UNIT TEST-1
(METALLURGY)

CLASS : XII **MARK : 70**

SUB : CHEMISTRY **TIME : 3.00 HRS**

`PART-I

I. Choose and write the correct answer : **15X1=15**

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

List - I	List – II
A)Diaspore	1)$ZnCO_3$
B)Magnetite	2)$PbSO_4$
C)Anglesite	3)Fe_3O_4
D)Calamine	4)$Al_2O_3.H_2O$

A B C D A B C D A B C D A B C D

(a)4 1 2 3 (b) 4 3 2 1 (c)3 2 4 1 (d) 2 3 1 4

2. The metal which is used packing material for food items

(a) Zn (b) Zr (c) Al (d) Au

3.which of the following is the ore of copper

(a) Azurite (b) Angalesite (c) Cerrusite (d) Argentite

4. Electrochemical process is used to extract

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

5.Cupellation is a process used for the refining of _____

(a) Silver (b) Lead (c) Copper (d)Iron

6.which one of the following is wrong pair

(a) Froth flotation-sulphide ores (b)Magnetic separation-ferromagnetic ore

(c) Hydraulic wash-oxide ore (d) none of these

7.Which one of the following reaction represents calcinations

(a) $2ZnO + O_2 \rightarrow 2ZnO$ (b) $2Zns + 3O_2 \rightarrow 2ZnO + 2SO_2$

(c)$ZnCO_3 \rightarrow ZnO + CO_2$ (d) Both a and c

8. Wolframite ore is separated from tinstone by the process of

(a) Smelting (b) Calcination

(c) Roasting (d) Electromagnetic separation

9.Leaching process is a _____

(a) Reduction (b) Dehydration

(c) Redon reaction (d) Dehydrogenation

10.Which one of the element is not purified by zone refining ?

(a) Si (b) Ge (c) Ga (d) Sc

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

(a) Pure copper (b) Impure copper

(c) Carbon rod (d) Platinum electrode

12. Bauxite has the composition
(a) Al_2O_3 (b) $Al_2O_3.nH_2O$ (c) $Fe_2O_3.2H_2O$ (d)None of these

13._____ is decompose on heating in the absence of a reducing agent
(a) Ag_2O (b) Cr_2O_3 (c) ZnO (d) FeO

14.Which one of the metal is used for increasing the efficiency of solar cells
(a) Fe (b)Cu (c) Au (d)Zn

15. The metal oxide which cannot be reduced to metal by carbon is
(a) PbO (b) Al_2O_3 (c) ZnO (d) FeO

PART-II

II. Answer any six questions (q.no.24 is compulsory) 6 x 2 =12

16. What is the role of limestone in the extraction of ironfrom its oxide Fe_2O_3?
17. Describe the role of the following in the process mentioned :

i)Silica in the extraction of copper

ii)Iodine in the refining of zirconium

18. What are the difference between Calcination and Roasting?
19.Give the limitations of Elingham diagram
20. Which type of ores can be concentrated by froth floatation method? Give two examples for such ores
21. What is auto-reduction ? give example
22. What is cementation?
23. What is meant by concentration of ores ?
24. Give an example for the following in froth floatation process

i) Frothing agent ii) Collector iii) Depressing agent

PART-III

III. Answer any six questions (q.no.33 is compulsory) 6 x 3 =18

25. Explain the following terms with suitable examples

i)Gangue ii)Slag iii)Flux

26. Distinguish between minerals and ores.
27. Explain the electrometallurgy of Aluminium
28. Write a note on electromagnetic separation
29. Write a note on gravity separation method ?
30. Explain Acid leaching with an example
31. Write the three application of aluminium
32. How Cr_2O_3 is reduced to Cr by Al powder
33. Write the formula for following ore

i) Malachite ii) cassiterite iii) Haematite

PART-IV

IV. Answer all the questions . **5x5=25**

34. a) Describe the zone refining process? (5)

(OR)

b) Write a short note on electrochemical principles of metallurgy? (5)

35. a) i) Explain the refing process of nickel ? (3)

ii) What are the various steps involved in extraction of pure metals from their ores? (2)

(OR)

b) i) Explain about cynide leaching ? (3)

ii) What is Elingham diagram ? (2)

36. a) Explain concentration of ore by froth flotation method ? (5)

(OR)

b) i) write any three main observation of Elingham diagram? (3)

ii) Write the two application of zinc ? (2)

37. a) Explain the principle of electrolytic refining with an example ? (5)

(OR)

b) i) Give the basic requirement for vapour phase refining ? (2)

ii) explain extraction of copper from copper pyrites ? (3)

38. a) i) Write a note on blister copper ? (1)

ii) Explain the alkali leaching of bauxite ore ?| (4)

(OR)

b) i) Explain refining of titanium by van-arkel method ? (3)

ii) How is metal purified by distillation method ? give example (2)

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S.MANIKANDAN.,M.Sc.,B.Ed.,
7708543401

UNIT TEST-2

CLASS : XII **MARKS : 70**

SUB : CHEMISTRY **TIME : 3.00HRS**

PART-A

Choose the correct answer . **15 X 1 = 15**

1. Match the following

(1) Fluorine (i) Identification of coloured metal ions

(2) Borax (ii) strong oxidizing agent

(3) Aluminium (iii) Chalcogen present in volcanic ashes

(4) Sulphur (iv) Most abundant element

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

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

2. Sodium salt of tetraboric acid is known as

(a) B_2H_6 (b) Na_2BO_3 (c) H_3BO_3 (d) $Na_2B_4O_7.10H_2O$

3. which of the following is not sp2 hybridised?

(a) Fullerene (b) Graphite (c) Diamond (d) Graphene

4. An aqueous solution of borax is

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

5. The element that shows lowest catenation among the following p-block elements is

(a) carbon (b) silicon (c) lead (d) germanium

6. Inorganic benzene is

(a) B_2H_6 (b) $B_3N_3H_6$ (c) H_3BO_3 (d) H_2B4O_7

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

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

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

(a) Aluminium (b) Calcium (c) Magnesium (d) Sodium

9. Carbon atoms in fullerene with formula C60 have

(a) sp3 hybridised (b) sp hybridised

(c) sp2 hybridised (d) partially sp2 and partially sp3 hybridised

10. The geometry at which carbon atom in diamond are bonded to each other is

(a) Tetrahedral (b) hexagonal (c) Octahedral (d) none of these

11. Thermodynamically most stble form of carbon is
(a) Diamond (b) graphite (c) Fullerene (d) none bof these

12. Match the following

List – I	List – II
A)Borazole	1)Flux
B)Boric acid	2)SiO_2
C)Quartz	3)Borazine
D)Borax	4)Eye lotion

A B C D A B C D A B C D A B C D

(a) 3 1 4 2 (b) 2 4 3 1 (c) 3 4 2 1 (d) 3 1 2 4

13._____ is employed as a styptic agent to arrest bleeding.
(a) alum (b) aluminium chloride (c) borax (d) diborane

14.Boric acid on heating at 413K gives ?
(a) metaboric acid (b) tetra boric acid (c) boric anhydride (d) borax

15.Which one of the following does not belong to group 13 ?
(a) B (b) Al (c) Ge (d) In

PART-II

Answer the following any six questions (Q.no. 24 is compulsory) 6 X 2 = 12

16. How will you prepare inorganic benzene ?
17. Write any two conditions for catenation ?
18. write a short note on anamolous properties of the first elements of each group of p-block ?.
19. Write a note on Fisher tropsch synthesis ?
20. mention the uses of carbon monoxide
21. How will you convert boric acid into boron nitride ?
22. How are the silicones prepared ?
23. What is inert pair effect ?
24.Comlete the following reaction.
i) $Na_2B_2O_7 + H_2SO_4 + H_2O \rightarrow$? ii) $SiCl_4 + NH_3 \rightarrow$?

PART-III

Answer the following any six questions (Q.no. 33 is compulsory) 6 X 3 = 18

25.explain structure of diborne ?
26. What is the action of heat on boric acid .
27. How is borax extracted from colemanite ?
28. Write a note on zeolites ?
29. Write a short note on metallic nature of P-block elements ?
30. How is potash alum prepared
31. What are the uses of boric acid ?
32. Write the uses of potash alum ?

33. Complete the following reactions :

a) $HCOOH + H_2SO_4 \rightarrow ?$ b) $B + NaOH \rightarrow ?$

PART-IV

Answer all the questions. **5 X 5 = 25**

34.a) i) Write the uses of silicones.(3)

ii) Write a short note on hydroboration(2)

(OR)

b) i) Describe briefly allotropism in p- block elements with specific reference to carbon(3)

ii) Compare the stability of $AlCl_3$ and $TlCl_3$ (2)

35. a) i)What is burnt Alum ? how it is prepared ?(3)

ii) Silicon oil don't thicken during winter why ?(2)

(OR)

b) i) Write a short note on fullerene (3)

ii) How do prepare $AlCl_3$ by McAfee process ?(2)

36. a) i) Give one example for each of the following (3)

i) icosogens ii) tetragen iii) pnictogen iv) chalcogen

ii) Give any two uses of borax (2)

(OR)

b) i) Explain the classification of inosilicate(3)

ii) Write the short note on carbon nanotubes (2)

37. a) i) How will you identify borate radical ?(3)

ii) Draw the structure of CO and CO_2 (2)

(OR)

b) i) A hydride of second 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(3)

ii) Write the types of silicones ? (2)

38. a) How will silicate classified ? Give an example for each type of silicate ?(5)

(OR)

b) i) Distinguish graphite from diamond(3)

ii) CO is a reducing agent. Justify with an example (2)

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S.MANIKANDAN.,M.Sc.,B.Ed.,
7708543401

UNIT TEST-3
(p-block elements-II)

CLASS : XII **MARK : 70**

SUB : CHEMISTRY **TIME : 3.00 HRS**

`PART-I

I. Choose and write the correct answer : **15X1=15**

1. Which of the following statements regarding ozone is not correct?
   a) the oxygen bond length in ozone is identical with that of molecular oxygen
   b) the ozone is response hybrid of two structures.
   c) the ozone molecule is angular in shape
   d)ozone is used as germicide and disinfectant in purification of water
2. Which of the following is correct for P_4 molecule of white phosphorous?
   a) it has six P-P single bonds and 6 lone pairs of electrons
   b) it has six P-P single bonds and 4 lone pairs of electrons
   c) it has three P-P single bondsand 4 lone pairs of electrons
   d)it has fourP-P single bondsand 4 lone pairs of electrons
3. The brown ring test for nitrates depends on
   a) reduction of ferrous sulphate to Iron b) oxidation of nitric oxide into nitrogen dioxide
   c) reduction of nitrate to nitric oxide d) oxidising action of sulphuric acid
4. Nitrogen oxidation state in N_2O
   a) +1 b) +2 c) +3 d) +4
5. Number of P-O-P bond in P_2O_3
   a) 2 b) 4 c) 5 d) 6
6. Phosphine has a _____ Shape
   a) linear b) tetrahedral c) pyramidal d) T shaped
7. Which one of the following is rotten fish smell
   a)Ammonia b) Nitric acid c) Phosphine d) Sulphur dioxide
8. Which of the following is strongest acid among all?
   a) HI b) HF c) HBr d) HCl
9. Among the following the correct order of acidity is
   a) $HClO_2 < HClO < HClO_3 < HClO_4$ b) $HClO_4 < HClO_2 < HClO < HClO_3$
   c) $HClO_3 < HClO_4 < HClO_2 < HClO$ d) $HClO < HClO_2 < HClO_3 < HClO_4$
10. 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.
11. $XeOF_4$ is _____ shape
    a) Linear b) Square planar c) Square pyramidal d) T shaped

12. Which of the following statements are true?
  a) only type of interactions between the particles of noble gases are due to weak dispersion forces.
  b) XeF_2 does not form addition compounds.
  c) Hydrolysis of XeF6 is a redox reaction.
  d) Xenon fluorides are not reactive.
13. When Cl_2 gas reacts with hot and concentrated sodium hydroxide solution,the oxidation number of chlorine changes from
  a) zero to -1 and zero to +3 b) zero to +1 and zero to -3
  c) zero to +1 and zero to -5 d) zero to -1 and zero to +5
14.Match

1) XeF	-	i) Pyramidal
2) XeO_3	-	ii) T shaped
3) $XeOF_2$	-	iii) Linear
4) XeF_6	-	iv) distorted octahedron

  a) 1- i, 2- ii, 3-iii, 4- iv b) 1- iii, 2- iv, 3-ii, 4- i
  c) 1- iii, 2- ii, 3-i, 4- iv d) 1- iii, 2- i, 3-ii, 4- iv
15._____ is used in cryogenic technique
  a) He b) Ne c) Ar d) Kr

PART-II

II. Answer any six questions (q.no.24 is compulsory) 6 x 2 =12

16. Chalcogens belongs to p-block. Give reason
17. Draw the following compounds
  i) pyrophospheric acid ii) phosphorous pentaoxide
18. Write about the reducing property of phosphine ?
19. Complete the following reactions.
  i) $P_4 + NaOH + H_2O \rightarrow$?
  ii) $AgNO_3 + PH_3 \rightarrow$?
20. what is inert pair effect ?
21. How is bleaching powder prepared ?
22. HF can't be stored in glass bottle ?
23. What is royal water ?
24. Complete the following reactions.
  (1) $XeF_6 + H_2O \rightarrow$ (2) $Cu + conc.H_2SO_4 \rightarrow$

PART-III

III. Answer any six questions (q.no.33 is compulsory) 6 x 3 =18

25. Write the reason for the anomalous behaviour of Nitrogen
26. How is ammonia prepared in laboratory ?
27.Write shorts note on holme's signal ?
28. Give the uses of helium and argon
29. What are interhalogen compounds ? give two examples

30. Powdered $CaCO_3$ reacts much faster with dilute HCl than with the same mass of $CaCO_3$ as marble give Reason ?
31. Explain the dehydrating property of sulphuric acid with suitable example
32. What is the hybridisation of iodine in IF_7 ? Give its structure.
33. Write the balanced equation for the overall reaction of chlorine with cold NaOH and hot NaOH ?

PART-IV

IV. Answer all the questions . 5x5=25

34. a) i) Give any two uses of Oxygen (2)
ii) Give a reaction between nitric acid and a basic oxide.(3)

(OR)

b) i) What is the reaction of ammonia with iron and copper salts ?(3)
ii) Write about Haber's process ?(2)

35. a) Writethedifference between red phosphorus and whitephosphorus(5)

(OR)

b) i) Complete the following reaction ?(3)
1) NH_3(excess) + $Cl_2 \rightarrow$?
2) i) NH_3 + Cl_2(excess) $\rightarrow$?
ii) Write about ostwalds process ?(2)

36. a) Explain the commercial method of preparation of nitric acid ?(5)

(OR)

b) i) How is Ozone prepared in laboratory ?(2)
ii) Draw the Structure of Ozone (1)
iii) How is ozone estimated ?(2)

37. a) explain the Deacons's process for manufacture of chlorine(5)

(OR)

b) i) write the molecular formula and draw the structure of sulphurous acid Marshall's acid (2)
ii) Write the properties of inter halogen compounds(3)

38. a) What is the action of copper with dil HNO_3 and Con.HNO_3 ?(5)

(OR)

b) i) explain the bleaching action of Sulphur dioxide(2 ½)
ii) Why is Flurine more reactive than other halogens ? (2 ½) (2 ½)

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S.MANIKANDAN.,M.Sc.,B.Ed
.,
7708543401

UNIT TEST-4A
(Transition and Inner Transition Elements)

CLASS : XII **MARK : 35**

SUB : CHEMISTRY **(Page no 101 to 112)** **TIME : 1.30 HRS**

`PART-I

I. Choose and write the correct answer : **5 X 1=5**

1. CH_3-CHO + CO $\xrightarrow{\text{Rh/ Ir complex}}$?
   (a) Poly propylene (b) Butan-1-al
   (c) Acetic acid (d) Acetate

2.The alloy of copper that contain zinc is
   (a)Monel metal (b)Bronze (c)Bell metal (d) none of these

3. 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

4. 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

5. The transition element which has only +3 oxidation state is
   (a) Ni (b) Mn (c) Cr (d) Sc

PART-II

II. Answer any three questions (q.no.10 is compulsory) **3 x 2 =6**

6. What are interstitial compounds? Give examples .
7. Which is more stable Fe^{2+} or Fe^{3+} ? why ?
8. Calculate the spin only magnetic moment of Ti^{3+} and Mn^{2+} .
9. Write a note on zeigler –Natta catalysis .Give its use
10. Which is stronger reducing agent Cr^{2+} or Fe^{2+}?

PART-III

III. Answer any three questions **3 x 3 =9**

11. Explain the properties of interstitial compounds
12. Explain : Zirconium and Hafmium exhibit similar properties
13. Why most of the d-block elements and their compounds used as a catalyst? Give examples
14. Describe the variable oxidation state of 3d series elements
15. Explain why most of the d-block elements form complexes?

PART-IV

IV. Answer any three questions . 3 x 5 =15

16. i) Explain hume –rothery rule for formation of alloys?

ii) Why first ionisation enthalpy of chromium is lower than that of zinc?

17. i) Calculate the number of unpaired electrons and spin only magnetic moment Of Cr^{3+} , Co^{2+} and Fe^{3+} ?

ii) Which metal in the 3d series exhibit +1 oxidation state most frequently and why?

18. i) Transition metals show high melting points why?

ii) A substance is found to have a magnetic moment of 3.9 BM . how Many unpaired electrons does it contain ?

19. Describe the preparation of $K_2Cr_2O_7$?

20. i) What is meant by transition elements ? give two example

ii) Why Mn^{2+} is more stable than Mn^{3+} ?

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S.MANIKANDAN.,M.Sc.,B.Ed
.,
7708543401

UNIT TEST-5
(COORDINATION CHEMISTRY)

CLASS : XII **MARK : 70**

SUB : CHEMISTRY **TIME : 3.00 HRS**

`PART-I

I. Choose and write the correct answer : **15X1=15**

1. How many geometrical isomers are possible for $[Pt(Py)(NH_3)(Br)(Cl)]$?
   a) 3 b) 4 c) 0 d) 15
2. An excess of silver nitrate is added to 100ml of a 0.01M solution of pentaaquachloridochromium(III)chloride. The number of moles of AgCl precipitated would be
   a)0.02 b) 0.002 c) 0.01 d) 0.2
4. A magnetic moment of 1.73 BM will be show by one among the following
   a) $[CoCl_6]^{4-}$ b) $TiCl_4$
   c) $[Cu(NH_3)_4]^{2+}$ d) $[Ni(CN)_4]^{2-}$
5. An example for double salt
   a) $FeSO_4$ b) $FeSO_4(NH_4)_2SO_4.6H_2O$
   c) $K_4[Fe(CN)_6]$ d) $K_2SO_4.2H_2O$
6. . In $K_4[Fe(CN)_6]$ the co-ordination number of Fe^{2+} is _____
   a) 4 b) 2 c) 3 d) 6
7. Fac-mer isomerism is shown by :
   a) $[Co(en)_3]^{3+}$ b) $[Co(NH_3)_4Cl_2]^{+}$
   c) $[Co(NH_3)_3Cl_3]$ d) $[Co(NH_3)_5Cl]\ SO_4$
8. 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)
9. Which type of isomerism is exhibited by $[Pt(NH_3)_2Cl_2]$?
   a) Coordination isomerism b) Linkage isomerism
   c) Optical isomerism d) Geometrical isomerism
10 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
11. Which kind of isomerism is possible for a complex $[Co(NH_3)_4Br]\ Cl$?
   a) geometrical and ionization b) geometrical and optical
   c) optical and ionization d) geometrical only
12. IUPAC name of the complex $K_3[Al(C_2O_4)_3]$ is
   a) Potassiumtrioxalatoaluminium(III) b) Potassiumtrioxalatoaluminate(II)
   c) Potassiumtrisoxalatoaluminate(III) d) Potassiumtrioxalatoaluminate(III)

13. The sum of primary valence and secondary valence of the metal M in the complex $[M(en)_2(Ox)]Cl$ is

a) 3 b) 6 c) -3 d) 9

14. Oxidation state of Iron and the charge on the ligand NO in $[Fe(H_2O)_5NO]SO_4$

a) +2 and 0 respectively b) +3 and 0 respectively

c) +3 and -1 respectively d) +1 and +1 respectively

15.Geometry of the complex $[Fe(CO)]_5$ is _____

a)Linear b) Trigonal planar c) Octahedral d) Trigonal bipyramidal

PART-II

II. Answer any six questions (q.no.24 is compulsory) 6 x 2 =12

16. what are the limitation of VB theory ?
17. What is crystal fielding splitting energy ?
18. Define Coordination number
19. Write any two medicinal uses of co-ordination compounds ?
20. What is linkage isomerism . explain with an example
21. Write the formula for the following coordination compounds.

a) potassiumhexacyanidoferrate(II) b) petacarbonyliron(0)

22. Give one test to differentiate $[Co(NH_3)_5 Cl]SO_4$ & $[Co(NH_3)_5SO_4]Cl$
23. What are hydrate isomers? Explain with an example.
24. What are the inert and labile complex ?

PART-III

III. Answer any six questions (q.no.33 is compulsory) 6 x 3 =18

25. Give the difference between double salt and coordination compound
26. What is crystal field stabilization energy (CFSE) ?
27. In tetrahedral field draw the figure to show splitting of d orbitals
28. Write the IUPAC name of the following

I) $[Ag(NH_3)_2]^+$ ii).$[Co(NH_3)_5Cl]^{2+}$

29. Draw all possible geometrical isomers of the complex $[Co(en)_2Cl_2]^+$ and identify the optically active isomer
30. The mean pairing energy and octralhedral splitting energy of [Mn(CN)6]3- are 28000 cm-1 and 38500 cm-1 respectively whether this complex is stable in low or high spin ?
31. Write the IUPAC ligand name for the following

a) $C_2O_4^{2-}$ b) H_2O c) Cl^-

32. $[Sc(H_2O)_6]^{3+}$ is colourless explain
33. Calculate the magnetic moment and magnetic property of $[CoF_6]^{3-}$

PART-IV

IV. Answer all the questions . **5x5=25**

34. a) write the postulates of werner's theory

(OR)

b) Write the salient feature of CFT

35. a) Explain the bonding nature in metal carbonyl.

(OR)

b) Mention the main assumption of valence bond theory coordination compounds.

36. a) based on the VB theory ,explain why $[Ni(CN)_4]^{2-}$ it is diamagnetic

(OR)

b) i) Define the term central atom in co-ordination compounds.

ii) What is the coordination entity formed when excess of liquid ammonia is added to an aqueous solution of copper sulphate?

37. a) $[Ni(CO)_4]$ diamagnetic , explain using VB theory

(OR)

b) i) For the complex $[Pt(NO_2)\ (H_2O)(NH_3)_2]Br$ identify the following

(a) Central metal atom / ion

(b) Co-ordination number

(c) Oxidation number of central metal ion

(d) Ligand

(e) Nature of complex

38. a) $[Fe(CN)_6]^{3-}$ paramagnetic , explain using VBtheory

(OR)

b) i) Mention the oxidation state of the central metal ion , co-ordination number , nature of ligand for the complex $K_4[Mn(CN)_6]$

ii) What is strong field ligand ?

S.MANIKANDAN.,M.Sc.,B.Ed
.,
7708543401

UNIT TEST-6
(SOLID STATE)

CLASS : XII **TIME : 3.00HRS**
SUB : CHEMISTRY **MARKS : 70**

`PART-I

I. Choose and write the correct answer : 15X1=15

1. Which of the following is an example of hydrogen bonded molecular solid

a)$C_6H_{12}O_6$ b)Solid CO_2 c)naphthalene d)anthracene

2.The fraction of total volume occupied by simple cubic is

a)$(\frac{\pi}{4})$ b)$(\frac{\pi}{6})$ c) $(\frac{\pi}{3})$ d) $(\frac{\pi}{8})$

3.Percentage of void in simple cubic lattice is

a)51.26% b)48.26% c)47.69% d)53.16%

4. The percentage of packing efficiency in Cscl crystal lattice is

a)68% b)74% c)52.31% d)54.26%

5.The crystal with metal deficiency defect is

a)Nacl b)FeO c)ZnO d)Kcl

6. Graphite and diamond are

a) Covalent and molecular crystals b) ionic and covalent crystals
c) both covalent crystals d) both molecular crystals

7. Solid CO_2 is an example of

a) Covalent solid b) metallic solid c) molecular solid d) ionic solid

8. The vacant space in bcc lattice unit cell is

a) 48% b) 23% c) 32% d) 26%

9. The yellow colour in NaCl crystal is due to

a) excitation of electrons in F centers b) reflection of light from Cl^- ion on the surface
c) refraction of light from Na^+ ion d) all of the above

10. The ratio of radius of cation and anion $\left(\frac{r_{C+}}{r_{A-}}\right)$ is 0.548 then the structure is

a) cube b) octahedral c) tetrahedral d) trigonal planar

11.The crystal structure of CsCl is _____

a) Simple cubic b) Face centred cubic c) Tetrgonal d) Body centred cubic

12. The $\left(\frac{r_{C+}}{r_{A-}}\right)$ ratio of NaCl is

a) 0.155-0.225 b) 0.225-0.415 c) 0.414-0.732 d) 0.732-1.0

13. Total no.of atoms in bcc unit cell

a) 1 b) 2 c) 3 d) 4

14.The coordination number of the sphere in simple cubic arrangement is ___

a) 6 b) 12 c) 3 d) 4

15.Which defect is cation and anion differ in size ___

a) Schottky defect b) frenkel defect c) both a and b d) none of these

PART-II

II. Answer any six questions (q.no.24 is compulsory) 6 x 2 =12

16. Define unit cell.
17. What are point defects?
18. 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?
19. What is packing efficiency ?
20. What are primitive and non primitive unit cell
21. Define covalent solids
22. If the Radius ratio of the compound is between 0.155 to 0.225 find out the coordination number and structure of the compound
23. What are crystal defects classified ?
24. If the th number of close packed sphere is 8 calculate the number of octahedral voids and tetrahedral voids generated

PART-III

III. Answer any six questions (q.no.33 is compulsory) 6 x 3 =18

25. Write a note on Frenkel defect.
26. Calculate the packing efficiency of SC crystal lattice ?
27. Distinguish between tetrahedral and octahedral voids ?
28. Write the Bragg's equation ? explain it terms
29. Why ionic crystals are hard and brittle?
30. What is meant by the term "coordination number"? What is the coordination number of atoms in a bcc structure?
31. Distinguish between isotropy and anisotropy in solids
32. Glassify the following into Covalent molecular ionic and metallic solids
    i) Diamond ii) brass iii) Nacl iv) Naphthalene v) glucose vi)P_4
33. sustantiate with suitable reason zinc oxide is colourless at room temperature and on heating it turns to yellow colour

PART-IV

IV. Answer all the questions . 5x5=25

34. a) i) Sketch and calculate the number of atoms in SC , BCC and FCC unit cell.
    ii) Write short note on Schottky defect

    (OR)

    b) Write the short note on the metal deficiency defect and metal excess defect with example

35. a) i) What are the difference between amorphous and crystalline solids?
    ii) Calculate the number of atom in Fcc unit cell ?

    (OR)

    b) i) Derive an expression for density of a crystal
    ii) Write any three general charctertistics. Ionic solid ?

36. a) i) Calculate the packing efficiency of BCC unit cell ?
ii) Write the short note on the impurity defect in crystal

(OR)

b) Classify molecular crystal with an example for each type.

37. a) explain AAAA and ABABA and ABABC type of three dimensional packing with the help of neat diagram ?

(OR)

b) Distinguish between hexagonal close packing and cubic close packing

38. a) Explain briefly seven types of unit cell.

(OR)

b) i) Explain f centres with a neat diagram
ii) Imperfections in solid play an important role in various is process justify

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S.MANIKANDAN.,M.Sc.,B.Ed.,
7708543401

UNIT TEST-7
(CHEMICAL KINETICS)

CLASS : XII **MARK : 70**
SUB : CHEMISTRY **TIME : 3.00 HRS**

`PART-I

I. Choose and write the correct answer : **15X 1 = 15**

1. The initial concentration of the reactant is doubled , the time for half reaction also doubled. Then the order

a) Zero b) One c) Two c) Three

2.Unit of first order reaction is

a) sec^{-1} b) min^{-1} c) $time^{-1}$ d) All of these

3.If 75% of a first order reaction was completed in 60 minutes , 50% of the same reaction under the same conditions would be completed in

a) 20 minutes b) 30 minutes c) 35 minutes d) 75 minutes

4.A zero order reaction X→Product , with an initial concentration 0.02M has a half life of 10 minutes. If one starts with concentration 0.04M , then thehalf life is

a) 10s b) 5 min

c) 20 min d) Cannot be predicted using the given information

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

a) (3/2)log 2 b) (2/3)log 2 c) (3/2)log (3/4) d) (2/3)log (4/3)

6.The addition of a catalyst during chemical reaction alters which of the following quantities

a) Enthalpy b) Activation energy c) Entropy d) Internal energy

7. Ea of a reaction is zero the value of rate constant in

a) 0 b) A c) Ea d) Ea/2

8. The Unit of Zero order rate constant is

a) litre mol^{-1} sec^{-1} b) mol $litre^{-1}$ sec^{-1} c) sec^{-1} d) $litre^{2}$ sec^{-1}

9.The rate law for a reaction is rate = $k [A]^{1/2} [B]^{3/2}$. Then the order of the reaction is

a) 0 b) 1 c) 1.5 d) 2

10. The half life period of a first order reaction is

a) $t1/2 = \frac{2.303}{k}$ log2 b) $t1/2 = \frac{2.303}{k}$ X 0.3010 c) $t1/2 = \frac{0.693}{k}$ d) all the above

11.If half life period of a first order reaction is 100 minutes, then rate constant of the reaction is

a) $6.93 \times 10^{3}\ min^{-1}$ b) $0.693 \times 10^{-3}\ min^{-1}$ c) $6.93 \times 10^{-3}\ min^{-1}$ d) $69.3 \times 10^{-2}\ min^{-1}$

12. In the Arrhenius equation $k = Ae^{-Ea/RT}$ the factor 'A' represents

a) Energy of activation b) Frequency factor c) Threshold energy d) Rate constant

13.The activation energy of a reactin can be lowered by

a) lowering temperature b) removing products

c) lowering pressure d) adding a catalyst

14. Arrhenius equation is

a) $k = Ae^{-1/RT}$ b) $k = Ae^{-RT/Ea}$ c) $k = Ae^{-Ea/RT}$ d) $k = Ae^{Ea/RT}$

15.If half life period of a first order reaction is 20 min. The time taken for the completion of 99.9 % of the reaction is

a) 200 min b) 2000 min c) 250 min d) 20 min

PART-I

II. Answer any six questions (q.no.24 is compulsory) **6 x 2 =12**

16. Define rate law and rate constant.

17. Explain pseudo first order reaction with an example

18. Explain rate determining step with an example.

19. Write the rate law for the following reactions. (a) A reaction that is 3/2 order in x and zero order in y. (b) A reaction that is second order in NO and first order in Br_2.

20. The rate constant for a first order reaction is $1.54 \times 10^{-3}\ s^{-1}$. Calculate its half life time.

21. Identify the order for the following reactions

(i) Rusting of Iron (ii) Radioactive disintegration of $_{92}u^{238}$.

22. Write Arrhenius equation and explains the terms involved.

23. Define order of reaction ?

24. Give the schematic representation of proper and improper alignment of rectant for a general reaction $A_2 + B_2 \rightarrow 2AB$

PART-III

III. Answer any six questions (q.no.33 is compulsory) 6 x 3 =18

25. What is an elementary reaction? What are the differences between order and molecularity?
26. Derive integrated rate law for a zero order reaction . A → Product.
27. The rate law for a reaction of A,B and C has been found to be rate = $K[A]^2[B][C]^{3/2}$.How would the rate change when i) [C] is quadrupled ii) [A] is halved iii)Concentration of both [A] and [B]are doubled.
28. The half life of a first order reaction x→ Product is 6.932 X 10^4 s at 500K.What % of x would be decompose on heating at 500K for 100 minutes.($e^{0.06}$ = 1.06)
29. Give three examples for first order reaction.
30. Define half life of a reaction. Show that for a first order reaction half life is independent of initial concentration
31. write the difference between rate and rate constant of a reaction
32. Define order and molecularity of a reaction
33. 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

PART-IV

IV. Answer all the questions . 5x5=25

34. a) Derive an expression for rate law of first order reaction with its graphical representation

(OR)

b) i) Show that in case of first order reaction the time required for the completion 99% twice required for the completion of 99% of the reaction

ii) Explain the effect of catalyst on reaction rate with an example

35. a) i) The rate of the reaction. x + 2y →product is 4 x 10-3mol L -1 s -1 if [x] =[y]=0.2M and rate constantat 400k is 2 x 10-3 s-1 what is the overall order of the reaction ?

ii) rate constant of a reaction at 400 and 200 K are 0.04 and 0.02 s^{-1} respectively. Calculate the value of activation energy.

(OR)

b) Explain briefly the collision theory of bimolecular reaction

36. a) i) A first order reaction takes 8 hours for 90 % completion . Calculate the time required for 80 % completion .(log 5 =0.6989 ; log 10 =1)

ii) Define – average rate and instantaneous rate.

(OR)

b) i) A first order reaction takes 8 hours for 90 % completion calculate the time required for 80 % completion

ii) What is activation energy ?

37. a) i) A zero order reaction is 20% completein 20 minutes. Calculate the value of the rate constant. In what time will thereaction be 80% complete?

ii) How do concentrations of the reactant influence the rate of reaction?

(OR)

b) Derive Arrhenius equation to calculate Ea from rate constants k1 and k2 at temperature T1 and T2

Show

38. a) i) Show that the half life period of zero order reaction directly proportional to the initial concentration of the reaction

ii) 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?

(OR)

b) Mention the factors affecting the rate of the reaction

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S.MANIKANDAN.,M.Sc.,B.Ed.,
7708543401

UNIT TEST-8
(Ionic Equilibrium)

CLASS : XII **MARK : 70**

SUB : CHEMISTRY **TIME : 3.00 HRS**

`PART-I

I. Choose and write the correct answer : **15X1=15**

1. An aqueous solution of borax is
   a) neutral b) acidic c) basic d) amphoteric
2. The pH of an aqueous solution is Zero. The solution is
   a) slightly acidic b) strongly acidic c) neutral d) basic
3. Which of the following can act as Lowry – Bronsted acid as well as base?
   a) HCl b) SO_4^{2-} c) HPO_4^{2-} d) Br-
4. The aqueous solutions of sodium formate, anilinium chloride and potassium cyanide are respectively
   a) acidic, acidic, basic b) basic, acidic, basic
   c) basic, neutral, basic d) none of these
5. Which of these in not likely to act as lewis base ?
   (a) BF_3 (b) PF_3 (c) CO (d) F^-
6. Which one of the following will cause common-ion-effect when added to the following dissociation equilibrium reaction ?

   CH_3COOH (aq) $\rightleftharpoons$ CH_3COO^- (aq) + H^+(aq)

   (a) CH_3COCl (b) AgCl
   (c) CH_3Cl (d) HCl
7. The pH of 10^{-3} M KOH solution will be
   (a) 3 (b) 11 (c) 14 (d) none of these
8. .The P^H of 10^{-5} M KOH solution will be
   a)9 b)5 c)13 d)none of these
9. What is the pH of the resulting solution when equal volumes of 0.1M NaOH and 0.01M HCl are mixed?
   a) 2.0 b) 3 c) 7.0 d) 12.65
10. 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
11. Equal volumes of three acid solutions of pH 1,2 and 3 are mixed in a vessel. What will be the H+ ion concentration in the mixture?
    a) 3.7×10^{-2} b) 10^{-6} c) 0.111 d) none of these
12. What is the pH of the resulting solution when equal volumes of 0.1M NaOH and 0.01M HCl are mixed?
    a) 2.0 b) 3 c) 7.0 d) 12.65
13. $H_2PO_4^-$ is the conjugate base of
    a)PO_4^{3-} b)P_2O_5 c)H_3PO_4 d)HPO_4^{2-}
14. P^H value of battery acid is _____
    a) 0 b) 1 c) 2 d) 3
15. Which one of the following is Lewis acid
    a) CO_2 b) CaO c) MgO d) H_2O

PART-II

II. Answer any six questions (q.no.24 is compulsory) 6 x 2 =12

16. Define common ion effect
17. What is salt hydrolysis ?
18. Define ionic product of water .Give its value at room temperature
19. Define pH
20. What are the limitations of Arrhenius concept ?
21. Calculate the P^H and P^{OH} of 0.001 M HCl solution
22. Define solubility product.
23. Define buffer action
24. What is the equation to find the P^H of an acid buffer solution ?

PART-III

III. Answer any six questions (q.no.33 is compulsory) 6 x 3 =18

25. Derive henderson equation
26. What is buffer solution ? .Mentions the two type of buffer solution
27. What is buffer capacity ? what is buffer index(β) ?
28. Determination of solubility product from molar solubility
29. what are Lewis acid and bases give one example for each
30. Discuss the Lowry –Bronsted concept of acid and bases
31. Write the expression for the solubility product of.
    i) $BaSO_4$ ii) Ag_2CrO_4
32. Write the relation between ionic product and solubility product
33. find the pH of buffer solution containing 0.20 mole per litre sodium Acetate and 0.18 mole per litre acetic acid .Ka for acetic acid is 1.8×10^{-5}.

PART-IV

IV. Answer all the questions . 5x5=25

34. a) Derive an expression for ostwald dilution law

(OR)

b) i) What are conjugate acid base pair give an example ?
ii) Identify the conjugated acid base pairs of following equation in water with write the difference equation.
I) NH^{4+} ii) H_2SO^4 iii) CH^3COOH

35. a) i) Difference between Lewis acid and Lewis bases
ii) Classify the following into Lewis acids and Lewis bases
(A) BF_3 (B) CO_2 (C) MgO (D) CH_3^-

(OR)

b) i) Write the pH value of following substance
a) Vinegar b) black coffee C) packing soda d) soapy water
ii) Explain Arrhenius concepts with example

36. a) i) calculate the PH of 1.5×10^{-3} m solution of $Ba(OH)_2$.
ii) Calculate the concentration of OH^- ion in a fruit juice which contains 2×10^{-3} M, H_3O^+ ion . Identify the nature of the solution.

(OR)

b) Derive an expression for the hydrolysis constant and degree of hydrolysis Of Salt of strong acid and weak base

37. a) Derive an expression for the hydrolysis constant and degree of hydrolysis of Salt of strong acid and weak base

(OR)

b) Explain Arrheius theory of acids and bases with examples.Mention its limitations

38. a) i) Derive the Relation between PH and POH

ii) Identify the conjugate acid base pair for the following reaction 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) i) Write the expression for the solubility product of Hg_2Cl_2 and $Ca_3(PO_4)_2$

ii) calculate PH of 10^{-8} H_2SO_4

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S.MANIKANDAN.,M.Sc.,B.Ed.,
7708543401

UNIT TEST-9
(Electro Chemistry)

CLASS : XII **MARK : 70**

SUB : CHEMISTRY **TIME : 3.00 HRS**

`PART-I

I. Choose and write the correct answer : **15X1=15**

1.The number of electrons that have a total charge of 9650 coloumb is

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

2.How many Faraday's of electricity are required for the following reaction to occur

$MnO^{4-} \rightarrow Mn^{2+}$

a)5F b)3F c)1F d)7F

3.During electrolysis of molten sodium chloride , the time required to produce0.1 mole of chlorine gas using a current of 3A is

a)55 minutes b)107.2 minutes c)220 minutes d)330 minutes

4.Faraday's constant is defined as

a)Charge carried by 1 electron

b)Charge carried by 1 mole of electrons

c)Charge required to deposit one mole of substance

d)Charge carried by 6.22×10^{10} electrons

5.Which of the following electrolytic solution has the least specific conductance?

a)2N b)0.002N c)0.02N d)0.2N

6. Among the following cells

I) Leclanche cell

II) Nickel – Cadmium cell

III) Lead storage battery

IV) Mercury cell

Primary cells are

a) I and IV b) I and III c) III and IV d) II and III

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

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

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

Reason : Rust has the compositionFe_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

9. A certain current liberated 0.504gm of hydrogen in 2 hours. How many grams of copper can be liberated by the same current flowing for the same time in a copper sulphate solution

a) 31.75 b) 15.8 c) 7.5 d) 63.5

10 A gas X at 1 atm is bubble through a solution containing a mixture of 1MY- and 1MZ- at 25oC . If the reduction potential of Z>Y>X, then

a) Y will oxidize X and not Z b) Y will oxidize Z and not X

d) Y will oxidize both X and Z d) Y will reduce both X and Z

11. Which one of the following material conducts electricity

(a) Diamond

(b) Crystalline sodium chloride

(c) Barium sulphate

(d) Fused potassium chlorides

12. molar conductivity of ionic solution depends on

a) Temperature b) distance between electrodes

c) concentration of electrolytes d) Surface area of electrodes

13. Which of the following will not conduct electricity in aqueous solution

a) Copper sulphate b) Sugar c) Common salt d) None of these

14. On heating one end of piece of metal, the other becomes hot because of

a)energised electron moving to the other end b) minor perturbation in the energy of atom

c) resistance of the metal d) mobility of atoms in the metal

15. Which one of the following metals could not be obtained on electrolysis of aqueous solution of its salts

a) Ag b) Mg c) Cu d) Cr

PART-II

II. Answer any six questions (q.no.24 is compulsory) 6 x 2 =12

16. Define equivalent conductance
17. Define molar conductance
18. what is electrochemical equivalent ?
19. What is intercalation ?
20. Why is AC current used instead of DC in measuring the electrolytic conductance ?
21. What is Emf ?
22. Define anode and cathode
23. Conductivity decreases while the dilution of the solution increased why ?
24. A solution of silver nitrate is electrolysed for 20 minutes with a current of 2ampere calculate the mass of silver deposited at the cathode.

PART-III

III. Answer any six questions (q.no.33 is compulsory) 6 x 3 =18

25. Explain lithium-ion battery and mercury button cell
26. Write a note on Standard Hydrogen Electrode(SHE)

27. Write the Galvanic cell notation for following reaction ?

$2Cr_{(S)} + 3Cu^{2+}_{(aq)} \rightarrow 2Cr^{3+}_{(aq)} + 3Cu_{(s)}$

28. Why is anode in galvanic cell considered to be negative and cathode positive electrode?
29. State kohlrausch law and explain any one of the application
30. What are the conversion used Galvanic cell notation ?
31. What is electrochemical series ? how is it useful to predict corrosion ?
32. how are metals protected from corrosion by cathodic protection method ?
33. Ionic conductance at infinite dilution of Al^{3+} and SO_4^{2-} 189 and 160 mho cm2 equivalent calculate the equivalent and molar conductance of the electrolyte $Al_2(SO_4)_3$ at infinite dilution.

PART-IV

IV. Answer all the questions . 5x5=25

34. a) Derive an expression for Nernst equation

(OR)

b) i) State faraday's law of electrolysis ?
ii) What is cell constant give its unit ?

35. a) Explain the three application of kohlrausch's law

(OR)

b) i) A solution of silver nitrate is electrolysed for 30 minutes with a current of 2 ampere calculate the mass of silver deposited at the cathode
ii) What is leclanche cell ?

36. a) Describe the construction of Daniel cell. Write the cell reaction

(OR)

b) i) Explain Electrochemical mechanism of corrosion
ii) Arrange the following solutions in decreasing order of specific conductance and give reason :
i)0.01M Kcl ii)0.005M Kcl iii)0.1M Kcl iv)0.25M Kcl v)0.5M Kcl

37. a) Describe the electrolysis of molten NaCl using inert eelectrodes.

(OR)

b) i) Explain Lead storage battery
ii) What is fuel cell ?

38. a) Mention factors that affect electrolytic conductance

(OR)

b) Derive an expression for thermodynamic relation of a cell reaction

UNIT TEST -10
(SURFACE CHEMISTRY)

Class. : XII. **Marks : 70**

Sub : chemistry. **Time : 3.00hrs**

PART-A

Choose the correct answer . **15 X 1 = 15**

1. on which of the following properties does the coagulation power of an ion Depend ?
   a) both magnitude and sign of the charge on the ion b) size of the ion alone
   c) the magnitude of the charge on the ion alone d) the sign of charge on the ion alone
2. Which is correctly matched
   a) emulsion-smoke b) gel-butter c) foam-mist d) whipped cream -sol
3. Which one of the following characteristics are associated with adsorption
   a) ΔG and ΔH negative but ΔS is positive b) ΔG and ΔS negative but ΔH is positive
   c) ΔG is negative and ΔH and ΔS are positive d) ΔG ,ΔH, ΔS all are negative
4. Milk is
   (a) Dispersed fats in oil . (b) Dispersed fats in water
   (c) Dispersed water in fats (d) Dispersed water in oil
5. Fog is a colloidal solution of
   (a) Solid in gas (b) Liquid in gas (c) Gas in liquid (d) Gas in solid
6. Which one of the following is not a colloid
   (a) Milk (b) Blood (c) Solution of urea (d) Ice cream
7. Movement of colloidal particles under the influence of electrostatic field is
   (a) Electrophoresis (b) Electrolysis (c) Dialysis (d) Ionisation
8. Enzyme activity is maximum at
   a) 300 K (b) 310 K (c) 320 K (d) 330 K
9. The zig-zag motion of colloidal particles is due to
   (a) Small size of colloidal particles
   (b) Large size of colloidal particles
   (c) The conversion of potential energy into kinetic energy
   (d) Bombardment on colloidal particles by molecules of dispersion medium
10. Bredig arc method can not be used to prepare colloidal solution of which of the following
    (a) Pt (b) Fe (c) Ag (d) Au
11. The phenomenon observed when a beam of light is passed through a colloidal solution is
    a) Cataphoresis b) Electrophoresis c) Coagulation d) Tyndall effect
12. 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
13. Collodion is a 4% solution of which one of the following compounds in alcohol – ether mixture?
    a) Nitroglycerine b) Cellulose acetate c) Glycoldinitrate d) Nitrocellulose
14. 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
15. Which one of the following is an example for homogeneous catalysis?
    a) manufacture of ammonia by Haber's process b) manufacture of sulphuric acid by contact process
    c) hydrogenation of oil d) Hydrolysis of sucrose in presence of dil HCl

PART-II

Answer the following any six questions (Q.no. 24 is compulsory) **6 X 2 = 12**

16. Define gold number
17.what are active centers ?
18.what is peptization ? with example
19. Which will be adsorbed more readily on the surface of charcoal and why; NH_3 or Co_2?
20 Heat of adsorption is greater for chemisorptions than physisorption. Why?
21. What happens when a colloidal sol of $Fe(OH)_3$ and AS_2O_3 are mixed?
22. What is the difference between a sol and a gel?
23. Why lyophillic colloidal sols are more stable than lyophobic colloidal sol.
24. Name the factors affecting adsorption.

PART-III

Answer the following any six questions (Q.no. 33 is compulsory) **6 X 3 = 18**

25. What is inversion phase? Give an example.
26. What are promoters and catalytic poison?
27. Write a short note on ultrafiltration?
28. What is difference between homogeneous and heterogeneous catalysis?
29. What are the factors which influence the adsorption of a gas on a solid?
30. Give three uses of emulsions.
31. Why does bleeding stop by rubbing moist alum?
32. Write a note on electro osmosis?
33. mention the medicinal uses of colloids

PART-IV

Answer all the questions. **5 X 5 = 25**

34. a)Explain intermediate compound formation theory of catalysis with an Example

(OR)

b) Explain the adsorption theory of catalysis

35.a) Difference between physical adsorption and chemical adsorption

(OR)

b)Write any five characteristics of catalyst?

35. a) i) What is Helmholtz double layer?
ii) What are the Characteristics of adsorption?

(OR)

b) Explain chemical methods (Condensation Methods) of the preparation of colloids

36. a) Write notes on a) Positive catalysis b) Negative catalysis c) Auto catalysis

(OR)

b) Describe some feature of catalysis by Zeolites.

37. a) i) Give an account on Nano catalysis.
ii) Write notes on Enzyme Catalysis.

(OR)

b) i) how is delta formed ?
ii) Write note on Freundlich adorption isotherm

38. a) i) What is Tyndall effect?
ii) Write a short note on Brownian movement

(OR)

b) i) Give the examples of Positively charged colloids and Negatively charged colloids.
ii) Explain dispersion methods of preparation of colloids.

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UNIT TEST-11
(HYDROXY COMPOUNDS AND ETHERS)

CLASS : XII **MARK : 70**

SUB : CHEMISTRY **TIME : 3.00 HRS**

`PART-I

I. Choose and write the correct answer : **15X1=15**

1. Carbolic acid is

a) Phenol b) Picric acid c) Benzoic acid d) Phenylacetic acid

2. On reacting with neutral ferric chloride, phenol gives

a) red colour b) violet colour c) dark green colour d) no colouration.

3. $HO\text{-}CH_2CH_2\text{-}OH$ on heating with periodic acid gives

a) Methanoic acid b) Glyoxal c) Methanal d) CO_2

4. Which one of the following is the strongest acid?

a) 2-nitro phenol b) 4-chloro phenol c) 4 – nitro phenol d) 3 – nitro phenol

5. Williamson synthesis of preparing dimethyl ether is an

a) S_N1 reaction b) S_N2 reaction c) Electrophilic addition d) Electrophilic substitution

6. Assertion : Phenol is more acidic than ethanol
Reason: Phenoxide ion is resonance stabilized

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.

7. Which of the following compounds on reaction with methyl magnesium bromide will give tertiary alcohol.

a) benzaldehyde b) propanoic acid c) methyl propanoate d) acetaldehyde

8. Which of the following has lowest boiling point ?

a) phenol b) o-nitro phenol c) m-nitro phenol d) p- nitro phenol

9. Which among the following is a simple ether

a) 1-methoxy propane b) 2- methoxy propane
c) methoxy methane d) methoxy benzene

10. According to Lewis concept, an ether is

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

11. The oxygen atom in ether is _____ hybridised

a)sp b) sp^2 c) sp^3 d) dsp^2

12. Grignard reagent reacts with _____ to give primary alcohol

a)HCHO b) RCHO c) RCOR d) RNH_2

13.Match

1.Primary alcohol - i) iso propyl alcohol
2.Secondary alcohol - ii) glycerol
3.Trihydric alcohol - iii) ethylene glycol
4.Drihydric alcohol - iv) Neopentyl alcohol

a) 1- ii , 2- iv , 3-i , 4- iii
b) 1- iii , 2- i , 3- iv , 4- ii
c) 1- iv , 2- i , 3- ii , 4- iii
d) 1- iv , 2- i , 3- iii , 4- ii

14.Cold dilute alkaline $KMnO_4$ is called

a) Fenton's reagent
b) Tollen's reagent
c) Bayer's reagent
d) schiff's reagent

15. Which of the following compound can be used as artifreeze in automobile radiators?

a) methanol
b) ethanol
c) Neopentyl alcohol
d) ethan -1, 2-diol

PART-II

II. Answer any six questions (q.no.24 is compulsory) 6 x 2 =12

16. How will you Convert phenol into picric acid ?
17. Explain – Hydroboration
18. How will you prepare butan-2-ol from Grignard reagent?
19. Explain Swern oxidation.
20. How are Convert glycerol to acrolein ?
21. give the uses of diethyl ether
22. what is metamerism and give one example ?
23. Give an example for simple ether and mixed ether ?
24. Explain C-O-C bond angle is slightly greater than the tetrahedral bond angle . Why?

PART-III

III. Answer any six questions (q.no.33 is compulsory) 6 x 3 =18

25. Distinguish between 1^0 , 2^0 and 3^0 alcohols using Luca's reagent.
26. Explain : i) Phthalien reaction ii) Coupling reaction.
27. Write the tests to differentiate phenols and alcohols ?
28. How phenol is prepared from benzene?
29. Explain auto oxidation of ethers
30. How are the nitroglycerin prepared from glycerol ?
31. how will you prepare the following by using grignard reagent ?
    a) Propan-1-ol b)propan-2-ol
32. How are the glycerose prepared from glycerol ?
33. How are Williamson synthesis of ether ? (mechamism)

PART-IV

IV. Answer all the questions . **5x5=25**

34. a) Explain : i)Dow's process ii)Kolbe's reaction iii)Riemer – Tiemann reaction

(OR)

b) Write a note on Sayzteff's rule ?

35. a) Distinguish between 1^0 , 2^0 and 3^0 alcohols using Victor Meyer's test

(OR)

b) Mention the mechanism in the following reactions

i) One mole of HI reacts with methoxy ethane

ii) One mole of HI reacts with 2 methoxy 2 –methylpropane

36. a) i) How does HI react with following compouds

i) C_2H_5-O-CH_3 ii) C_6H_5-O-CH_3

ii)Write the Friedel Craft's reaction of Anisole ?

(OR)

b) i) What are the uses of glycerol ?

ii) Write any one method of preparation of diethyl ether ?

37. a) i) Write a bromination rection of anisole

ii) How are the following conversion effected?

1) ethylene glycol → acetaldehyde

2) glycerol → acrolein

(OR)

b) i) Write note biological oxidation

ii) How is phenol prepared from 1) chloro benzene 2) isopropyl benzene

38. a) i) How is crotyl alcohol obtained by reduction reaction ?

ii) How does diethyl ether react with the following reagent ?

a) Cl_2/light b) dil H_2SO_4 c) PCl_5

(OR)

b) i) What is Baeyer's regent ? how it is useful to convert ethene to ethane 1 2diol ?

ii) How is ethylene glycol converted into 1,4 dioxane ?

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S.MANIKANDAN.,M.Sc.,B.Ed.,
7708543401

UNIT TEST-12
(Carbonyl Compounds and Carboxylic Acids)

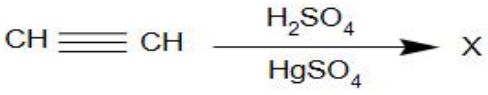
CLASS : XII **MARKS : 70**

SUB : CHEMISTRY **TIME : 3.00 HRS**

`PART-I

I. Choose and write the correct answer : **15X1=15**

1. In the following reaction



Product 'X' will not give

a) Tollen's test b) Victor Meyer test
c) Iodoform test d) Fehling solution test

2. The formation of cyanohydrin from acetone is an example of
a) nucleophilic substitution b) electrophilic substitution
c) electrophilic addition d) Nucleophilic addition

3. Which of the following represents the correct order of acidity in the given compounds
a) $FCH_2COOH > CH_3COOH > BrCH_2COOH > ClCH_2COOH$
b) $FCH_2COOH > ClCH_2COOH > BrCH_2COOH > CH_3COOH$
c) $CH_3COOH > ClCH_2COOH > FCH_2COOH > BrCH_2COOH$
d) $ClCH_2COOH > CH_3COOH > BrCH_2COOH > ICH_2COOH$

4. Which one of the following reaction is an example of disproportionation reaction
a) Aldol condensation b) cannizaro reaction
c) Benzoin condensation d) none of these

5. Carboxylic acids have higher boiling points than aldehydes, ketones and even alcohols of comparable molecular mass. It is due to their
a) more extensive association of carboxylic acid via van der Waals force of attraction
b) formation of carboxylate ion
c) formation of intramolecular H-bonding
d) formation of intermolecular H – bonding

6. In which of the following reactions new carbon – carbon bond is not formed?
a) Aldol condensation b) Friedel craft reaction c) Kolbe's reaction d) Wolf kishner reduction

7. The reagent used to distinguish between acetaldehyde and benzaldehyde is
a) Tollens reagent b) Fehling's solution c) 2,4 – dinitrophenyl hydrazine d) semicarbazide

8. Which one of the following undergoes reaction with 50% sodium hydroxide solution to give the corresponding alcohol and acid
a) Phenylmethanal b) ethanal c) ethanol d) methanol

9. Which one of the following reduces tollens reagent
a) formic acid b) acetic acid c) benzophenone d) none of these

10. Reaction of acetone with one of the following reagents involves nucleophilic addition followed by elimination of water. The reagent is
a) Grignard reagent b) Sn / HCl
c) hydrazine in presence of slightly acidic solution d) hydrocyanic acid

11. Decarboxylation of sodium benzoate on heating with soda lime gives
a) benzene b) toluene c) benzaldehyde d) benzoic acid

12. Through which of the following reactions number of carbon atoms can be increased in the chain?
a) Rosenmund reduction b) Cannizaro's reaction
c) Aldol condensation d) HVZ reaction

13. Assertion : Aldehydes and ketones, both react with Tollen's reagent to form silver mirror.
Reason : Both, aldehydes and ketones contain a carbonyl group.
a) Assertion and reason both are correct and reason is correct explanation
b) Assertion and reason both are wrong statements
c) Assertion is wrong statement but reason is wrong statement
d) Assertion is wrong statement but reason is correct statement

14. Which of the following cannot be prepared using Rosenmund reaction?
a) Acetaldehyde b) Benzaldehyde c) Formaldehyde d) both (a) and (b)

15. Perspex is
a) smokeless powder b) food preservative c) thermo softening plastic d) antiseptic

PART-II

II. Answer any six questions (q.no.24 is compulsory) **6 x 2 =12**

16. Write the test for carboxylic acid group ?
17. write the HVZ reaction ?
18. What is urotropine ? how it is prepared ?
19. Explain Benedict's solution test
20. What is formalin what is its use ?
21. What is glacial acetic acid ?
22. Write the haloform reaction with an example
23. Write Wolf kishner reduction ?
24. write gattermann-koch reaction

PART-III

III. Answer any six questions (q.no.33 is compulsory) **6 x 3 =18**

25. i) Write clemmenson reduction ?
ii) Write stephenen's reaction
26. Name the ester which has the following flavolur ?
i) banana ii) pine apple iii) orange
27. Write a note on Rosenmund rerduction
28. Write note on benzoin condensation
29. What is trans esterfication ? give example
30. Write the reaction of benzaldehyde with chlorine in the absence and presence of catalyst.
31. Write the reaction of Claisen- Schmid treaction
32. The oxidation of unsymmetrical ketone is governed by which rule? State the rule with suitable examples?
33. Explain the mechanism of cannizaro reaction?

PART-IV

IV. Answer all the questions . **5x5=25**

34. a) Write the mechanism of aldol condensation reaction(5)

(OR)

b) i) Arrange the following in the increasing order of relative reactivity of acid derivatives and mention the reason alone (2)
$CH_3COOC_2H_5$ CH_3COCl CH_3CONH_2 $CH_3COOCOCH_3$
ii) How will you prepare benzophenone from benzene ? (3)

35. a) How does ammonia react with the following compounds (5)
i) formaldehyde ii) acetone iii) benzaldehyde

(OR)

b) how will you convert benzaldehyde into the following compounds? (5)
i) benzoin ii)cinnamic acid iii) malachite green

36. a) Write the test for esterification reaction? And mechanism(5)

(OR)

b) i) What happens when isobutylene is subjected to reductive ozonolysis ? (2 ½)
ii) How will you convert Ethyacetate into Ethylaceto acetate ? (2 ½)

37. a) i) Write the cross aldol condensation reaction ? (2 ½)
ii) Write a crossed cannizzaro reaction? (2 ½)

(OR)

b) i) Write the reduction of pinacols ? (2 ½)
ii) Write the uses of formic acid and benzoic acid ? (2 ½)

38. a) How will you prepare (5)
i) Acetic anhydride from acetic acid
ii) Ethylacetate from methylacetate
iii) Acetamide from methylcyanide

(OR)

b) i) Write the hoffmann's degradation reaction ? (2 ½)
ii) How will you convert acetone into propane ? (2 ½)

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S.MANIKANDAN.,M.Sc.,B.Ed
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7708543401

UNIT TEST-13
(Organic Nitrogen Compounds)

CLASS : XII **MARK : 70**

SUB : CHEMISTRY **TIME : 3.00 HRS**

`PART-I

I. Choose and write the correct answer : **15X1=15**

1. Which of the following reagent can be convert nitro benzene to aniline?

a)Sn / Hcl b)Zn-Hg/NaOH c)Zn/NH_4cl d)All of these

2.The product formed by aldehyde with a primary amine

a)Carboxylic acid b)Aromatic acid c)Schiff's base d)Ketone

3.When aniline reacts with acetic anhydride the product formed is

a)o-aminoacetophenone b)m-aminiacetophenone c)p-aminoacetophenone d)acetanilide

4.The method by which aniline cannot be prepared is

a)degradation of benzamide with Br_2/NaOH

b)potassium salt of phthalimide treated with chlorobenzene followed by hydrolysis with aqueous NaOH solution

c)reduction of nitrobenzene with $LiAlH_4$

d)reduction of nitrobenzene by Sn /Hcl

5.The order of basic strength of methyl substituted amine in aqueous solution is

a)$N(CH_3)_3 > HN(CH_3)_2 > H_2N(CH_3) > NH_3$ b) $H_2N(CH_3) > HN(CH_3)_2 > N(CH_3)_3 > NH_3$

c) NH3 > $H_2N(CH_3) > HN(CH_3)_2 > N(CH_3)_3$ d) $HN(CH_3)_2 > H_2N(CH_3) > N(CH_3)_3 >$ NH

6. The reduction of nitrobenzene with Zinc alkali results in the formation of

a) aniline b) hydrazobenzene c) nitrosobenzene d) phenyl hydroxylamine

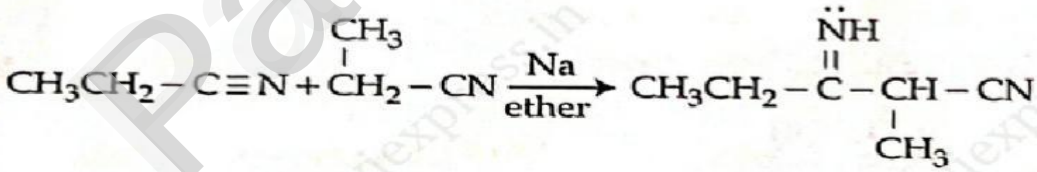
7. Secondary nitro alkanes react with nitrous acid to form

a) red solution b) blue solution c) green solution d) yellow solution

8. Which one of the following is most basic?

a) 2,4 – dichloroaniline b) 2,4 – dimethyl aniline

c) 2,4 – dinitroaniline d) 2,4 – dibromoaniline



9. The above reaction is :

(a) Thorpe nitrile condensation (b) Levine and Hauser acetylation

(c) Lederer-manasse reaction (d) Aldol condensation

10. $C_6H_5N_2^+Cl^- \xrightarrow{Cu_2Cl_2/\ HCl} C_6H_5Cl + N_2$ this reaction is known as

(a) Gattermann reaction (b) Gomberg reaction

(c) Schotten-Baumann reaction (d) Sandmeyer reaction

11. Aniline + benzoyl chloride $\xrightarrow{NaOH}$ C_6H_5-NH-COC_6H_5 .this reaction is known as
(a) Fridel- crafts reaction (b) HVZ reaction
(c) Schotten-Baumann reaction (d) Kolbe's reaction

12. Assertion : Acetamide on reaction with KOH and bromine gives acetic acid
Reason : Bromine catalyses hydrolysis of acetamide.
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

13. Gabriel phthalimide reaction is used for preparing
a) Primary aromatic amines b) Secondary amines
c) Primary aliphatic amines d) tertiary amines

14. Which of the following cannot show tautomerism?
a) 2-Methyl -2-nitropropane b) 2-Nitropropane
c) 1-Nitropropane d) Vinyl alcohol

15. On reduction, Secondary amine is given by
a) nitrobenzene b) Methylcyanide c) nitroethane d) methyl isocyanide

PART-II

II. Answer any six questions (q.no.24 is compulsory) 6 x 2 =12

16.How will you convert nitrobenzene into
i)1,3,5 – trinitro benzene ii) o and p–nitrophenol ?
17.Explain diazotisation reaction.
18.Aniline does not undergo Friedel – Craft's reaction.Why?
19.Explain the Schotten – Baumann reaction of aniline.
20. What is libermann's nitroso test?
21. What is carbylamine reaction ?
22. what is gomberg reaction explain
23. How is aryl halide prepared by using Cu_2Cl_2 /HCl(or) Cu_2Br_2/HBr ?
24. .Identify A and B

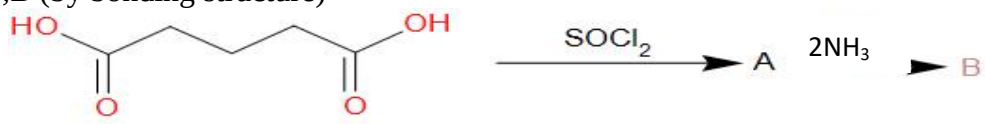
A. $\xrightarrow{Na(Hg)/C_2H_5OH/4[H]}$ CH_3-CH_2-NH_2

B $\xrightarrow{Na(Hg)/C_2H_5OH/4[H]}$ CH_3-NH-CH_3

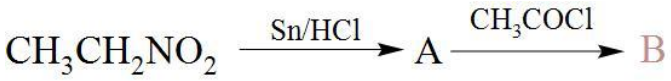
PART-III

III. Answer any six questions (q.no.33 is compulsory) 6 x 3 =18

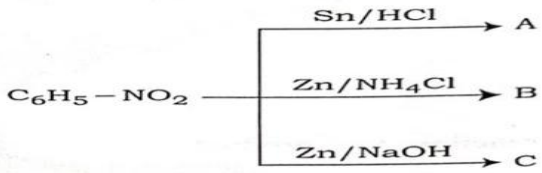
25.Explain the mustard oil reaction of .
26.Which type of amine is prepared by Gabriel phthalimide synthesis?Write the reaction.
27. name the reducing agent used in the reduction of nitrobenzene to the following compounds
A) Aniline B) phenyl hydroxylamine
28.Explain : i)Hoffmann's bromide reaction ii)Hoffmann's ammonolysis
29. Write a note thrope nitrile condensation?
30.i) How is chloropicrin prepared
ii) sand meyer reaction
31 . Identify A ,B (by bonding structure)



32. Identify the compounds A and B in the following sequence of reactions.



33.Identify compounds A,B and C for the following



PART-IV

IV. Answer all the questions . 5x5=25

34.a) How will you distinguish between primary, secondary and tertiary aliphatic amines.(5)

(OR)

b)Give an account for the following :

i)Pk_b of aniline is more than that of methyl amine (2)

ii)Ethylamine is soluble in water whereas aniline is not (1)

iii)Amines are more basic than amides .(2)

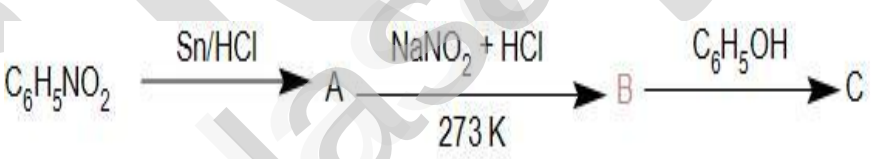
35.a) i)How will you convert aniline into p-nitro aniline?(3)

ii)What are the difference between nitro form and aci form?(2)

(OR)

b) A compound 'A' of molecular formula C_2H_3N on reduction with $Na(Hg)/C_2H_5OH$ gives 'B' of molecular formula C_2H_7N which undergoes carbylamine test. Compound 'B' on reaction with nitrous acid gives compound 'C' of molecular formula C_2H_6O by liberating nitrogen. Identify A,B and C and write the reactions involved. (5)

36. Identify compounds A, B and C in the following sequence of reactions.(3)



ii) write a mendius reaction ? (2)

(OR)

b) Nitrous acid react with primary and secondary amine and tertiary amine(5)

37. a) i) Write the NEF carbonyl synthesis(3) ii) Write a short note on solvation effect(2)

(OR)

b) explain reduction of nitrobenzene in various medium ? (5)

38. a) How will you convert from benzene diazonium chloride (2 + 2 + 1)

i)phenol ii) iodo benzene iii)biphenyl

(OR)

b) i) Write a electrolytic reduction of nitrobenzene (2)

ii) Name the test used to identify primary amines . Write the reaction involved in the test.(3)

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S.MANIKANDAN.,M.Sc.,B.Ed
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7708543401

CLASS : 12TH **TIME : 3.00HRS**
SUBJECT : CHEMISTRY **UNIT TEST-14** **MARKS : 70**

PART-A

Choose the correct answer **15 X1=15**

1. Which of the following amino acids are achiral
   a) Alanine b) leucine c)proline d)glycine
2. On which of the following properties does the coagulation power of anion Depend ?
   a) Both magnitude and sign of the charge on the ion
   b) Size of the ion alone
   c) The magnitude of the charge on the ion alone
   d) the sign of charge on the ion alone
3. match the following

1) sorbitol,mannitol	I)glycogen
2) α D and β D glucose	ii)fructose
3) animalstarch	iii)epimer
4) fruitsugar	iv)anomer

   a) 1-I, 2-iii, 3-I,4-iv b)1-iii,2-iv,3-i,4-ii
   c)1-iv, 2-iii,3-I, 4-ii d)1-I,2-ii, 3-iii,4-iv
4. Which one of the following rotates the plane polarized light towards left?
   a) D(+) Glucose b) L(+) Glucose c)D(-) Fructose d) D(+) Galactose
5. Which one given below is a non-reducing sugar?
   a) Glucose b) Sucrose c) maltose d) Lactose.
6. In a protein, various amino acids linked together by
   a) Peptide bond b) Dative bond c) a - Glycosidic bond d) β - Glycosidic bond
7. Which of the following are epimers
   a) D(+)-Glucose and D(+)-Galactose b) D(+)-Glucose and D(+)-Mannose
   c) Neither (a) nor (b) d) Both (a) and (b)
8. If one strand of the DNA has the sequence 'ATGCTTGA', then the sequence of complementary strand would be
   a) TACGAACT b) TCCGAACT c) TACGTACT d) TACGRAGT
9. Which of the following vitamins is water soluble?
   a) Vitamin E b) Vitamin K c) Vitamin A d) Vitamin B
10. Which one of the following is not produced by body?
    a) DNA b) Enzymes c) Harmones d) Vitamins
11. Which is a mono saccharide among the following
    a) Sucrose b)Cellulose c)Maltose d) Glucose
12. Glucose is not oxidised to gluconic acid by
    a) Br2/H2O b) Fehing solution c) Tollen's reagent d) Conc.HNO3

13.Which of the following contains a lipid ?

a) starch b)mineral oil c) edible oil d) peptide

14.Identify the reducing sugar

a) Sucrose b) Cellulose c) Starch d) Glucose

15.Glucose forms _____ with acetic anhydride and sodium acetate

a) di acetate b) tetra acetate c) penta acetate d) hexa acetate

PART-B

Answer the following any five questions **6X2=12**

Question number: 24 compulsory

16.Write a short note on peptide bond?

17.write the structure of ∝D(+) glucophyranose

18.Define zwitterion

19.What are reducing and non-reducing sugars?

20. Name the Vitamins whose deficiency cause i) rickets ii) scurvy

21. What are epimers ? give example

22. How are vitamine classified ?

23. How can you confirm the presence of aldehyde and hydroxyl group present in glucose ?

24. Identify A and B Fructose + conc HNO_3 →A+B.Write the equation

Part-C

Answer the following any five questions **6X3=18**

Question number : 33 compulsory

25.Write any three difference between DNA and RNA?

26.Distinguish nucleosides from nucleotides?

27.I)Classify the following in to monosaccharide ,disaccharide, polysaccharide

a) Starch b)fructose c)sucrose d)lactose

ii)Write the structure of sucrose?

28. Write a note on denaturation of proteins?

29. What are different types of RNA which are found in cell

30. .What is different between fibrous protein and globular protein ?

31. What happens when fructose is partially reduced with sodium amalgam and water ?

32. How are vitamine classified ?

33. Mention the importance of carbohydrate

Part-D

Answer the all questions **5X5=25**

34.a)Elucidate the Structure of glucose

(OR)

b)Elucidate the Structure of fructose

35.a)i) Give two difference beteween Hormoes and Vitamins?

ii)what is isoelectric point?

(OR)

b)I)How will you classify carbohydrates with example?

ii) What is glycosidic linkage **?**

36. a) Explain the method of DNA finger printing ?

(OR)

b)i) Define enzymes

ii) Why carbohydrate are generally optical active ?

37. a) Write short note on cyclic structure of fructose ?

(OR)

b)explain the cyclic structure of sucrose

38. a) Explain primary ,secondary and tertiary structure of proteins

(OR)

b)i) Mention the biological importance of lipids

ii) Mention any three importance of protein in biological process ?

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S.MANIKANDAN.,M.Sc.,B.Ed.,
7708543401

UNIT TEST-15
(CHEMISTRY IN EVERYDAY LIFE)

CLASS : XII **MARK : 70**

SUB : CHEMISTRY **TIME : 3.00 HRS**

`PART-I

I. Choose and write the correct answer : **15X1=15**

1. Aspirin is a/an
   a) acetylsalicylic acid b) benzoyl salicylic acid c) chlorobenzoic acid d) anthranilic acid
2. Terylene is an example of
   a) polyamide b) polythene c) polyester d) polysaccharide
3. Which one of the following is a bio-degradable polymer?
   a) HDPE b) PVC c) Nylon 6 d) PHBV
4. Regarding cross-linked or network polymers, which of the following statement is incorrect?
   a) Examples are Bakelite and melamine
   b) They are formed from bi and tri-functional monomers
   c) They contain covalent bonds between various linear polymer chains
   d) They contain strong covalent bonds in their polymer chain
5. Drugs that bind to the receptor site and inhibit its natural function are called
   a) antagonists b) agonists c) enzymes d) molecular targets
6. Which of the following is a co-polymer?
   a) Orlon b) PVC c) Teflon d) PHBV
7. Minimum Total fatty matter (TFM) value for grade - I soap as per BIS standard is ____
   a)70% b) 60% c) 67% d) 76%
8. Nylon is an example of
   a) polyamide b) polythene c) polyester d) poly saccharide
9. Cetrizine is an example for _____
   a) antiseptics b) antihistamines c) opioids d) antimicrobials
10. Natural rubber has
    a) alternate cis- and trans-configuration b) random cis- and trans-configuration
    c) all cis-configuration d) all trans-configuration
11. Food additives added to prevent oxidation of fats and oils is_____
    a) Sorbic acid b) Sulphur di oxide c) Mannitol d) butyl hydroxy toluene
12. Caprolactam is used for the manufacture of _____
    a) Nylon – 2 – Nylon -6 b) Orlon c) Nylon -6,6 d) Nylon – 6
13. PHBV is used in _____
    a) unbreakable crockery b) tanklinings c) controlled release of drugs d) conveyor belts
14. The commercial name of polyacrylonitrile is _____
    a) Dacron b) Novaloc c) Teflon d) Orlon
15. Identify the thermo setting polymer
    a) Poly styrene b) Poly vinyl chloride c) Buna –S d) Bakelite

PART-II

II. Answer any six questions (q.no.24 is compulsory) **6 x 2 =12**

16. Classify the following as linear, branched or cross linked polymers
    a) Bakelite b) Nylon-6,6 c) LDPE d) HDPE
17. Write the structural formula of aspirin

18. What are antibiotics?
19. Give a brief account antioxidants
20. What are food preservatives?
21. Name the vitamins whose deficiency causes
    (a) rickets (b) Scurvy
22. How is Nylon– 2-Nylon -6 prepared ?
23. What are drugs ? How are they classified ?
24. How do you classify the following into various class of drugs
    a) Milk of magnesia b) Aspirin c) penicillin d) procaine

PART-III

III. Answer any six questions (q.no.33 is compulsory) **6 x 3 =18**

25. Write a note on vulcanization of rubber
26. What are bio degradable polymers? Give examples.
27. How do antiseptics differ from disinfectants?
28. What are narcotic and non – narcotic drugs. Give examples
29. Write a note on synthetic detergents
30. State any three advantage of food additives
31. Why do soaps not work in hard work ?
32. Which chemical is responsible for the antiseptic properties of dettol ?
33. How is neoprene prepared ?

PART-IV

IV. Answer all the questions . **5 x 5 = 25**

34. a) Differentiate thermoplastic and thermosetting ? (5)

(OR)

b) i) Name one substance which can act as both analgesic antipyretic (2)
ii) Write the preparation of PHBV (3)

35. a) i) What is TFM? How TFM used? (2)
ii) What is therapeutic index ? How is it related to the safety of the drug ? (5)

(OR)

b) Write the preparation of Buna-N, Buna-S, ? (5)

36. a) How polymers are classified on the basis of structure and molecular forces, give examples of each one . (5)

(OR)

b) i) Given example and use of histamine? (2)
ii) Write the preparation of polythene. How to classification ? (3)

37. a) i) Write a note on synthetic detergents ? (2)
ii) What are Antiseptics? Give an example . (3)

(OR)

b) Explain any five therapeutic action of different classes of drugs (5)

38. a) i) How nylon -6 is prepared ? (2)
ii) How do you prepare Teflon ? Give its uses (3)

(OR)

b) Explain the mechanism of cleansing action of soaps and detergents (5)

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