condensation      b) Friedel craft reaction  
c) Kolbe's reaction      d) Wolf Kishner reduction
- $CH_3 - CH_2 - Br \xrightarrow[A]{aq. NaOH} A \xrightarrow{KMnO_4/H^+} B \xrightarrow[A]{NH_3} C \xrightarrow[NaOH]{Br_2} D$ . 'D' is .....  
a) Bromomethane.      b) acetamide      c) methanamide      d) methanamine

14. Which one given below is a non-reducing sugar?  
 a) Glucose                      b) Sucrose                      c) Maltose                      d) Lactose
15. Natural rubber has  
 a) alternate cis-and trans-configuration                      b) random cis and trans-configuration  
 c) all cis-configuration                      d) all trans-configuration

**Part - II****Note: Answer any 6 questions. Question no. 21 is compulsory.****6 x 2 = 12**

16. What are the various steps involved in extraction of pure metals from their ores?  
 17. How will you identify borate radical?  
 18. Transition elements exhibit variable oxidation state. Justify your answer.  
 19. Give any three characteristics of ionic crystals.  
 20. Write note on autocatalyst with example.  
 21. Calculate pH of  $1.5 \times 10^{-3}$  M solution of  $\text{Ba}(\text{OH})_2$ .  
 22. Write notes on Claisen ester condensation reaction.  
 23. Write notes on mustard oil reaction.  
 24. Give two differences between Hormones and vitamins.

**Part - III****III. Answer any six questions. Question No. 31 is compulsory.****6 x 3 = 18**

25. Give the basic requirement for vapour phase refining and explain the refining of Nickel.  
 26. Complete the following reactions i)  $\text{AgNO}_3 + \text{PH}_3 \rightarrow$  ii)  $\text{Cu} + \text{H}_2\text{SO}_4 \rightarrow$   
 27. In the complex  $[\text{Co}(\text{en})_2\text{Cl}_2] \text{Cl}$ . Identify the following.  
 i) Central metal ion    ii) Ligand and their types  
 iii) Oxidation number and co-ordination number of central metal ion.  
 iv) Geometry and net charge of the complex  
 28. Define half life of a reaction. Show that for a first order reaction half life is independent of initial concentration.  
 29. Derive an expression for nernst equation.  
 30. Explain how colloids prepared by i) Bredig's arc method ii) Hydrolysis  
 31. Compound (A)  $\text{C}_2\text{H}_4$  undergo hydroxylation using Baeyer's reagent gives 'B'. 'B' reacts with anhydrous  $\text{ZnCl}_2$  gives 'C'. Identify A, B and C.  
 32. How are the following conversions effected. i) Benzene diazonium chloride to Biphenyl.  
 ii) Benzene diazonium chloride to chlorobenzene.  
 33. What are biodegradable polymers? Give three example.

**Part - IV****Note: Answer all questions:****5 x 5 = 25**

34. a) i) Explain how  $\text{Cr}_2\text{O}_3$  is reduced to Cr by aluminothermite process? (3)  
 ii) Give the uses of silicones (2)                      **(OR)**  
 b) i) Describe the structure of diborane. (3) ii) Give the uses of helium. (2)  
 35. a) Explain how potassium dichromate prepared from chromate ore.                      **(OR)**  
 b) i) A solution of  $[\text{Ni}(\text{H}_2\text{O})_4]^{2+}$  is green where as a solution of  $[\text{Ni}(\text{CN})_4]^{2-}$  is colourless. Explain. (2)  
 ii) Explain crystal field splitting in octahedral complexes with diagram. (3)  
 36. a) i) Calculate percentage efficiency of packing in case of face centred cubic crystals. (3)  
 ii) Differentiate order and molecularity of a reaction. (2)                      **(OR)**  
 b) i) Derive Henderson - Hasselbalch equation. (3)  
 ii) Write the expression for the solubility product of  $\text{Ca}_3(\text{PO}_4)_2$ . (2)  
 37. a) i) Write a note on standard hydrogen electrode (SHE) with neat diagram. (3)  
 ii) Explain any three methods of protection of metals from corrosion. (2)                      **(OR)**  
 b) i) Complete the following reactions (3)  
 a)  $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5 + \text{H}^+/\text{H}_2\text{O} \rightarrow$  b)  $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5 + \text{excess of O}_2 \rightarrow$   
 ii) Mention the uses of phenol. (2)  
 38. a) What is Cannizaro's reaction? Explain with mechanism.                      **(OR)**  
 b) i) Mention any three importance of proteins in biological process. (2)  
 ii) How anaesthetics work in our body? How are classified? Give example. (3)