

## Standard 12 CHEMISTRY PART - A

Time: 3.00 Hours

Marks: 70

15x1=15

Choose the correct answer.

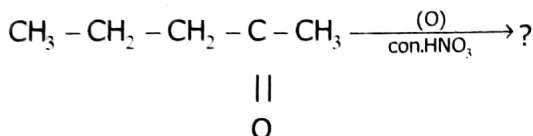
- 1) Considering Ellingham diagram, which of the following metals can be used to reduce alumina?
  - a) Cu
  - b) Fe
  - c) Zn
  - d) Mg
- 2) Which of the following is not  $sp^2$  hybridised?
  - a) Graphite
  - b) graphene
  - c) Fullerene
  - d) dry ice
- 3) On hydrolysis,  $PCl_3$  gives
  - a)  $H_3PO_3$
  - b)  $PH_3$
  - c)  $H_3PO_4$
  - d)  $POCl_3$
- 4) 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
- 5) The Fraction of total volume occupied by the atoms in a simple cube is
  - a)  $\frac{\pi}{4\sqrt{2}}$
  - b)  $\frac{\pi}{6}$
  - c)  $\frac{\pi}{4}$
  - d)  $\frac{\pi}{3\sqrt{2}}$
- 6) The crystal with a metal excess defect is
  - a) AgBr
  - b) FeO
  - c)  $CdCl_2$
  - d) KCl
- 7) The decomposition of phosphine ( $PH_3$ ) on tungsten at low pressure is a first order reaction. It is because the
  - a) rate is proportional to the surface coverage
  - b) rate is inversely proportional to the surface coverage
  - c) rate is independent of the surface coverage
  - d) rate of decomposition is slow.
- 8) In a first order reaction  $x \rightarrow y$ . If K is the rate constant and the initial concentration of the reactant 'x' is 0.1 M 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
- 9) Carboic acid is
  - a) Picric acid
  - b) phenol
  - c) benzoic acid
  - d) phenylacetic acid
- 10) Which of the following compound can be used as antifreeze in automobile radiators?
  - a) methanol
  - b) Neopentyl alcohol
  - c) ethan - 1, 2 - diol
  - d) ethanol
- 11) The pH of  $10^{-5}$  M KOH solution will be
  - a) 9
  - b) 19
  - c) 5
  - d) 7
- 12)  $H_2PO_4^-$  the conjugate base of
  - a)  $PO_4^{3-}$
  - b)  $P_2O_5$
  - c)  $H_3PO_4$
  - d)  $HPO_4^{2-}$
- 13) The correct structure of the product 'A' formed in the reaction.
 
  - a)
  - b)
  - c)
  - d)
- 14) Which of the following is strongest acid among all?
  - a) HI
  - b) HF
  - c) HBr
  - d) HCl
- 15) The magnetic moment of  $Mn^{2+}$  ion is
  - a) 5.92 BM
  - b) 2.80 BM
  - c) 8.95 BM
  - d) 3.90 BM

## PART - B

6x2=12

## II. Answer any six questions. [Q.No. 24 is compulsory]

- 16) Give the uses of zinc (any two)
- 17) Give one example for each of the following
  - i) icosagens
  - ii) tetragens
  - iii) pnictogens
  - iv) chalcogens
- 18) What is inert pair effect?
- 19) Which is more stable?  $Fe^{3+}$  or  $Fe^{2+}$  - explain.
- 20) Give two examples for zero order reaction.
- 21) Give the dehydration of glycerol.
- 22) Calculate the pH of 0.01 M  $HNO_3$  solution.
- 23) What is meant by the term "Coordination number"? What is the coordination number of atoms in a bcc structure?
- 24) Complete the following reaction



## PART - C

6x3=18

## III. Answer any six questions. [Q.No. 33 is compulsory]

- 25) How will you identify borate radical?
- 26) Give a reason to support that sulphuric acid is a dehydrating agent.
- 27) Compare lanthanoids and actinoids.
- 28) Explain schottky defect.
- 29) Explain pseudo first order reaction with an example.
- 30) What are lewis acids and bases? Give two example for each.
- 31) Explain kolbe's schmit reaction.
- 32) What is Urotropine? Write its preparation and uses.
- 33) Write the expression for the solubility product of  $Hg_2Cl_2$ .

## PART - D

5x5=25

## IV. Answer all the questions.

- 34) a) i) What are the differences between minerals and ores?  
ii) Give the limitations of Ellingham diagram  
(OR)  
b) What are silicones? What are the uses of silicones?
- 35) a) i) Write the preparation of bleaching powder?  
ii) Give the uses of helium.  
(OR)  
b) What is lanthanoide contraction? What are the cause and effects?
- 36) a) Calculate the packing efficiency of BCC?  
(OR)  
b) Show that in case of first order reaction the time required for 99.9% completion is nearly ten times the time required for half completion of the reaction.
- 37) a) Derive Henderson - Hasselbalch equation  
(OR)  
b) How do you differentiate three types of alcohols by victor Meyer's test.
- 38) a) Explain the mechanism of connizaro reaction.  
(OR)  
b) Write note on  
i) perkins' reaction  
b) Knoevenagal reaction