Std : XII **Marks : 70**

Subject : Chemistry **Time : 3 hrs**

PART - I

Choose the best answer : **10 ×1 = 10**

1) 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

2) Diborane has only _____ valence electrons.

   a) 11 b) 10 c) 12 d) 14

3) The basic structural unit of silicates is

   a) $(SiO_3)^{2-}$ b) $(SiO_4)^{2-}$ c) $(SiO)^{-}$ d) $(SiO_4)^{4-}$

4) XeF_6 on complete hydrolysis produces

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

5) Permanganate ion changes to _____ in acidic medium.

   a) MnO_4^{2-} b) Mn^{2+} c) Mn^{3+} d) MnO_2

6) The most common oxidation state of actinoids is

   a) +2 b) +3 c) +4 d) +6

7) The fraction of total volume occupied by the atoms in bcc unit cell is

   a) π/6 b) √3π/8 c) √2π/6 d) π/4

8) The rate of constant of a reaction is $5.8 \times 10^{-2}\ s^{-1.}$ The order of the reaction is

   a) first order b) zero order c) second order d) third order

9) The aqueous solution of sodium acetate, ammonium chloride and ammonium acetate is _____

   a) acidic, neutral, basic b) basic, neutral, acidic

   c) acidic, basic, neutral d) basic, acidic, neutral

10) Which of the following is true for acidic solution ?

   a) $[H_3O^+] > [OH^-]$ b) $[H_3O^+] < [OH^-]$ c) $[H_3O^+] = [OH^-]$ d) none of these

11) After 2 hours, a radioactive substance becomes (1/6)th of original amount, then half life time (in min) is _____

   a) 60 min b) 120 min c) 30 min d) 15 min

12) Which one of the following is the strongest acid ?

   a) 2-nitrophenol b) 4 – chlorophenol c) 4- nitrophenol d) 3 - nitrophenol

13) The major product formed on bromination of anisole with acetic acid gives _____

   a) o – bromoanisole b) p – bromoanisole c) m-bromoanisole d) all of these

14) Match the following :

a) Tollens reagent	-	cold alk.$KMnO_4$
b) Fehling's solution	-	$AgNO_3$ + NH_4OH
c) Benedicts solution	-	$Cuso_4$ + Rochelle salt
d) Baeyer's reagent	-	$Cuso_4$ +sodium citrate + NaOH

a) a – 4, b – 2, c – 3, d -1
b) a – 1, b – 3, c – 4, d -2
c) a – 2, b – 3, c – 4, d -1
d) a – 3, b – 2, c – 4, d -1

15) Assertion : 2-2 dimethyl propanic acid does not give HVZ reaction.
Reason : 2-2 dimethyl propanic acid does not have α – hydration atom.
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.

PART - II

<u>Answer any 6 questions</u> : Q.No. 24 is compulsory 6 × 2 = 12

16) What is burnt alum ?
17) How will you prepare chlorine in the laboratory ?
18) What are interstitisl compounds ?
19) Calculate the number of atoms in a fcc unit cell.
20) Give the example for zero order reaction.
21) Mention the P^H value of the following substances
a) Black coffee b) Soapy water
22) Write SN_2 mechanism.
23) Identify X and Y and complete the following equations.
1) $xMnO_4 + y\ I^- + 16\ H^+$ ----------→ ?
2) $yMnO_4^- + y\ NO_2^- + 6\ H^+$ ----------→ ?

24) How does ammonia reacts with formaldehyde ? Give equations.

PART - III

Answer any 6 questions : Q.NO. 33 is compulsory **6 × 3 = 18**

25) Give the uses of zinc.
26) Give the balanced equation for the reaction b/w chlorine with cold NaOH and hot NaOH.
27) Which is stronger reducing agent Cr^{2+} (or) Fe^{2+} ?
28) Give any three characteristics of ionic crystals.
29) Explain pseudo first order reaction with an example.
30) Explain common ion effect with an example.
31) Write the dehydration reaction of glycerol.
32) State and explain popoff's rule.
33) Complete the following reactions and identify x and y

a) $CH_3 - \underset{\underset{O}{\|}}{C} - OH \xrightarrow{LiAlH_4} X$

b) $CH_3 - \underset{\underset{O}{\|}}{C} - OH \xrightarrow{Pd/BaSO_4} Y$

PART – IV

Answer Any 2 of the following : **2 × 5 = 10**

34) a) Explain forth floatation process with example. (5)

(or)

b) (i) Give uses of zinc. (2)
(ii) Describe the structure of diborane. (3)

35) a) (i) Give the uses of silicones. (3)
(ii) What is aqua regia ? Give its uses ? (2)

(or)

(b) i) Compare lanthanides and actinides . (3)
ii) What are point defect? (2)

36) a) Derive integrated rate law for first order reaction A products. (5)

(or)

b) Derive an expression for the hydrolysis constant and degree of hydrolysis of salt of strong acid and weak base. (5)

37) a) Derive an expression for ostwald's dilution law. (5)

(or)

b) i) Explain Saytzeff's rule with example. (3)

ii) What is auto oxidation of ethers ? (2)

38) a) i) Give the mechanism of addition of alcohol with acetaldehyde. (3)

ii) Write Benedict's solution test ? (2)

(or)

b) i) Formic acid reduces Tollen's reagent but acetic acid does not.Give reason. (2)

ii) Give the test for carboxylic acids. (3).

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