CHAPTER 1

PERIODIC CLASSIFICATION OF ELEMENTS AND PERIODICITY

1. The number of shells in an element reflects its:
(a) Period number (b) Group number (c) Both (d) None

2. The number of electrons in valence shell of an element reflects its:
(a) Period number (b) Group number (c) Both (d) None

3. Generally metals form oxides:
(a) Acidic (b) Basic (c) Amphoteric (d) None

4. Variable valency is shown by:
(a) Group 1A (b) Group IIA
(c) Group VIIA (d) Group IB

5. Hydrogen can be placed above the groups of the periodic table:
(a) IA, IVA and VIIA elements (b) VIIA Elements
(c) IIIA, IVA and VA elements (d) IIA, IIIA and VIIA elements

6. Members of group IA are called:
(a) Alkali metals (b) Alkaline earth metals
(c) Halogens (d) Noble gases

7. Members of group IB are called:
(a) Alkali metals (b) Alkaline earth metals
(c) Halogens (d) Coinage metals

8. Keeping in view the sizes of atoms, which order is the correct one:
(a) Mg>Sr (b) Ba > Mg (c) Be>Mg (d) Ra>Ba

9. Which one of the following oxides is Amphoteric in nature:
(a) MgO (b) Na_2O (c) SO_2 (d) ZnO

10. According to Newland's arrangement of elements recurrence (periodicity) of properties take place at every:
(a) 8^{th} element (b) 10^{th} element (c) 18^{th} element (d) None

11. Atomic number was discovered by Mosley in:
(a) 1913 (b) 1914 (c) 1915 (d) 1916

12. Total groups in modern periodic table:
(a) 7 (b) 8 (c) 10 (d) 18

13. Non-metals usually exist as:
(a) Liquids (b) Gases
(c) Liquids or gases (d) Waxy solids

14. The Ionization energy of Sodium is:
(a) 500 K.J mol^{-1} (b) 513 K.J mol^{-1}
(c) 496 K.J mol^{-1} (d) 480 K.J mol^{-1}

15. $SnCl_4$ is a:
(a) Co-ordinate Covalent Compound (b) Ionic compound
(c) Covalent Compound (d) None of these

16. Ga has oxidation state:
(a) +3 (b) +2 (c) +4 (d) +1

17. Hydrides can be classified into:
(a) Two types (b) Three types
(c) Four types (d) Five types

18. Which of the following represents elements in order of increasing atomic radii:
(a) I>Br> Cl (b) Li>Na>K (c) He>Ne>Ar (d) None

19. The decrease in nuclear force on valence electrons, because of the increase in number of shells containing electrons and layering above is known as:
(a) Resonance effect (b) Shielding effect
(c) Inductive effect (d) None

20. Number of elements present in the 5th period of periodic table is:
(a) 8 (b) 10 (c) 18 (d) 32

21. Which element has the largest first ionization energy:
(a) Li (b) Na (c) K (d) Rb

22. Which of the following pairs are chemically dissimilar:
(a) Na and K (b) Ba and Sr
(c) Zr and Hf (d) Ca and Zn

23. Which of the following elements is most electronegative:
(a) Oxygen (b) Chlorine (c) Nitrogen (d) Fluorine

24. Which of the following has greatest metallic character:
(a) Mg (b) Ca (c) Al (d) Cs

25. Highest Hydration energy is shown by:
(a) Na^{+} (b) Mg^{+2} (c) Al^{+3} (d) Ga^{+3}

26. Which of the following has highest value of Ionization Energy:
(a) Na^{+} (b) Al^{+} (c) Al^{+2} (d) Al^{+3}

27. The valence shell electronic structure of an element is ns^2np^5. The element will belong to the group:
(a) IA (b) IIA (c) VA (d) VIIA

28. Which of the following pair of atomic numbers represents IIA elements:
(a) 3, 11 (b) 3, 12 (c) 4, 20 (d) 3, 20

29. Among the following elements the highest value of electron affinity is shown by:
(a) F (b) Cl (c) Br (d) I

30. The force of attraction of an element on shared pair of electron is known as:
(a) Covalent bond (b) Ionization potential
(c) Electron affinity (d) Electronegativity

31. Alkali metals in each period have:
(a) Smallest size (b) Lowest Ionization Energy
(c) Highest Ionization Energy (d) Lowest atomic radius

32. The correct order of electron affinity among the following is:
(a) F > Cl > Br (b) Br > Cl > F
(c) Cl > F > Br (d) F > Br > Cl

33. Which of the following does not exhibit the "periodicity" in properties of the elements:
(a) Ionization energy (b) n/p ratio
(c) Electronegativity (d) Atomic radius

34. Polymeric (Intermediate) hydride shall be formed by:
(a) Na (b) K (c) Be (d) C

35. The highest acidity is shown by:
(a) Mn_2O_7 (b) Mn_2O_3 (c) MnO_2 (d) MnO

36. The covalent hydrides are usually:
(a) Liquids (b) Gases
(c) Volatile Liquids or gases (d) Waxy solids

37. Which of the following is not iso-electronic with others:
(a) Na^{+} (b) Mg^{2+} (c) O^{2-} (d) Cl^{-}

38. Which of the following oxides is Amphoteric in character:
(a) CaO (b) CO_2 (c) SiO_2 (d) Sb_2O_3

39. The melting point is lowest for:
(a) Be (b) Mg (c) Ca (d) Sr

40. Which of the following in not true for metalloids:

(a) They are borderline elements that exhibit both metallic and non-metallic properties
(b) They usually act as electron donors to non-metals
(c) They usually act as electron acceptors from metals
(d) They are good conductor of heat and electricity

41. Among the pure ionic compounds, the ------- have the highest lattice energies:

(a) Fluorides (b) Chlorides (c) Bromides (d) Iodides

42. Which electronic sub-shell in lanthanides is incompletely filled:

(a) 4f (b) 5f (c) 6f (d) All

43. The number of elements in fourth period of periodic table is: (GRW 2011)

(a) 32 (b) 18 (c) 10 (d) 8

44. The basis of modern periodic law is: (FSD, BWP, GRW 2012)

(a) Electron affinity (b) atomic mass
(c) Ionization energy (d) atomic number

45. The highest ionization energy is possessed by: (GRW 2011)

(a) Nitrogen (b) Phosphorous
(c) Bismuth (d) Antimony

46. The decrease in atomic sizes is much prominent across rows containing elements of:

(a) s & p-block (b) d-block
(c) f-block (d) All

47. Mark the correct statement:

(a) All lanthanides are present in the same group
(b) All halogens are present in the same period
(c) All the alkali metals are present in the same group
(d) All the noble gases are present in the same period.

48. Encircle the correct statement:

(a) Metallic character increases down the group
(b) Metallic character increases along a period
(c) Metallic character remains the same along a period
(d) Metallic character remains the same down the group

49. In Potassium super oxide (KO_2) oxidation state of O is:

(a) -1 (b) -2 (c) -1/2 (d) -4

50. Hydrogen can be placed with the element of group (IV-A) because both:

(a) Act as strong oxidizing agent (b) Act as strong reducing agent
(c) Possess the property of catenation (d) Form neutral oxides

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
a	b	b	d	a	a	d	b	d	a
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
a	d	c	c	c	a	b	a	b	c
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
a	d	d	d	c	d	d	c	b	d
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
b	c	b	c	a	c	d	d	b	a
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
a	a	b	d	a	a	c	a	c	b

CHAPTER 2

S-BLOCK ELEMENTS

1. Which of the following sulphates is not soluble in water:
(a) Sodium sulphate (b) Potassium sulphate
(c) Zinc sulphate (d) Barium sulphate

2. Chile Salt peter has the chemical formula:
(a) $NaNO_3$ (b) KNO_3
(c) $Na_2B_4O_7$ (d) $Na_2CO_3.H_2O$

3. Which one of the following compounds when dissolved in water reacts with CO_2:
(a) Calcium chloride (b) Sodium chloride
(c) Calcium Sulphate (d) Calcium hydroxide

4. The main product of the reaction of potassium with oxygen is
(a) KOH (b) K_2O_2 (c) KO_2 (d) K_2O

5. The alkali metal whose carbonate is relatively less stable to heat and decomposes on heating, giving its oxides is:
(a) Li (b) Ba (c) K (d) Rb

6. Which of the following compounds has a per oxide linkage:
(a) BaO_2 (b) CO_2 (c) PbO_2 (d) SiO_2

7. Which of the following does not belong to alkaline earth metals:
(a) Be (b) Mg (c) Ra (d) Rb

8. Which does not belong to alkali metals:
(a) Cs (b) Fr (c) Na (d) Ca

9. The oxides of beryllium are:
(a) Acidic (b) Neutral
(c) Basic (d) Amphoteric

10. Nelson's cell is used to prepare:
(a) Sodium hydroxide (b) Sodium carbonate
(c) Sodium metal (d) Sodium bicarbonate

11. What is deposited at the cathode during the electrolysis of brine:
(a) Na (b) H_2 (c) Cl_2 (d) OH

12. Which of the following is a rare radioactive element:
(a) Fr (b) Cs (c) Ra (d) Rb

13. The chemical formula of Magnesite is:
(a) $MgCl_2$ (b) $Mg(ClO_3)_2$
(c) $MgCO_3$ (d) None of these

14. Which carbonate of alkali metals is insoluble in water:
(a) Na_2Co_3 (b) K_2CO_3 (c) Li_2CO_3 (d) Cs_2CO_3

15. Ga has most common oxidation state of:
(a) +3 (b) +2 (c) +4 (d) +1

16. Alkali metals form:
(a) Ionic compounds (b) Covalent compounds
(c) Coordinate covalent compounds (d) None of these

17. Li_2O is:
(a) Orange yellow solid (b) White solid
(c) Greenish solid (d) Pale yellow solid

18. Melting point of pure sodium chloride is:
(a) 600 °C (b) 775 °C (c) 750 °C (d) 801 °C

19. Lime (CaO) is obtained by thermal decomposition of:
(a) $Ca(OH)_2$ (b) $CaCO_3$ (c) $CaHCO_3$ (d) None

20. The element necessary for normal "leaf" development is:

(a) Phosphorus (b) Sulphur
(c) Calcium (d) Magnesium

21. Lime is often used as:

(a) Reducing Agent (b) Oxidizing Agent
(c) Dehydrating Agent (d) Catalytic Agent

22. Sodium metal can be stored in:

(a) Alcohol (b) Kerosene oil (c) H_2O (d) All

23. Which of the following alkali metal hydroxide is the strongest base:

(a) LiOH (b) NaOH (c) KOH (d) CsOH

24. Washing soda has the formula:

(a) $Na_2CO_3.7H_2O$ (b) $Na_2CO_3.10\ H_2O$ (c) $Na_2CO_3.3H_2O$ (d) Na_2CO_3

25. Which halide has the highest melting point:

(a) NaCl (b) NaBr (c) NaF (d) NaI

26. The alkali metal that reacts with nitrogen directly to form Nitride is:

(a) Li (b) Na (c) K (d) Rb

27. The electronic configuration of metal (M) is $1s^2$, $2s^2$, $3s^1$. The formula of its oxide would be :

(a) MO (b) M_2O (c) M_2O_3 (d) MO_2

28. An aqueous solution of sodium carbonate is alkaline because sodium carbonate is a salt of:

(a) Weak acid and weak base (b) Strong acid and weak base
(c) Weak acid and strong base (d) Strong acid and strong base

29. Which of the following is a man-made element?

(a) Ra (b) Fr (c) Rn (d) Cs

30. Dolomite has the composition

(a) $KCl.MgCl_2.6H_2O$ (b) Na_3AlF_6
(c) $CaCO_3.MgCO_3$ (d) $CaCl_2.MgCl_2.6H_2O$

31. Epsom salt is:

(a) Magnesium sulphate (b) Ferrous ammonium sulphate
(c) Magnesium ammonium phosphate (d) Calcium sulphate

32. Plaster of Paris is a hydrate of:

(a) $BaSO_4$ (b) $CaSO_4$ (c) $MgSO_4$ (d) $ZnSO_4$

33. Which of the following on heating above 100°C gives plaster of Paris:

(a) Borax (b) Gypsum (c) Alum (d) Calomel

34. On heating quick lime with coke in an electric furnace, we get:

(a) Ca and CO_2 (b) $CaCO_3$ (c) Ca+CO (d) CaC_2

35. The substance not likely to contain $CaCO_3$ is :

(a) Dolomite (b) Marble
(c) Gypsum (d) Sea shells

36. The oxide of Beryllium is:

(a) Acidic (b) Basic
(c) Amphoteric (d) None of these

37. Point out the ore of potassium:

(a) Dolomite (b) Cryolite
(c) Bauxite (d) Carnallite

38. Dolomite is an ore of:

(a) Strontium (b) Magnesium
(c) Barium (d) Potassium

39. Which is not an alkali metal?

(a) Francium (b) Cesium (c) Rubidium (d) Radium

40. Chile salt peter has the chemical formula:

(a) $NaNO_3$ (b) KNO_3
(c) $Na_2Br_4O_7$ (d) $Na_2CO_3 .H_2O$

41. The milk of magnesia is used for the treatment of:

(a) Acidity (b) Basicity
(c) Rancidity (d) Jaundice

42. Cement contains gypsum: (LHR 2012)

(a) 3% (b) 2% (c) 0.2% (d) 0.3%

43. Dolomite is: (LHR 08,12)

(a) $CaCO_3$ (b) $MgCO_3.CaCO_3$ (c) $MgCO_3$ (d) Na_2CO_3

44. Chemical formula of Magnesite is: (FSD 2009)

(a) $CaMg_3(SiO_3)_4$ (b) $MgCO_3$ (c) $MgSO_4$ (d) $MgCl_2$

45. Which one does not belong to alkaline earth metals? (MTN 08,15, FSD 09,15, RWP 12, GRW 14,15)

(a) Be (b) Ra (c) Ba (d) Rn

46. The substance deposited at the cathode during electrolysis of brine in diaphragm cell: (FSD 10,14, BWP 10, LHR 14)

(a) Na (b) H_2 (c) Cl_2 (d) O_2

47. The ore $CaSO_4.2H_2O$ has general name: (BWP 14, FSD 11,13)

(a) Gypsum (b) Dolomite
(c) Calcite (d) Epsom salt

48. The only alkaline earth metal which forms peroxide is: (SGD 2010)

(a) Beryllium (b) Magnesium (c) Calcium (d) Barium

49. The sulphate compound insoluble in water is: (SGD 2010)

(a) Barium sulphate (b) Sodium sulphate
(c) Potassium sulphate (d) Zinc sulphate

50. $CaCl_2$ is added to NaCl in Down's cell to: (SGD 2011)

(a) Decrease solubility (b) Decrease dissociation
(c) Decrease Melting point (d) Decrease conductivity

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
d	a	d	c	a	a	d	d	d	a
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
b	c	c	c	a	a	b	d	b	c
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
c	b	d	b	c	a	b	c	b	c
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
a	b	b	d	c	c	d	b	d	a
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
a	b	b	b	d	b	a	d	a	c

CHAPTER 3

GROUP III A AND GROUP IV A ELEMENTS

1. Gibbsite contain _____ water molecules:
(a) 6 (b) 5 (c) 4 (d) 3

2. Sindur used by Indian women is chemically:
(a) PbO (b) PbO_2 (c) Pb_3O_4 (d) $PbCO_3$

3. Corundum is:
(a) Al_2O_3 (b) Na_3AlF_6
(c) $Al_2O_3.2H_2O$ (d) $Al_2O_3.3H_2O$

4. Which one of the following is not an ore of Aluminum:
(a) Corundum (b) Bauxite (c) Colemanite (d) Kaolin

5. Which one of the following is not a use of boric acid:
(a) Antiseptic (b) Glaze
(c) Stiffening agent for candle wick (d) Lubricant

6. Which of the following reactions of Al is used in a photo flash:
(a) $2\ Al + 3\ H_2 \rightarrow 2AlH_3$ (b) $4\ Al + 3\ O_2 \rightarrow 2Al_2O_3$
(c) $2\ Al + N_2 \rightarrow 2AlN$ (d) $2\ Al + 3Cl_2 \rightarrow 2AlCl_3$

7. Two elements frequently used for making transistors are:
(a) C and Si (b) Ga and In
(c) P and As (d) Si and Ge

8. Which one of the following is not a use of red lead, Pb_3O_4:
(a) Red Pigment (b) Flint Glass
(c) Ceramic glazes (d) Semiconductor

9. In the dried up lakes of Tibet and California _____ is found:
(a) Boric acid (b) Colemanite (c) Borax (d) All

10. What is the formula of Kaolin (Clay):
(a) $Al_2O_3.SiO_4$ (b) Al_2O_3
(c) $Al_2O_3\ .2H_2O$ (d) $Al_2O_3,\ 2SiO_2\ .2H_2O$

11. Boric acid is formed when borax reacts with:
(a) NaCl (b) NaOH (c) HCl (d) H_2CO_3

12. Ethyl borate is formed when boric acid is reacted with:
(a) Elhyl Choride (b) Ethyl Bormide
(c) Ethyl Alcohol (d) Ethyl Acetate

13. Which of the following is a weak acid:
(a) Na_2SO_4 (b) HCl
(c) Boric Acid (d) None of these

14. Talc is used in:
(a) Talcum powders (b) Face powders
(c) Making of house hold articles (d) All

15. The Chemical formula of Lead sub oxide:
(a) PbO (b) Pb_2O (c) Pb_2O_3 (d) Pb_3O_4

16. The Chemical formula for white lead is:
(a) $PbCO_3$ (b) Pb_3O_4 (c) $2PbCO_3.Pb(OH)_2$ (d) Pb_2O_3

17. Which metal is protected by a layer of its own oxide:
(a) Al (b) Zn (c) Sn (d) Pb

18. Inert pair effect plays an important role in case of:
(a) F (b) Al (c) Si (d) Pb

19. Alum is not used:
(a) To jam Radar (b) To insulate buildings
(c) Construction of ships (d) Making milk storage tanks

20. Al is badly corroded by:
(a) Pure water (b) Salt solutions
(c) Dil.H_2SO_4 (d) Dil.HNO_3

21. B_2H_6 is an example of:
(a) Ionic hydride (b) Molecular addition compound
(c) Good oxidizing agent (d) None

22. Aluminium reacts with caustic soda to form:
(a) Aluminium hydroxide (b) Aluminium oxide
(c) Sodium aluminium hydroxide (d) None

23. Compounds of Boron behave as Lewis acids because of:
(a) Electron donation (b) Electron deficiency of Boron
(c) Non-metallic nature of Boron (d) Small size of Boron

24. BF_3 acts as acid according to the concept of:
(a) Lewis (b) Bronsted-Lowry
(c) Arrhenius (d) None

25. The non-polar oxide is:
(a) H_2O (b) CO_2 (c) CO (d) All

26. The semiconductor material among following is:
(a) Si (b) Ge (c) PbS (d) All

27. In Borax bead test, when borax is heated with cobalt oxide it forms bead of:
(a) Black colour (b) Blue colour
(c) Red colour (d) Green colour

28. Chemical composition of Colemanite is: (SGD 14, GRW 06, BWP 12)
(a) $Ca_2B_6O_{11}.5H_2O$ (b) $CaB_4H_7.4H_2O$
(c) $CaNaB_5O_9.8H_2O$ (d) $Na_2B_4O_7.4H_2O$

29. Basic lead chromate is formed when lead chromate is boiled with:
(a) Dilute alkali hydroxide (b) Dilute acid
(c) Strong alkali hydroxide (d) Strong acid

30. Which of the following is used in making fire proof clothes? (LHR 2011)
(a) Water glass (b) Borax glass
(c) Kaolin (d) Asbestos

31. Orthoboric acid when heated to red hot gives: (GRW 2011)
(a) Boric anhydride (b) Pyroboric acid
(c) Metaboric acid (d) Tetraboric acid

32. S, Se, Te and Po are called: (FSD 2009)
(a) Coinage metals (b) Alkali metals
(c) Chalcogens (d) Halogens

33. Aluminum oxide is: (BWR, RWP, MTN 15, LHR 14,15, FSD 09,13)
(a) Acidic oxide (b) Basic oxide
(c) Amphoteric oxide (d) None of these

34. Boric acid reacts with caustic soda to produce: (FSD 2010)
(a) $NaBO_2$ (b) NaH_2BO_3 (c) $Na_2B_4O_7$ (d) Na_3BO_3

35. Ordinary glass is: (FSD 2011)
(a) Potassium silicate (b) Calcium silicate
(c) Sodium silicate (d) Calcium and sodium silicate

36. The compound which forms the bead in Borax bead test is: (LHR 08, SGD 09)
(a) Metal oxide (b) Metal boride
(c) Metal borate (d) Metal metaborate

37. The metal which does not give borax bead test is: (SGD 2010)
(a) Cu (b) Cr (c) Ni (d) Al

38. The aqueous solution of borax is: (SWL 15, SGD 11)
(a) Acidic (b) Neutral
(c) Basic (d) Corrosive

39. Which one is more stable? (RWP 2008)
(a) H_3BO_3 (b) HBO_2 (c) $H_2B_2O_2$ (d) $H_6B_3O_9$

40. Nitric acid can be transported in a container made up of: (RWP-09)
(a) Al (b) Zn
(c) Cu (d) none of these

41. Valence shell electronic configuration of the elements of group IIIA is: (RWP 2011)
(a) ns^1,np^2 (b) ns^2,np^3 (c) ns^0,np^3 (d) ns^2,np^1

42. The chief ore of aluminum is:
(a) $NaAlF_3$ (b) $Al_2O_3.2H_2O$
(c) Al_2O_3 (d) $Al_2O_3.H_2O$

43. The only nonmetal in group IIIA is:
(a) Ar (b) Ga (c) B (d) In

44. $C+SnO_2 \longrightarrow Sn + CO_2$: In this reaction carbon acts as a:
(a) Reducing agent (b) Oxidizing agent
(c) Dehydrating agent (d) none of these

45. The chemical formula of clay is:
(a) $Al_2O_3SiF_4$ (b) Na_3AlF_6
(c) Al_2O_3 (d) $Al_2O_3.2SiO_2.2H_2O$

46. Which naturally occurring substance is SiO_2?
(a) Haematite (b) Lime (c) Cryolite (d) Quartz

47. The highly rigid under cooled liquid silica is called:
(a) Silicone (b) Quartz
(c) Water glass (d) Vitreous silica

48. Which one of the given is amphoteric in nature?
(a) MgO (b) Na_2O (c) SO_2 (d) ZnO

49. When H_3BO_3 reacts with NaOH, the salt mostly formed is? (DGK 2009)
(a) Na_3BO_3 (b) $Na_2B_4O_7$ (c) NaH_2BO_3 (d) $NaBO_2$

50. Which element forms and ion with charge +3?
(a) Carbon (b) Silicone
(c) Aluminum (d) Beryllium

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10
d	c	a	c	d	c	d	d	c	d
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
c	c	c	d	b	c	a	d	c	b
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
b	c	b	a	b	d	b	a	c	d
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
a	c	c	c	d	d	d	c	a	a
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
d	b	c	a	d	d	d	d	b	c

CHAPTER 4

GROUP V A AND IV A ELEMENTS

1. The % by volume of N_2 in air is:
(a) 98 (b) 88 (c) 78 (d) 68

2. Which one of the following is an amphoteric oxide:
(a) SO_2 (b) SO_3 (c) CO_2 (d) Al_2O_3

3. In Pyrite burner, the gas produced is:
(a) SO_3 (b) SO_2 (c) CO_2 (d) NO

4. In which substance nitrogen is not present:
(a) Urea (b) Protein (c) Salt peter (d) Galena

5. Oxidation of NO in air produces:
(a) N_2O (b) N_2O_3 (c) NO_2 (d) NO

6. Which of the following is not correct about Phosphorous? (LHR 2008)
(a) It means light bearing (b) Does not exist free in nature
(c) Bone ash is its rich source (d) has no allotropic forms

7. Molecular formula of white phosphorous is: (LHR 2009)
(a) P_4 (b) P (c) P_3 (d) P_2

8. **At 18℃ the specific gravity of H_2SO_4 is: (LHR 2010)**
(a) 1.891 (b) 2.101 (c) 1.834 (d) 1.740

9. Which of the following elements is most metallic:
(a) Bi (b) Sb (c) As (d) P

10. The anhydride of nitric acid is:
(a) N_2O_4 (b) N_2O_3 (c) N_2O_5 (d) NO

11. Nitrous acid is a:
(a) Reducing agent (b) Oxidizing agent (c) Both a and b (d) None of these

12. Which of the following is a white hygroscopic powder:
(a) P_2O_3 (b) P_2O_5 (c) P_2O_2 (d) P_2O_4

13. Aqua Regia is:
(a) 3 volumes of HCl+ 1Volume of HNO_2 (b) 3 Volumes of HCl+ 1Volume of HNO_3
(c) 3 volumes of HNO_3+ 1Volume of HCl (d) 3 Volumes of HCl+ 1Volume of H_2SO_4

14. Which one of the following elements occur free in nature:
(a) N (b) P (c) As (d) Sb

15. Red phosphorous can be obtained from white Phosphorous by:
(a) Heating it with Iodine catalyst in vacuum at 250 °C
(b) Distilling it in an inert atmosphere
(c) Dissolving it in CS_2 and crystallizing
(d) Melting it and pouring the liquid into water

16. Phosphorus pentoxide is used as:
(a) A cleansing agent (b) A reducing agent
(c) A bleaching agent (d) A dehydrating agent

17. The structure of white phosphorus is:
(a) Square planar (b) Pyramidal
(c) Tetrahedral (d) Trigonal planer

18. Which of the following phosphorus is most reactive:
(a) Red phosphorus (b) White phosphorus
(c) Scarlet phosphorus (d) Violet phosphorous

19. Orthophosphoric acid is:

(a) Monobasic (b) Dibasic
(c) Tribasic (d) Tetrabasic

20. HNO_2 acts as an/a:

(a) Acid (b) Oxidizing agent
(c) Reducing agent (d) All the three

21. P_2O_5 is heated with water to get:

(a) Hypophosphorous acid (b) Phosphorous acid
(c) Hypophosphoric acid (d) Orthophosphoric acid

22. Ozone is not:

(a) An allotrope (b) A powerful oxidizing agent
(c) Paramagnetic species (d) A bent molecule

23. Oleum is:

(a) H_2SO_3 (b) H_2SO_4 (c) $H_2S_2O_7$ (d) None

24. SO_3 is not directly dissolved in water to get Sulphuric acid because:

(a) The reaction does not go to completion (b) The reaction is quite slow
(c) The reaction is highly exothermic (d) SO_3 is insoluble in water

25. In group VA the most electronegative element is:

(a) N (b) P (c) As (d) Sb

26. Cinnabar is:

(a) HgS (b) ZnS (c) PbS (d) FeS_2

27. The element whose inorganic minerals are not much abundant in earth crust: (LHR 2011)

(a) Li (b) N (c) Na (d) O

28. Gold dissolves in aqua regia to form: (BWP 09, FSD 10)

(a) $AuCl_3$ (b) AuI_3
(c) AuI_2 (d) $Au_2(SO_4)_3$

29. Arsenic oxides are removed during manufacture of H_2SO_4 by passing through: (SGD 2010)

(a) Ferric hydroxide (b) Sodium hydroxide
(c) Calcium hydroxide (d) Potassium hydroxide

30. The compound N_2O causes: (RWP 2011)

(a) Cancer (b) Sleeping sickness (c) Hysterical laughter (d) Tumor

31. H_2SO_4 has great affinity for water because: (MTN 2008)

(a) it decomposes the acid (b) it hydrolyses the acid
(c) acid decomposes water (d) acid forms hydrate with water

32. Atomic number of Te is: (MTN 2009)

(a) 52 (b) 60 (c) 65 (d) 80

33. Nitric acid, Sulphuric acid and Caustic soda can be transported in a container made up of: (MTN 2009)

(a) Aluminum (b) Copper (c) Zinc (d) Teflon

34. Which of the following elements does not show the phenomena of allotropy? (MTN 2009,10)

(a) As (b) N (c) Sb (d) all of these

35. The gas emitted when Zn reduces Conc. HNO_3 is: (MTN 2010)

(a) N_2O (b) NO (c) NO_2 (d) N_2O_5

36. When sugar is treated with conc. H_2SO_4 the sugar becomes black due to: (LHR 13, BWP 08)

(a) Oxidation (b) Reduction
(c) Dehydration (d) Combustion

37. The catalyst used in manufacturing of H_2SO_4 by Contact process is: (DGK, BWP 10, GRW 12)

(a) V_2O_5 (b) Fe_2O_3 (c) Ni (d) Pt

38. The given element gives NO gas with dil HNO_3: (BWP 2011)
(a) Zn (b) Cu (c) Mg (d) Sn

39. Which of the following statement is incorrect? (DGK 2009)
(a) H_2SO_4 acts as a strong oxidizing agent (b) H_2SO_4 acts as a dehydrating agent
(c) H_2SO_4 acts as a strong reducing agent (d) H_2SO_4 acts as a sulphonating agent

40. Bone ash contains: (DGK 2009)
(a) 80% P (b) 90% P
(c) 80% $Ca_3(PO_4)_2$ (d) 90% $Ca_3(PO_4)_2$

41. NO_2 is called: (DGK 2011)
(a) Nitrogen peroxide (b) Nitrous oxide
(c) Nitric oxide (d) Nitric anhydride

42. Which of the following metal reacts with HNO_3: (BWP 2012)
(a) Titanium (b) Iridium
(c) Platinum (d) Magnesiu

43. Ortho-phosphoric acid has melting point: (LHR 2012)
(a) 49℃ (b) 45℃ (c) 41℃ (d) 50℃

44. Which of the following gas is evolved when copper reacts with dil. HNO_3? (RWP 2009)
(a) N_2O (b) NO
(c) NO_2 (d) none of these

45. Which of the following gives brown ring with $FeSO_4$? (LHR 2014)
(a) NO_2 (b) NO (c) N_2O_3 (d) NO_3

46. Which metal is rendered passive by HNO_3? (SGD 2014)
(a) Pt (b) Co (c) Sn (d) Mn

47. Which of the following shows phosphorescence? (LHR 2008)
(a) Yellow phosphorous (b) white phosphorous
(c) black phosphorous (d) red phosphorous

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10
c	d	b	d	c	d	a	c	a	c
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
c	b	b	a	a	d	c	b	c	d
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
d	d	c	c	a	a	b	a	a	c
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
d	a	a	b	c	c	a	b	c	c
41	**42**	**43**	**44**	**45**	**46**	**47**			
b	d	c	b	b	b	b			

CHAPTER 5

THE HALOGENS AND THE NOBLE GAES

1. Halogen acid in gaseous state found as equilibrium mixture of monomers and hexamers is:
(a) HF (b) HCl (c) HBr (d) HI

2. Color of which halogen is not correctly related:
(a) F_2 Colorless gas (b) Cl_2 greenish yellow gas
(c) Br_2 Reddish brown liquid (d) I_2 grayish black solid

3. Mark the element, which can displace three halogens from their compounds:
(a) F_2 (b) Cl_2 (c) Br_2 (d) I_2

4. The chemical formula of iodic acid is:
(a) HI (b) HIO (c) HIO_2 (d) HIO_3

5. The most inert element in noble gas group is:
(a) He (b) Ne (c) Ar (d) Kr

6. In which compound, the oxidation state of xenon is not +6:
(a) $XeOF_2$ (b) $XeOF_4$ (c) XeO_3 (d) XeF_6

7. Radon is formed by the removal of alpha particles from:
(a) Radium (b) Rhenium
(c) Rhodium (d) Rutherfordium

8. Which of the following gases is used in radio therapy for cancer treatment and earthquake predictions?
(a) Ar (b) Ne (c) Xe (d) Rn

9. Chlorine heptaoxide (Cl_2O_7) reacts with water to form: (SGD 14, GRW 08, BWP 09)
(a) hypochlorous acid (b) perchloric acid
(c) chloric acid (d) chlorine and oxygen

10. The anhydride of $HClO_4$ is:
(a) Cl_2O_7 (b) Cl_2O_5 (c) ClO_3 (d) ClO_2

11. Silver bromide is used in: (LHR 2010)
(a) Paints (b) Photography (c) Ceramics (d) Gasoline

12. Which of the following acid is used for etching of glass:
(a) HF (b) HCl (c) HBr (d) HI

13. Oxidation state of chlorine in $HClO_4$ is:
(a) -7 (b) +7 (c) -1 (d) +1

14. Which is used for making unshrinkable wool:
(a) HBr (b) I_2 (c) Bleaching powder (d) HCI

15. _____ is used for earthquake prediction
(a) Rn (b) Kr (c) Xe (d) Ar

16. Which of the following compound is Carnallite:
(a) KCl. Mg $(OH)_2$. $6H_2O$ (b) KOH. $MgCl_2$ $6H_2O$
(c) KOH. $Mg(OH)_2$. $6H_2O$ (d) KCl. $MgCl_2$.$6H_2O$

17. Chlorine dioxide is a:
(a) Red gas (b) Pale yellow gas
(c) Orange gas (d) Green gas

18. Iodine pentoxide acts as a :
(a) Reducing Agent (b) Oxidizing Agent
(c) Dehydrating Agent (d) None of these

19. The Chemical formula of Perchloric acid is :
(a) HClO (b) $HClO_3$ (c) $HClO_4$ (d) $HClO_2$

20. The oxidation states of Xe in its compounds range from:
(a) +2 to +8 (b) +3 to +5
(c) +11 to +8 (d) +3 to +7

21. The compounds of Xe are:
(a) Saturated (b) Unsaturated
(c) Stable (d) Unstable

22. Which of the following is used to fill fluorescent tubes:
(a) Krypton (b) Argon (c) Xenon (d) Neon

23. Which is the strongest acid:
(a) HI (b) HCl (c) HBr (d) HF

24. Which of the following halogens does not form oxyacids:
(a) Fluorine (b) Chlorine (c) Bromine (d) Iodine

25. Which amongst the following is the smallest atom?
(a) F (b) Cl (c) Br (d) I

26. Fluorine does not have positive oxidation states due to the absence of
(a) d-orbital (b) s-orbital (c) p-orbital (d) None

27. Which of the following has greatest reducing power:
(a) HI (b) HBr (c) HCl (d) HI

28. Which of the following elements show only one oxidation state in its compounds:
(a) F (b) Cl (c) Br (d) I

29. Which halogen is most electropositive:
(a) F (b) Cl (c) Br (d) I

30. Fluorine is a stronger oxidizing agent than chlorine in aqueous solution. This is attributed to many factors except:
(a) Heat of dissociation (b) Electron affinity
(c) Ionization potential (d) Heat of hydration

31. Bleaching powder reacts with a few drops of conc. HCl to give:
(a) Chlorine (b) Hypochlorous acid (c) Calcium oxide (d) Oxygen

32. The bleaching action of chlorine is due to:
(a) Reduction (b) Hydrogenation
(c) Chlorination (d) Oxidation

33. Elements of which of the following groups will form anions most readily:
(a) Oxygen family (b) Nitrogen family
(c) Halogens (d) Alkali metals

34. The halogen that is most easily reduced:
(a) F_2 (b) Cl_2 (c) Br_2 (d) I_2

35. Which of the following is most volatile:
(a) HI (b) HBr (c) HCl (d) HF

36. Sodium chloride when heated with conc. H_2SO_4 and solid potassium dichromate gives:
(a) Chromic chloride (b) Chromyl chloride
(c) Chromous chloride (d) None of these

37. Which of the following is monoatomic gas:
(a) Oxygen (b) Neon
(c) Fluorine (d) Nitrogen

38. Which of the following fluorides of xenon is impossible?
(a) XeF_2 (b) XeF_3 (c) XeF_4 (d) XeF_6

39. The following shows zero oxidation state:
(a) Kr (b) Be (c) Al (d) Na

40. Which of the following noble gas is not present in atmosphere:
(a) He (b) Ne (c) Ar (d) Rn

41. The noble gas which was discovered first on the Sun and then on the earth:
(a) Argon (b) Xenon (c) Neon (d) Helium

42. The last member of the family of inert gases is:
(a) Argon (b) Radon (c) Xenon (d) Neon

43. XeF_6 on partial hydrolysis produces:
(a) XeF_2 (b) $XeOF_2$ (c) $XeOF_4$ (d) XeO_3

44. Which of the following noble gases does not have an octet of electrons in its outermost shell:
(a) Neon (b) Radon (c) Argon (d) Helium

45. The value of ionization potential for inert gases is:
(a) Zero (b) Low (c) High (d) Negative

46. The lowest boiling point of helium is due to:
(a) Inertness
(b) Gaseous nature
(c) High polarizability
(d) Weak Van-der Waal's forces between atoms

47. Which of the following statement is correct?
(LHR 2014)
(a) Bond energy of F_2 is less than Cl_2 (b) Bond energy of F_2 is less than I_2
(c) Bond energy of Cl_2 is less than F_2 (d) Bond energy of Cl_2 is less than Br_2

48. Goiter is caused due to the deficiency of:
(a) Flourine (b) Bromine (c) Chlorine (d) Iodine

49. Which hydrogen halide is the weakest acid in solution?
(BWP 14, FSD, LHR 13, GRW 13,14)
(a) HF (b) HBr (c) HI (d) HCl

50. The compound which causes burn to skin that heels slowly: **11 (LHR 2011)**
(a) F_2 (b) Cl_2 (c) Br_2 (d) Acid

ANSWER KEY

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1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
a	a	a	d	a	a	a	d	b	a
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
b	a	b	c	a	d	b		c	a
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
c	b	a	a	a	a	d	a	d	c
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
a	d	c	a	d	b	b	b	a	a
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
d	b	c	d	c	d	a	d	a	c

CHAPTER 6

TRANSITION ELEMENTS

1. Coordination number of Fe in $[Fe(CN)_6]^{-4}$ ion is: (GRW 2010)
(a) 4 (b) 2 (c) 6 (d) -4

2. In $[Co(NH_3)_6]^{+3}$ the coordination number of cobalt is:
(a) Zero (b) Two (c) Four (d) Six

3. Which one of the following correctly explains the structure of $[Cu(NH_3)_4]^{4+}$
(a) Square planar (b) Tetrahedral (c) Octahedral (d) Linear

4. Which one of the following compounds has oxidation state of chromium other than +6:
(a) K_4CrO_4 (b) $K_2Cr_2O_4$ (c) Cr_2O_6 (d) $CrCl_3$

5. In acidic medium, potassium dichromate acts as:
(a) Oxidizing agent (b) Reducing agent (c) An Acid (d) A base

6. Interstitial compounds are formed by:
(a) Fe (b) Ni (c) Co (d) All

7. Which element is always present with iron in steel:
(a) Aluminium (b) Copper (c) Carbon (d) Nickle

8. Which of the following transition elements show highest oxidation state:
(a) Mn (b) Cr (c) Cr (d) Zn

9. **Following property of transition elements does not vary with a regular pattern: (LHR 2011)**
(a) Binding energy (b) Covalent radius
(c) Melting point (d) Cationic radius

10. The coordination number of transition element in [Co(NO2)3(NH3)3] is:
(a) 3 (b) 4 (c) 6 (d) 0

11. Group IB of transition elements contains:
(a) Zn, Cd, Hg (b) Cu, Au, Ag
(c) Fe, Ru, Os (d) Cr, Mo, w

12. **The strength of binding energy of transition elements depends upon: (LHR 13, GRW 13,14, SGD 11)**
(a) Number of electron pairs (b) Number of unpaired electrons
(c) Number of Neutrons (d) Number of protons

13. First transition series starts with:
(a) Y (b) Sc (c) Zn (d) Cd

14. Group IIB of transition elements contains
(a) Zn, Cd, Hg (b) Cu,Au, Ag
(c) Fe, Ru, Os (d) Cr, Mo, W

15. The shape of ions containing dsp^3 hybridization is :
(a) Tetrahedral (b) Trigonal bipyramidal
(c) Octahedral (d) Square planar

16. Coordination number of iron in $K_3[Fe(CN)_6]$ is:
(a) 6 (b) 4 (c) 1 (d) 2

17. The paramagnetic behavior is the strongest for
(a) Fe and Mn (b) Fe^{3+} and Mn^{2+}
(c) Fe^{2+} and Mn^{3+} (d) Fe^{2+} and Mn^{2+}

18. The ore of iron:
(a) Fe_3O_4 (b) Fe_2O_2 (c) FeO (d) $Fe(OH)_2$

19. The Chemical formula of Slag is:
(a) MnSiO (b) $MnSiO_2$ (c) $MnSiO_3$ (d) Mn_2SiO_2

20. Chromates are salts of:
(a) $HCrO_3$ (b) H_2CrO_4 (c) HCr_2O_7 (d) H_2CrO_6

21. The color of all the chromates is:
(a) White (b) Red (c) Blue (d) Yellow

22. Which of the following can also be prepared by Stadeler's process:
(a) H_2SO_4 (b) K_2SO_4 (c) $KMnO_4$ (d) H_2S

23. Medium carbon steel is used in making:
(a) Castings (b) Hammer
(c) Tubes (d) All of above

24. Which of following is a very powerful oxidant :
(a) Sulphates (b) Dichromates
(c) Nitrates (d) Chromates

25. Which of the following transition metal ions will have definite value of magnetic moment:
(a) Sc^{3+} (b) Ti^{3+} (c) Cu^{+} (d) Zn^{2+}

26. Which of the following metal exhibits more than one oxidation states:
(a) Na (b) Mg (c) Fe (d) Al

27. The equilibrium $Cr_2O_7^{2-} \leftrightarrow 2CrO_4^{2-}$ is shifted to right in:
(a) An acidic medium (b) A basic medium
(c) A neutral medium (d) It does not exist

28. Bessemer converter is used in the manufacture of:
(a) Pig iron (b) Steel
(c) Wrought iron (d) Cast iron

29. The number of unpaired electrons in Ferrous ion (Z = 26) is
(a) 1 (b) 2 (c) 4 (d) 5

30. Corrosion of iron can be prevented by coating the surface with:
(a) Zn (b) Sn
(c) Ni (d) Any of the above

31. Choose the correct answer about transition elements:
(a) Transition elements have low melting points
(b) Transition elements do not have catalytic activity
(c) Transition elements exhibit variable oxidation states
(d) Transition elements exhibit inert pair effect

32. The total number of inner transition elements in the periodic table is:
(a) 10 (b) 14 (c) 28 (d) 30

33. The number of unpaired electrons in Mn^{2+}(Z=25) is:
(a) 5 (b) 4 (c) 3 (d) 2

34. The number of unpaired electrons in Fe^{3+} (Z = 26) are
(a) 5 (b) 6 (c) 3 (d) 4

35. In the manufacture of steel by open hearth process, the slag obtained is:
(a) $CaSiO_3$ (b) $FeSiO_3$ (c) $MnSiO_3$ (d) All

36. Which of the following is not an element:
(a) Graphite (b) Diamond
(c) 22-Carat gold (d) Rhombic sulphur

37. How many moles of acidified $FeSO_4$ solution can be completely oxidized by one mole of $KMnO_4$:
(a) 10 (b) 5 (c) 6 (d) 2

38. An element in +3 oxidation state has the electronic configuration (Ar) $3d^3$. Its atomic number is:
(a) 24 (b) 23 (c) 22 (d) 21

39. Which of the following has the maximum number of unpaired d-electrons?
(a) Zn (b) Fe^{2+} (c) Ni^{3+} (d) Cu^{+}

40. Group VI B of transition elements contains:
(a) Zn,Cd,Hg (b) Fe, Fu, Os
(c) Cr, Mo, W (d) Mn, Te, Re

41. Formula of chromyl chloride is: (RWP 08, SGD 12)
(a) Cr_2OCl_2 (b) CrO_2Cl_2 (c) Cr_2OCl_3 (d) $CrOCl_2$

42. The geometrical shape of PCl_5 is: (RWP 2009)
(a) Octahedral (b) Square planar
(c) Tetrahedral (d) Trigonal bipyramidal

43. Coinage metals are present in the periodic table in group: (MTN 2008)
(a) I-A (b) I-B (c) II-A (d) II-B

44. PCl_5 has hybridization: (MTN 2009)
(a) sp (b) dsp^2 (c) spd^2 (d) dsp^3

45. The chemical formula of hematite is: (MTN 09, BWP 12)
(a) Fe_2O_3 (b) Fe_3O_4
(c) FeO (d) $Fe_2O_3.3H_2O$

46. There are _____ types of ligands in $[PtCl(NO_2)(NH_3)_4]^{-2}$ (MTN 2010)
(a) 2 (b) 3 (c) 6 (d) 7

47. Which of the following elements is paramagnetic: (BWP 2010)
(a) Zinc (b) Iron (c) Scandium (d) Copper

48. The purest form of iron is: (BWP 2011)
(a) Wrought iron (b) Pig iron (c) Cast iron (d) Steel

49. The central metal atom along with ligand is called: (DGK 2008)
(a) Coordination number (b) Coordination sphere
(c) Chelates (d) none of these

50. Mild steel contains carbon: (LHR 2012)
(a) 0.1 to 0.2% (b) 0.2 to 0.7%
(c) 0.2 to 0.6% (d) 0.1 to 0.6%

51. Percentage of carbon in steel is: (RWP 2012)
(a) 0.25 to 2.5% (b) 0.12 to 0.20%
(c) 3.0 to 4.5% (d) 2.0 to 4.5%

52. Which of the following species has the maximum number of unpaired electrons? (SGD,GRW 2015)
(a) O_2 (b) O_2^+ (c) O_2^- (d) O_2^{-2}

53. Which of the following species has the maximum number of unpaired electrons? (DGK,BWP 2014)
(a) Fe (b) Fe^{+2} (c) Mn^{+2} (d) Cr^{+3}

54. Coordination number of Cu in $[Cu(NH_3)_4]SO_4$ is: (LHR 2014)
(a) Zero (b) Two (c) Four (d) Six

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
c	d	a	a b d	a	d	c	a	d	c
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
b	b	b	a	b	a	b	a	c	b
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
d	c	a	b	b	c	b	b	c	d
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
c	c	a	a	d	d	b	a	b	c
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
b	d	b	d	a	a	b	a	b	a
51	**52**	**53**	**54**						
a	a	c	c						

CHAPTER 7

FUNDAMENTAL PRICIPLES OF ORGANIC CHEMISTRY

1. The total coal resources of Pakistan estimated by geological survey are:
(a) 184 billion tonnes (b) 184 million tonnes
(c) 841 billion tonnes (d) 184 tonnes

2. How many isomers are possible for C_6H_{14}:
(a) 4 (b) 5 (c) 6 (d) 7

3. Which one of the following is an isomer of Dimetly ether:
(a) $(CH_3)_2$ CHOH (b) CH_3CH_2OH (c) CHO-CHO (d) None

4. The hardest form of coal is:
(a) Bituminous (b) Sub-bituminous coal (c) Anthracite (d) Lignite

5. Which one of the following compounds is heterocyclic?
(a) Anthracene (b) Phenol (c) Pyridine (d) Aniline

6. Which molecule has a tetrahedral shape?
(a) CH_3-CH_3 (b) CH_2=CH_2 (c) CH≡CH (d) None

7. The formula of aniline is:
(a) C_6H_5 (b) C_6H_5-NH-C_6H_5
(c) C_6H_5-NH_2 (d) C_6H_5-NO_2

8. The formula of cyclopropane is:
(a) C_3H_8 (b) C_3H_4 (c) C_3H_5 (d) C_3H_6

9. The Octane number is 100 for:
(a) n-Octane (b) n-Heptane
(c) Iso-Octane (d) n-Hexane

10. Homologues of alkanes differ from each other by:
(a) CH_2 group (b) CH_3 group
(c) CH_4 group (d) CH group

11. The major components of coal gas are:
(a) H_2 and CH_4 (b) Ethane and CO
(c) H_2 and CO (d) H_2, CH_4 and CO

12. The compound in which two alkyl groups are attached to carbonyl group is called:
(a) Ether (b) Alcohol
(c) Ketone (d) Aldehyde

13. Carbonyl group is present in:
(a) Aldehyde (b) Ketone
(c) Alcohols (d) both a and b

14. The Chemical formula of urea is:
(a) $(NH_4)_2CO$ (b) $(NH_2)_4C$
(c) $(NH_2)_2CO$ (d) $(NH_4)_2CO_3$

15. The fractional distillation of petroleum yields only:
(a) 20% Gasoline (b) 30% Gasoline
(c) 15% Gasoline (d) 10% Gasoline

16. Antiknocking agent is:
(a) $(C_2H_5)_2Pb$ (b) $(C_2H_5)_4Pb$
(c) $(C_2H_5)_3Pb$ (d) $(C_2H_5)_4Pd$

17. Father of Organic Chemistry is:
(a) Faraday (b) Hoffman
(c) F. Wohler (d) Democritus

18. The example of sp hybridization is:
(a) Methane (b) Benzene (c) Ethene (d) Ethyne

19. The number of chain isomers of Pentane are:
(a) Three (b) Two (c) One (d) Zero

20. Metamerism is only shown by:
(a) Ethers (b) Ketones
(c) Both a and b (d) every organic family

21. Octane number 100 is given to:
(a) n – octane (b) n – Heptane
(c) 2,2,4 – Trimethylpentane (Iso-octane) (d) 2,2,4 – Trimethyl octane

22. The type of hybridization of carbon atom in methane is:
(a) sp (b) sp^2
(c) sp^3 (d) None of these

23. The boiling point range of petroleum ether is: (GRW 2007)
(a) 5 – 20°C (b) 10 – 30°C
(c) 20 – 60°C (d) 30 – 90°C

24. Which one of the following is not a heterocyclic compound? (LHR 2008)
(a) Thiophene (b) Anthracene (c) Furan (d) Pyrrol

25. The state of hybridization of carbon atom in ethane is: (GRW 2008,12)
(a) sp^3 (b) sp^2 (c) sp (d) dsp^2

26. Geometric isomerism is present in: (GRW 2010)
(a) Methane (b) Ethane
(c) Propane (d) 2-Butene

27. Double bond consists of:
(a) Two sigma bonds (b) One sigma one pi bond
(c) One sigma and two pi bonds (d) Two pi bonds

28. Which set of hybrid orbitals has planar triangular shape?
(a) sp^3 (b) sp (c) sp^2 (d) dsp^2

29. The type of hybridization of carbon atom in methane is: (LHR 2007,09)
(a) sp^3 (b) sp (c) sp^2 (d) dsp^2

30. The chemist who synthesized urea from ammonium cyanate was: (FSD 2014)
(a) G.N. Lewis (b) Fredrick Wohler
(c) Kolbe (d) Berzelius

31. The process used to improve the quality of gasoline is called: (LHR 2014)
(a) Thermal cracking (b) Reforming
(c) Steam cracking (d) Combustion

32. An isomer of C_2H_5OH is: (SGD, GRW 2015)
(a) CH_3OH (b) $(C_2H_5)_2O$
(c) CH_3OCH_3 (d) CH_3COCH_3

33. Linear shape is associated with which set of hybrid orbitals? (MTN 08,13, SGD, FSD 09, GRW, BWP 09,15)
(a) sp^3 (b) sp (c) sp^2 (d) dsp^2

34. Ethers show the phenomena of: (SGD 14, LHR 14,15, FSD 11)
(a) Metamerism (b) Functional group isomerism
(c) Position isomerism (d) cis-trans isomerism

35. Carbon atom in following is sp^2 hybridized (LHR 2011)
(a) CH_3CN (b) $CH\equiv CH$ (c) HCOOH (d) CH_2Cl_2

36. The isomerism shown by alkanes is: (LHR 2011)
(a) Skeletal (b) Position
(c) Geometric (d) Metamerism

37. Hybridization of carbon in carbonyl group is: (FSD, SGD 15, RWP 10)
(a) sp^3 (b) sp (c) sp^2 (d) dsp^2

38. How many isomers are there in pentane? (FSD 09, LHR 12, GRW 11)
(a) 6 (b) 5 (c) 3 (d) 2

39. Vital force theory was rejected by: (LHR 2012,14)
(a) G.N. Lewis (b) F.Wholer
(c) Greek Philosophers (d) Scientists of 20^{th} century

40. Select one which shows cis-trans isomerism. (FSD 2010)
(a) $Cl_2C=CCl_2$ (b) $CH_2=CH_2$
(c) ClCH=CHCl (d) $Br_2C=CBr_2$

41. Which of the following compound may exist as cis-trans isomer?
(a) 1-butene (b) 2-butene (c) Cyclopropane (d) Acetone

42. Urea belongs to which class of compounds? (RWP 2009)
(a) Imides (b) Amines
(c) Amides (d) carboxylic acid

43. In ethane, each carbon atom is: (GRW, FSD 12, LHR 10, DGK 09)
(a) sp^3 hybridized (b) sp^2 hybridized
(c) sp hybridized (d) unhybridized

44. The hybridization of carbon atom in HCHO is: (MTN, RWP 2011)
(a) sp (b) sp^2 (c) sp^3 (d) dsp

45. Geometric isomerism in alkenes is due to: (MTN 2008)
(a) Oscillation of H atoms between two polyvalent carbon atoms
(b) Optical rotation due to multiple bonds
(c) Free rotation about C=C bond
(d) Restricted rotation about C=C bond

46. Metamerism is shown by:
(a) Amines (b) Ethers
(c) neither a nor b (d) Both a and b

47. Dimethyl ether and Ethyl alcohol are called: (MTN 2009)
(a) Metamers (b) Functional group isomers
(c) Position isomers (d) cis-trans isomers

48. The self-linking property of elements is: (MTN 2009)
(a) Aromatization (b) Polymerization (c) Association
(d) Catenation

49. The carbon atoms in propene are: (MTN 2010)
(a) sp (b) sp^2
(c) sp^3 and sp^2 (d) sp^2 and sp

50. Peat before conversion into coal is converted into: (BWP 2008)
(a) Anthracite (b) Asphalt
(c) Lignite (d) all of these

51. Tetra ethyl lead is added to petrol to: (BWP 2010)
(a) Prevent its freezing point (b) Increase its boiling point
(c) Prevent knocking (d) Increase its viscosity

52. The crude petroleum is separated in fractions by: (DGK 2008)
(a) Filtration (b) Fractional distillation
(c) Steam distillation (d) Fractions sublimation

53. Carbon atom in Dimethyl ether is: (DGK 2009)
(a) sp^3 hybridized (b) sp^2 hybridized
(c) sp hybridized (d) unhybridized

54. Number of isomers of C_4H_{10} is: (DGK 2010)
(a) 1 (b) 2 (c) 3 (d) 4

55. In t-butyl alcohol, the tertiary carbon is bonded to: (MTN, SGD 2015)
(a) Three hydrogen atoms (b) Two hydrogen atoms
(c) One hydrogen atom (d) No hydrogen atom

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10
a	a	b	c	c	a	c	d	c	a
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
d	c	d	c	a	b	c	d	a	c
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
c	c	c	b	a	d	b	c	a	b
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
b	c	b	a	c	a	b	c	b	c
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
b	c	a	b	d	b	b	d	c	c
51	**52**	**53**	**54**	**55**					
c	a	b	b	d					

CHAPTER 8

ALIPHATIC HYDROCARBONS

1. An Aldehyde is reduced to Alkane with:
(a) $KOH+N_2H_4$ (b) NaOH
(c) CaO and NaOH (d) $Co(OH)_2$

2. Which of the following compound will not form Metal alkynide:
(a) Ethyne (b) Propyne
(c) 1- Butyne (d) 2-Butyne

3. When a mixture of Ethene and air is passed over heated silver under pressure we get:
(a) Superoxide (b) Epoxide
(c) Ozonide (d) Benzene

4. Ethyl chloride when boiled with alcoholic KOH gives:
(a) Acetylene (b) Ethylene
(c) Ether (d) Ethyl alcohol

5. What type of reaction occurs between Ethene and hydrogen:
(a) Addition (b) Substitution
(c) Oxidation (d) Dehydration

6. Which ion is most stable:
(a) CH_3^+ (b) $CH_3\text{-}CH_2^+$
(c) $(CH_3)_2CH^+$ (d) $(CH_3)_3C^+$

7. Mustard gas is:
(a) Highly viscous liquid (b) Low boiling liquid
(c) High boiling liquid (d) Colourless gas

8. Select the compound which has acidic hydrogen:
(a) Methane (b) Ethene
(c) Butadiene (d) Acetylene

9. The characteristic reactions of alkanes are:
(a) Polymerization (b) Addition
(c) Elimination (d) Substitution

10. Polymerization of three molecules of acetylene while passing through Cu tube at 300°C gives:
(a) Benzene (b) n-Hexane
(c) Naphthalene (d) Cyclohexane

11. The characteristic reactions of alkenes are:
(a) Polymerization (b) Addition
(c) Elimination (d) Substitution

12. The presence of pi bond in a molecule is the sign of :
(a) Unsaturation (b) Inertness
(c) Stabilty (d) Saturation

13. Vinyl acetylene combines with HCl to yield:
(a) Neoprene rubber (b) Chloroprene
(c) Poly vinyl acetylene (d) White ppt.

14. CH_3 is an example of:
(a) Alkenyl group (b) Alkane series
(c) Alkyl group (d) None of these

15. When Sodium Salts of fatty acid are heated with Sodalime, we get alkane along with:
(a) Na_4C (b) H_2O
(c) $CO_2+ N_2$ (d) Na_2CO_3

16. For each double bond, the heat of hydrogenation of Alkene is:
(a) 110 K.J mol^{-1} (b) 130 K.J mol^{-1}
(c) 115 K.J mol^{-1} (d) 120 K.J mol^{-1}

17. The alkenes react with aqueous solution of halogen acid to form:
(a) Alcohols (b) Aldehyde
(c) Alkanes (d) Alky halides

18. Which of following is used as a general anesthetic:
(a) Ethane (b) Propane
(c) Ethenol (d) Ethene

19. Alkyl halides on treatment with active metals like Zn yield:
(a) Alkene (b) Alkyne
(c) AIkane (d) Alcohol

20. Which of following is prepared by oxidation of Ethane:
(a) Acetone (b) Ethyl alcohol
(c) Formic acid (d) None

21. Acetylene gives:
(a) White ppt. with ammonical $AgNO_3$ and red ppt. with ammonical $Cu(NO_3)_2$
(b) With ppt. with ammonical $AgNO_3$ and red ppt. with ammonical Cu_2Cl_2
(c) White. ppt. with both
(d) Red ppt. with both

22. The order of reactivity of halogens in aliphatic substitution reactions:
(a) $Br_2 > Cl_2 > F_2$ (b) $Cl_2 > Br_2 > F_2$
(c) $F_2 > Cl_2 > Br_2$ (d) $F_2 > Br_2 > CI_2$

23. The IUPAC name of the compound having the formula $(CH_3)_3\ C - CH = CH_2$ is:
(a) 1, 1 – Dimethyl-3-butene (b) 1, 1, 1 – Trimethyl-3 propene
(c) 3, 3 – Dimethyl-1-butene (d) 3, 3,3 – Trimethyl-1-propene

24. For preparing a symmetrical alkane, a concentrated aqueous solution of sodium or potassium salt of saturated carboxylic acid is subjected to:
(a) Hydrolysis (b) Oxidation
(c) Hydrogenation (d) Electrolysis

25. The reaction/method that does not give an alkane is
(a) Catalytic hydrogenation of Alkene (b) Wurtz reaction
(c) Hydrolysis of alkyl magnesium bromide (d) Dehydrohalogenation of an alkyl halide

26. A fuel has the same knocking property as a mixture of 70% Iso-octane (2, 2, 4-Trimethylpentane) and 30% n-Heptane by volume, the octane number of that fuel is:
(a) 100 (b) 70
(c) 50 (d) 40

27. Hydrocarbon which is liquid at room temperature is:
(a) Hexane (b) Butane
(c) Ethane (d) Propane

28. Marsh gas was the name given to:
(a) Methane (b) Ethane
(c) Propane (d) Butane

29. Each different compound should have a different name" was published by IUPAC system of nomenclature in:
(a) 1892 (b) 1830
(c) 1947 (d) 1979

30. Write the name of following Alkene $CH_2 = CH- CH = CH_2$
(a) 1, 3-Butadiene (b) Buta -1 , 3 diene
(c) Both a & b (d) None

31. C_nH_{2n} is the general formula of:
(a) Alkanes (b) Alkenes
(c) Alkynes (d) None of above

32. An Alkane is produced when an Alkyl halide reacts with Zinc in the presence of a catalyst; the reaction is called:
(a) Sabatier-Sendern's reaction (b) Wurtz Synthesis
(c) Frankland's Reaction (d) Clemmenson's reduction

33. The method in which alkane is prepared by Alkyl halide in the presence of Palladium charcoal, is:
(a) Hydrolysis (b) Electrolysis
(c) Hydrogenation (d) Hydrogenolysis

34. Kolbe's method is not useful for the production of:
(a) Methane (b) Ethane
(c) Butane (d) Hexane

35. Kolbe's method has limited synthetic applications due to:
(a) Use of electrical energy (b) Slow reaction
(c) Number of side products (d) Salts used are very expensive

36. The reaction in which a Ketone is reduced to the alkane is called:
(a) Kolbe's electrolysis (b) Clemmensen's reduction
(c) Cannizzaro (d) None

37. Alkanes containing carbons C-18 onwards are:
(a) Gases (b) Liquids
(c) Waxy solids (d) Solids

38. Alkanes are soluble in all except:
(a) Benzene (b) Ether
(c) Water (d) Carbon tetra chloride

39. The property of an alkane which does not increase with increase in molar mass:
(a) Boiling point (b) Melting point
(c) Density (d) Solubility

40. The low reactivity of alkanes is based upon:
(a) Inertness of sigma-bond (b) Non-polarity of the bonds
(c) Both a and b (d) None of above

41. Complete combustion of alkane yields:
(a) $CO_2 + H_2O$ (b) CO_2 + Heat
(c) $CO_2 + H_2O + CO$ (d) $CO_2 + H_2O$ + Heat

42. The major reaction occurring in the engines of automobiles is:
(a) Oxidation (b) Reduction
(c) Combustion (d) Decomposition

43. Incomplete oxidation of alkanes yields:
(a) CO_2 & carbon black (b) CO_2 +CO
(c) $CO + H_2O$ +carbon black (d) CO_2 +heat

44. The order of reactivity of halogen acids towards alkenes:
(a) HCl > HBr >HI (b) HBr >HCl>HI
(c) HCl > HBr>HF (d) HI > HBr >HCl

45. Raney – Nickel is the alloy of Ni with:
(a) Pt (b) Al
(c) Cu (d) Pd

46. Polymerization of Ethene to Polyethylene take place at pressure of 100 atm and a temperature of:
(a) 200^oC (b) 400^oC
(c) 600^oC (d) 800^oC

47. During the preparation of alkynes the active metals that reacts with Tetrahalo-alkane is:

(a) Zn (b) Mg
(c) Both a and b (d) None

48. Alkynes are colorless & odorless except:

(a) Acetylene (b) Propyne
(c) Butyne (d) Pentyne

49. An Alkyne having Carbon atoms =15 is most probably a:

(a) Gas (b) Liquid
(c) Solid (d) Waxy solid

50. The reaction of Acetylene with water in H_2SO_4 and $HgSO_4$ yields:

(a) Vinyl alcohol (b) Acetaldehyde
(c) Mixture of both a and b (d) None

51. The gas used for illumination:

(a) Methane (b) Ethene
(c) Ethyne (d) None

52. The Alkynides are used for the ----------of alkynes

(a) Preparation (b) Purification
(c) Separation (d) All of above

53. Formula of chloroform is:

(a) CH_3Cl (b) CH_2Cl_2
(c) $CHCl_3$ (d) CCl_4

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10
a	d	b	b	a	d	c	d	d	a
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
b	a	b	c	d	d	d	d	c	b
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
b	c	c	d	d	b	a	a	d	c
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
b	c	d	a	c	b	c	c	d	c
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
d	c	c	d	b	b	c	a	c	c
51	**52**	**53**							
a	d	c							

CHAPTER 9

AROMATIC HYDROCARONS

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1. Most common reactions of benzene and its derivatives are:
(a) Electrophilic addition reactions (b) Electrophilic substitution reactions
(c) Nucleophilic addition reactions (d) Nucleophilic substitution reactions

2. Benzene + Ozone →Y, in this sequence Y is:
(a) Benzene monozonide (b) Benzene diozonide
(c) Benzene triozonide (d) Succinic acid

3. Which species represents the electrophile in aromatic Nitration:
(a) NO_2 (b) NO_2^+ (c) NO^+ (d) NO_3

4. Heating a mixture of Sodium benzoate and soda lime gives:
(a) Benzene (b) Methane
(c) Sodium benzoate (d) Calcium benzoate

5. Which of the following species participate in Sulphonation of benzene ring:
(a) SO_3^{-2} (b) $S_2O_3^{-2}$ (c) SO_3 (d) SO_2

6. The compound prepared by electrophilic substitution reaction of benzene is:
(a) Acetophenone (b) Glyoxal
(c) Cyclohexane (d) Hexabromo cyclohexane

7. The term 'Aromatic' was derived from:
(a) Greek word (b) Latin (c) Russian (d) English

8. Which compound was recognized as the parent member of aromatic compounds:
(a) Aniline (b) Phenol (c) Benzene (d) Toluene

9. Which one of the following is not monocyclic aromatic hydrocarbon:
(a) Benzaldehyde (b) Benzoic acid
(c) Benzene sulphonic acid (d) Anthracene

10. In which one of the following compound rings are not fused together at ortho positions:
(a) Phenanthrene (b) Naphthalene
(c) Dipheny l methane (d) Anthracene

11. Toluene is called:
(a) Hydroxyl benzene (b) Methyl benzene (c) Ethyl benzene (d) None

12. Substituted phenyl groups are called:
(a) Aryl groups (b) Phenyl groups
(c) Acyl groups (d) Alkyl groups

13. Benzene was discovered by Michael Faraday's in:
(a) 1824 (b) 1825 (c) 1826 (d) 1827

14. The empirical formula of Benzene was determined by:
(a) IR spectra (b) U.V
(c) Elemental analysis (d) NMR spectra

15. How many molecules of chlorine add to benzene in the presence of sunlight:
(a) One (b) Two (c) Three (d) Four

16. The bond angles in benzene ring are:
(a) 90^o (b) 120^O (c) 145^O (d) None

17. All C-H bond lengths of benzene ring is:
(a) $1.07A^O$ (b) $1.09A^O$ (c) $1.08A^O$ (d) None

18. A six membered ring containing one double bond is called:
(a) Cyclohexene (b) Cyclohexane (c) Benzene (d) None

19. Hybridization of each carbon atom in benzene ring is:
(a) sp (b) sp^2 (c) sp^3 (d) dsp^2

20. The stability of aromatic compounds _____ with the increase in the number of its resonance structures:

(a) Decreases (b) Increases
(c) Remains constant (d) partially decreases

21. Benzene is obtained from Benzene sulphonic acid by treating it with:

(a) HCl (b) NaOH (c) H_2O (d) $NaHCO_3$

22. Which Electrophilic substitution reaction is too vigorous to control:

(a) Chlorination (b) Bromination
(c) Iodination (d) Fluorination

23. Sulphuric acid generates nitronium ion by reacting it with:

(a) Nitric acid (b) Nitrogen gas
(c) Nitrous acid (d) Potassium nitrate

24. Benzene reacts with ozone and gives:

(a) Glycerin (b) Glyoxal
(c) Maleic anhydride (d) Benzoic acid

25. Alkyl benzene are readily oxidized by acidified:

(a) $KMnO_4$ (b) K_2CO_3 (c) MnO_2 (d) Mn

26. The electron releasing effect of Methyl group is significant and it makes the ring a good:

(a) Electrophilic (b) Nucleophilic
(c) Nucleophobic (d) Hydrophobic

27. Meta directing groups decrease the -------- of benzene ring:

(a) Melting point (b) Chemical reactivity (c) Density (d) None

28. Which class of compound is most reactive:

(a) Alkane (b) Alkene
(c) Alkyne (d) Benzene

29. Which of the following acid can be used as a catalyst in Friedel Craft's reactions:

(a) $AlCl_3$ (b) HNO_3 (c) $BeCl_2$ (d) NaCl

30. Aromatic hydrocarbons are the derivatives of:

(a) Normal series of paraffin (b) Alkenes (c) Benzene (d) None

31. Which one of the following is (m-xylene):

(a) 1,2-Dimethyl benzene (b) 1,3-Dimethyl benzene
(c) 1,5-Dimethyl benzene (d) 1,4-Dimethyl benzene

32. The Nitration of benzene takes place when it is heated with a mixture of conc. HNO_3 and conc. H_2SO_4 at 50^oC in ratio of :

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

33. The three alternate single and double bonds in the benzene ring are called:

(a) Conjugate bonds (b) Resonating bonds
(c) Both a and b (d) None of above

34. The difference between amount of heat actually released and the experimentally calculated heat is called:

(a) Bond energy (b) Resonance energy
(c) Binding energy (d) None

35. All are ortho & Para directing groups except:

(a) -X (b) -OH (c) $-\overset{+}{N}R_3$ (d) $-NH_2$

36. Substitution of halogens in the benzene ring requires which catalyst?

(a) NaCl (b) $FeCl_3$
(c) SiO_2 (d) Organo - nickel

37. Which one of the following does not decolorize $KMnO_4$?

(a) Alkene (b) Alkyne (c) Benzene (d) All

38. Benzene is prepared from n-Hexane in the presence of which catalyst?

(a) Cr_2O_3 (b) Al_2O_3
(c) SiO_2 (d) Fused mixture of a, b and c

39. Benzene cannot undergo:
(a) Substitution reactions (b) Additional reaction
(c) Oxidation reaction (d) Elimination reaction

40. Ortho, para derivatives are obtained by halogenations of: (LHR 2011)
(a) Nitrobenzene (b) Toluene
(c) Benzaldehyde (d) Benzene

41. Benzene is prepared from Cyclohexane by the process called: (LHR 2008)
(a) Hydrogenation (b) Dehydration
(c) Dehydrogenation (d) None of these

42. The conversion of n-Hexane into benzene by heating in the presence of Pt is called:
(a) Isomerism (b) Aromatization
(c) Dealkylation (d) Rearrangement

43. Which compound is the most reactive one?
(a) Benzene (b) Ethene (c) Ethane (d) Ethyne

44. What is the molecular formula of TNT?
(a) $C_6H_2(NO_2)_3CH_3$ (b) $C_6H_2(NO_2)_2CH_3$
(c) $C_6H_2(NO_2)_3C_2H_5$ (d) $C_6H_2(NO_2)_3C_3H_7$

45. Molecule of benzene contain (GRW 2011,14)
(a) Three double bonds (b) Two double bonds
(c) One double bond (d) Delocalized л-electron charge

46. Nitration of Toluene takes place at:
(a) m-position (b) p-position
(c) 0-position (d) both 'o' and 'p' positions

47. Resonance energy of benzene is: (LHR 2012)
(a) 150.5 KJ/mol (b) 140.5 KJ/mol
(c) 155 KJ/mol (d) 145 KJ/mol

48. In which compound benzene rings are isolated?
(a) Diphenyl methane (b) Naphthalene
(c) Anthracene (d) Phenanthrene

49. Presence of double or triple bond is a sign of: (SGD 2011)
(a) Un-saturation (b) Saturation
(c) Addition (d) Substitution

50. Benzene reacts with alkyl and acyl halides in the presence of $AlCl_3$. This reaction is: (RWP 2008)
(a) Freidel Crafts reaction (b) Aldol condensation
(c) Halogenations reaction (d) Nitration reaction

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
b	c	b	a	c	a	a	c	d	c
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
b	a	b	c	c	b	b	a	b	b
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
c	d	a	b	a	b	b	b	a	c
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
b	b	c	b	c	b	c	d	d	b
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
c	b	b	a	d	d	a	a	a	a

CHAPTER 10

ALKYL HALIDES

1. Electrophile amongst the following is:
(a) NH_3 (b) H_2O (c) BF_3 (d) Cl_2

2. SN_2 mechanism involves:
(a) 1st order kinetics (b) 2nd order kinetics
(c) 3rd order kinetics (d) Zero order kinetics

3. Alkyl magnesium halide (Grignard's reagent) when hydrolyzed yields:
(a) Alkane (b) Alkene (c) Alkyne (d) Alkyl halide

4. Tertiary alcohols are obtained by treating Grignard's reagent with:
(a) Aldehyde (b) Ketone (c) Water (d) Amine

5. Alkyl Halides are:
(a) Monohaloalkanes (b) Dihaloalkanes (c) Polyhaloalkanes (d) All

6. Which substance is used to convert Grignard's reagent to alkane:
(a) H_2O (b) NH_3 (c) Ethyl alcohol (d) All of these

7. For the reaction $C_2H_5OH + HX \rightarrow C_2H_5\text{-}X + H_2O$ the order of reactivity of HX is:
(a) HBr > Hl > HCl (b) HI > HCl > HBr
(c) HCl > HBr > Hl (d) HI > HBr > HCl

8. Carbanions are:
(a) Electrophiles (b) Nucleophiles (c) Group of atoms (d) Free radical

9. Secondary alkyl halides follow
(a) First order kinetics (b) Second order kinetics
(c) Both a and b (d) none of these

10. $(CH_3)_3CBr$ preferably undergoes:
(a) SN_2 reactions (b) SN_1 reactions
(c) both a and b (d) none of these

11. Ethyl chloride reacts with alcoholic KOH to give:
(a) C_2H_4 (b) C_2H_5OH (c) C_2H_6 (d) None of these

12. When an alcohol reacts with $SOCl_2$ an alkyl halide is formed what are two other products:
(a) SO_2 and HCl (b) SO_2 and H_2O
(c) HCl and H_2O (d) H_2S and HCl

13. Which of the following is not a nulceophile:
(a) OH^- (b) NH_3 (c) $C_2H_5O^-$ (d) Br^+

14. Which of the following reactions is not shown by an alkyl halide:
(a) SN_1 (b) SN_2 (c) Addition (d) Elimination

15. In primary alkyl halides, the halogen atom is attached to a carbon which is further attached to:
(a) One Carbon atoms (b) Two Carbon atoms
(c) Three Carbon atoms (d) Four Carbon atoms

16. Reaction of following with Grignard's reagent can give primary alcohol: (LHR 2011,14)
(a) Epoxide (b) Peroxide (c) Super oxide (d) Hydrogen

17. S_N1 reactions are easily given by: **(LHR 2012)**
(a) Primary alkyl halide (b) Secondary alkyl halide
(c) Secondary alcohols (d) Tertiary alkyl halides

18. Thionyl chloride reacts with alcohol to form:
(a) Mustard gas (b) Alkyl halide (c) Aldehyde (d) Alcohol

19. Which of the following is a Sodium Lead alloy:
(a) NaPb (b) Na_2Pb (c) Na_3Pb (d) Na_4Pb

20. Secondary alcohol is formed when Grignard's reagent reacts with:
(a) Propanone (b) Methanal
(c) Ethanal (d) Ethanoic acid

21. When Grignard reagent reacts with Epoxide, it forms:
(a) 1- Alkanal (b) 1- Alkanol (c) Carboxylic acid (d) None

22. Which of the following reagent cannot be used for preparing alkyl chloride from alcohol:
(a) HCl+ anhydrous $ZnCl_2$ (b) NaCl (c) PCl_5 (d) $SOCl_2$

23. Carbon atom holding halogen in Alkyl halide is:
(a) sp^2- hybridized (b) sp^3-hybridized
(c) sp-hybridized (d) sp^3d- hybridized

24. Which of the following does not give Iodoform test:
(a) Ethanol (b) Ethanal
(c) Acetophenone (d) Benzophenone

25. C-X bond is strongest in:
(a) CH_3Cl (b) CH_3Br (c) CH_3F (d) CH_3I

26. The alkyl halide is converted into an alcohol directly by:
(a) Addition (b) Substitution
(c) Dehydrohalogenation (d) Elimination

27. Iodoethane reacts with sodium in ether, the product formed is:
(a) Ethane (b) Ethene (c) Butene (d) Butane

28. 1, 3 – Dibromopropane reacts with metallic zinc to form:
(a) Propene (b) Propane (c) Cyclopropane (d) Hexane

29. Ethyl alcohol gives Ethyl chloride with the help of:
(a) $SOCl_2$ (b) NaCl (c) Cl_2 (d) KCl

30. Butane nitrile is formed by reaction of KCN with:
(a) Propyl alcohol (b) Butyl chloride (c) Butyl alcohol (d) Propyl Chloride

31. Tetrabomoethane on treatment with alcoholic zinc gives:
(a) Ethyl bromide (b) Ethane (c) Ethane (d) Ethyne

32. S_N1 reaction of Alkyl halides leads to:
(a) Retention of configuration (b) Inversion of configuration
(c) Both a and b (d) None of these

33. Which one of the following will have the maximum dipole moment:
(a) CH_3F (b) CH_3Cl (c) CH_3Br (d) CH_3I

34. The reaction of an Alkyl halide with RCOOAg produces:
(a) Ester (b) Ether
(c) Aldehyde (d) Carboxylic acid

35. The substrate of a typical S_N2 reaction is: **(FSD 2012)**
(a) Primary alkyl halide (b) Secondary alkyl halide
(c) Secondary alcohols (d) Tertiary alkyl halides

36. Most reactive Alkyl halide towards S_N1 reaction is:
(a) n-Butyl chloride (b) Sec-Butyl chloride
(c) ter-Butyl chloride (d) Allyl chloride

37. Which responds +vely towards Iodoform test:
(a) 1-Butene (b) Butanal
(c) Acetic acid (d) 2-Pentanone

38. Electrophile among the following is:
(a) NH_3 (b) H_2O (c) BF_3 (d) Cl_2

39. The order of a typical SN_2 reaction is:
(FSD 2010)
(a) Zero (b) First (c) Second (d) Third

40. Which of the following is not a Nulceophile?
(a) H_2O (b) H_2S (c) BF_3 (d) NH_3

41. In which two mechanisms, the first step involved is same:
(a) E1 and E2 (b) E2 and S_N2
(c) E1 and S_N1 (d) S_N1 and S_N2

42. SN_2 reactions are:
(a) Unimolecular (b) Bimolecular
(c) Trimolecular (d) Tetramolecular

43. Elimination bimolecular reaction involves kinetics: (LHR 2014)
(a) 1st order (b) 2nd order
(c) 3rd order (d) Zero order

44. In primary alkyl halides, the halogen atom attached to a carbon atom is further attached to how many carbon atoms:
(a) Two (b) Three
(c) One (d) Four

45. Elimination bimolecular reaction involves:
(a) First order kinetics (b) Second order kinetics
(c) Third order kinetics (d) Zero order kinetics

46. Ethyl magnesium bromide reacts with water to form:
(a) Ethane (b) Methane
(c) Propane (d) n-butane

47. Primary alcohol is obtained by treating Grignard's Regent with:
(a) HCHO (b) CH_3CHO (c) CH_3COCH_3 (d) CO_2

48. In SN_2 mechanism, the hybridization of carbon atom changes from: (RWP 2009)
(a) sp (b) sp^2
(c) dsp^2 (d) none of these

49. Tertiary alcohol is obtained by treating Grignard reagent with: (RWP 2009)
(a) HCHO (b) CH_3CHO (c) CH_3COCH_3 (D) CO_2

50. Order and molecularity of SN2 reaction of alkyl halide is: (RWP 2011)
(a) 1,2 (b) 2,1 (c) 2,2 (d) 0,1

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
c	b	a	b	a	d	d	b	c	b
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
a	a	d	c	a	a	d	b	b	c
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
b	b	b	d	c	b	d	c	a	d
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
d	c	a	a	a	c	d	c	c	c
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
c	b	b	c	b	a	a	d	c	c

CHAPTER 11

ALCOHOLS, PHENOLS AND ETHERS

1. Which compound will have maximum repulsion with H_2O?
(a) C_6H_6 (b) C_2H_5OH (c) $CH_3CH_2CH_2OH$ (d) C_6H_5OH

2. When Ether is protonated, the conjugate acid formed is called:
(a) A Carbonion (b) Oxide ion
(c) An Oxonium ion (d) A Hydronium ion

3. When ethyl bromide is heated with Ag_2O the product formed is:
(a) Ethanol (b) Ethene
(c) Ethanal (d) Diethyl ether

4. When diethyl ether is treated with PCl_5 the product is:
(a) Ethanol (b) Triethyl phosphine
(c) Ethyl chloride (d) Oxonium ion

5. 2-Alkanol on oxidation forms:
(a) Ether (b) Aldehyde
(c) Ketone (d) Carboxylic acid

6. Which substance is used as an Antifreeze:
(a) Methanol (b) Ethanol
(c) Acetone (d) Acetic acid

7. Which of the following would you expect to give a yellow precipitate of CHI_3 when heated with I_2 in alkaline solution:
(a) CH_3OH (b) C_3H_7OH
(c) $CH_3CH_2CH(OH)CH_2CH_3$ (d) CH_3CH_2OH

8. Alcohols on heating with ------give alkenes at high temperature:
(a) Oxygen (b) Conc. H_2SO_4
(c) PCl_3 (d) Conc. HNO_3

9. Carbolic acid is the other name of:
(a) Phenol (b) Biphenyl
(c) Picric acid (d) H_2CO_3

10. Alcohols and ------react to produce esters:
(a) Water (b) Ethers
(c) Carboxylic acid (d) Ketones

11. Oxidation of ------alcohol gives aldehyde:
(a) Primary (b) Secondary
(c) Tertiary (d) Quaternary

12. Which compound is more soluble in water?
(a) C_2H_5OH (b) CH_3COCH_3
(c) CH_3OH (d) C_6H_5OH

13. Which compound shows maximum hydrogen bonding with water?
(a) CH_3-O-CH_3 (b) CH_3-OH
(c) C_2H_5-OH (d) C_6H_5-OH

14. Which enzyme is not involved in fermentation of starch
(a) Diastase (b) Maltase
(c) Zymase (d) Urease

15. Methyl alcohol is used as:
(a) a drink (b) an anti freezing agent
(c) a preservative for biological specimen (d) a substitute for petrol

16. Only maximum------% alcohol is obtained by fermentation of molasses:
(a) 14 (b) 24
(c) 95 (d) 100

17. Ethene is formed when Ethyl alcohols reacts with conc. H_2SO_4 at
(a) 180°C (b) 150°C
(c) 120°C (d) 110°C

18. Dow's method helps in preparation of:
(a) Biphenyl (b) Benzene
(c) Phenol (d) Ester

19. When phenol react with alkali it forms:
(a) Acid (b) Salt
(c) Base (d) None of these

20. Phenol reacts with zinc dust and forms:
(a) Benzene (b) Acetylene
(c) Molozonide (d) Ozonide

21. Bakelite is formed when phenol reacts with:
(a) Acetaldehyde (b) Farmaldehyde
(c) Propanoic acid (d) Butanoic acid

22. Ethers reacts with hydrogen iodide to give:
(a) Alcohol (b) Phenol
(c) Alcohol+ Alkyl halide (d) Aldehyde

23. Which one is primary alcohol:
(a) Buten-2-ol (b) Propan-2-ol
(c) Butan-1-ol (d) 2, 3- Dimethylhexane-4-ol

24. Ethyl alcohol is industrially prepared from ethylene by:
(a) Permanganate oxidation (b) Catalytic reduction
(c) Absorbing in H_2SO_4 followed by hydrolysis (d) Fermentation

25. Ethanol containing some quantity of methanol is called:
(a) Absolute spirit (b) Rectified spirit
(c) Wood spirit (d) Methylated spirit

26. Hydrolytic conversion of Sucrose into glucose and fructose in known as:
(a) Induction (b) Inversion
(c) Insertion (d) Inhibition

27. Alcohols of low molecular weight are:
(a) Soluble in water (b) Soluble in water on heating
(c) Insoluble in water (d) Insoluble in all solvents

28. Fermentation is a:
(a) Chemical process (b) Biochemical process
(c) Engineering process (d) Physical Process

29. Ethyl alcohol on oxidation with acidified $K_2Cr_2O_7$ gives:
(a) Acetic Acid (b) Acetaldehyde
(c) Formaldehyde (d) Formic acid

30. C_2H_5OH can be differentiated from CH_3OH by:
(a) Lucas Test (b) Baeyer's Test
(c) Iodoform test (d) None

31. Ethyl alcohol on treating with Conc. H_2SO_4 at 140°C yields:
(a) Ethene (b) Diethyl Ether
(c) Ethyl acetate (d) Ethanoic acid

32. Which of the following statements is correct:
(a) Phenol is less acidic than Ethanol (b) Phenol is more acidic than Ethanol
(c) Phenol is more acidic than Acetic acid (d) None

33. Isopropyl alcohol on oxidation gives:
(a) Acetone (b) Ether
(c) Ethylene (d) Acetaldehyde

34. Which of the following is the most suitable method for removing the traces of water from ethanol:
(a) Reacting with Na metal (b) Passing dry HCl through it
(c) Distilling in presence of CaO (d) Reacting with Mg

35. Na reacts with Ethanol to produce:
(a) H_2 gas (b) Benzene
(c) CO_2 gas (d) CO gas

36. Picric acid is:
(a) 2, 4, 6- Trinitrotoluene (b) 2, 4, 6-Tribromethanol
(c) 2, 4, 6-Trinitrophenol (d) Para-Nitrophenol

37. Organic acidic compound without a carboxylic acid group is:
(a) Ascorbic acid (b) Vinegar
(c) Oxalic acid (d) Picric acid

38. Methanol can be prepared from hydrogenation of: (LHR 2011)
(a) CH_3CN (b) CH_3Br
(c) HCHO (d) CH_3CHO

39. Phenol reacts with acetyl chloride in the presence of a base to form an: (LHR 2008)
(a) acid (b) alcohol (c) aldehyde (d) ester

40. Alcohol obtained by fermentation never exceeds: (LHR 2014)
(a) 10% (b) 16%
(c) 14% alcohol (d) 95% alcohol

41. Phenol reacts with acetyl chloride in the presence of a base to form an:
(a) Acid (b) Alcohol
(c) Aldehyde (d) Ester

42. 2 – Hydroxy propanoic acid is called:
(a) Oxalic acid (b) Lactic acid
(c) Citric acid (d) Aspartic acid

43. Methyl alcohol is not used: (GRW 2014)
(a) As a substitute for Ethanol in drinking (b) As a substitute for petrol
(c) For denaturing of ethyl alcohol (d) All

44. Which liquid is called wood spirit? (GRW 2011)
(a) CH_3OH (b) C_2H_5OH
(c) CH_3COOH (d) CH_3OCH_3

45. Order of reactivity of alcohols when C-O bond breaks is: (LHR 2012)
(a) Tertiary alcohol>Secondary alcohol>Primary alcohol
(b) Primary alcohol>Secondary alcohol>Tertiary alcohol
(c) Secondary alcohol>Primary alcohol>Tertiary alcohol
(d) Tertiary alcohol>Primary alcohol >Secondary alcohol

46. Which compound is called a universal solvent?
(a) H_2O (b) CH_3OH
(c) C_2H_5OH (d) CH_3OCH_3

47. Ethanol and methanol can be distinguished by (MTN 08, FSD 10)
(a) Iodoform test (b) Lucas Test
(c) Benedicts test (d) Tollen's test

48. Ethers show the phenomena of:
(a) Position isomerism (b) Functional group isomerism
(c) Metamerism (d) Cis-trans isomerism

49. Which enzyme is not involved in fermentation of starch? (LHR 2014,15)
(a) Diastase (b) Zymase
(c) Urease (d) Invertase

50. Which of the following reagent will replace –OH group of alcohol by halogen atoms?
(a) HOCl (b) Br_2 (c) $SOCl_2$ (d) I_2

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
a	c	d	c	c	a	d	b	a	c
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
a	c	b	d	b	a	a	b	b	a
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
b	c	c	d	d	b	a	b	b	c
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
b	b	a	c	a	c	d	c	d	c
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
d	b	a	a	a	a	a	c	c	c

CHAPTER 12

ALDEHYDES AND KETONES

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1. Which one of the following undergoes Cannizzaro's reaction in the presence of dilute aqueous sodium hydroxide?
(a) HCHO (b) CH_3CHO
(c) CH_3-CH_2-CHO (d) CH_3-$COCH_3$

2. Formaldehyde condenses with phenol in the presence of dilute base to yield:
(a) Nylon-6,6 (b) Urotropine
(c) Aniline-formaldehyde (d) Bakelite

3. Calcium acetate on dry heating yields:
(a) HCHO (b) CH_3CHO
(c) CH_3COCH_3 (d) CH_3COOH

4. Air oxidation of methanol produces:
(a) Ethanol (b) Methanal
(c) Mixture of Methanal and Ethanal (d) Methane

5. Acetone reacts with HCN to form cyanohydrin, It is an example of:
(a) Electrophilic addition (b) Electrophilic substitution
(c) Nucleophilic addition (d) Nuclearphilic substitution

6. Which of the following compounds will not give Iodoform:
(a) Acetaldehyde (b) Acetone
(c) Butanone (d) 3-Pentanone

7. Addition of alcohol in carbonyl compounds gives acetal; the geometry of acetal is:
(a) Linear (b) Trigonal
c) Tetrahedral (d) Planar

8. Which of the following compound will react with Tollen's reagent:
(a) Acetone (b) Acetic acid
(c) Methyl ethyl ketone (d) Acetaldehyde

9. Which of the reagents will react with Ketones only:
(a) Sodium nitroprusside (b) Tollen's reagent
(c) Fehling's reagent (d) Benedict's reagent

10. The Nucleophilic addition reactions of carbonyl compounds are catalyzed by:
(a) Acids (b) Bases
(c) Both a and b (d) None of these

11. Acetaldehyde is distinguished from other aldehydes by:
(a) Iodoform test (b) Tollen's reagent
(c) Silver mirror test (d) all of these

12. Which is used in the preparation of throat lozenges:
(a) Formaldehyde (b) Acetaldehyde
(c) Menthol (d) Menthone

13. Which is used as an antiseptic inhalant:
(a) Formaldehyde (b) Acetaldehyde
(c) Formic acid (d) Acetic acid

14. Aldehyde forms acetal when they combine with alcohols in the presence of:
(a) Hydrogen Iodide (b) Hydrogen gas
(c) Hydrogen Chloride (d) Sodium Hydroxide

15. Which of the following groups does not show catalytic oxidation:
(a) Aldehyde (b) Alcohol
(c) Carboxylic acid (d) Ketone

16. Isopropyl alcohol on oxidation forms:
(a) Acetone (b) Ether
(c) Ethylene (d) Acetaldehyde

17. Which of the following reactions is used for detecting the presence of carbonyl group?
(a) Reaction with hydroxylamine (b) Ammonical cuprous oxide
(c) Ammonical silver bromide (d) Ammonical silver nitrate

18. Propyne on hydrolysis in presence of H_2SO_4 and $HgSO_4$ gives:
(a) Acetaldehyde (b) Acetone
(c) Formaldehyde (d) None

19. On heating acetaldehyde with Ammonical silver nitrate solution, we get:
(a) CH_3OH (b) Silver acetate
(c) HCHO (d) Silver mirror

20. At room temperature formaldehyde is:
(a) Gas (b) Liquid
(c) Solid (d) Rubber like solid

21. The compound obtained by the reduction of Propionaldehyde with amalgamated Zinc and concentrated HCl is:
(a) Propanol (b) Propane
(c) Propane (d) All

22. Aromatic Aldehydes undergo disproportionation reaction in presence of sodium or potassium hydroxide to give corresponding alcohol and acid. The reaction is known as:
(a) Wurtz reaction (b) Cannizzaro reaction
(c) Friedel-Craft reaction (d) None

23. Which of the following is used in formation of hypnotic drug:
(a) Chloral hydrate (b) Ethanol Tetramer
(c) Ethanol Trimer (d) both a and c

24. When vapors of Isopropyl alcohol are passed over heated copper, the major product obtained is:
(a) Propane (b) Propylene
(c) Acetaldehyde (d) Acetone

25. A Nucleophilic regent will readily attack on:
(a) Ethylene (b) Ethanal
(c) Ethanol (d) Ethylamine

26. Which of the following does not react with phenyl hydrazine:
(a) Ethanol (b) Ethanal
(c) Acetone (d) Acetophenone

27. Self condensation of Acetaldehyde in the presence of dilute alkali gives:
(a) An acetal (b) An aldol
(c) Paraldehyde (d) Acetone

28. Which of the following does not give brick red ppt. with Fehling solution:
(a) Formalin (b) Acetaldehyde
(c) D-Glucose (d) Acetone

29. Formalin is 40% aqueous solution of:
(a) Furfural (b) Formaldehyde
(c) Formic acid (d) Methyl iodide

30. Acetone is oxidized with:
(a) Tollen's reagent (b) Fehling solution
(c) Acidified dichromate solution (d) Benedicts solution

31. Concentrated Sodium hydroxide and Benzaldehyde reacts to produce:
(a) Benzyl alcohol (b) Hydrobenzamide
(c) Cinnamic acid (d) Benzophenone

32. Wolf-Kishner reduction is used for the reduction of.
(a) Nitro compounds (b) Carboxylic acids
(c) Carbonyl compounds (d) Olefins

33. C_2H_5CHO and $(CH_3)_2CO$ can be distinguished by testing with:
(a) Phenyl hydrazine (b) Hydroxylamine
(c) Fehling solution (d) Sodium bisulphate

34. Clemmenson's reduction of Ketones is carried out with:
(a) H_2 with Pd catalyst (b) $KOH+N_2H_4$
(c) $LiAlH_4$ in water (d) Zn-Hg with conc. HCl

35. Which of the following organic compounds exhibits positive Fehling test as well as Iodoform test:
(a) Methanal (b) Ethanol
(c) Propanone (d) Ethanal

36. Which of the following reactants will render Tertiary butyl alcohol on reacting with methyl magnesium iodide?
(a) HCHO (b) CH_3CHO
(c) CH_3COCH_3 (d) CO_2

37. Bisulphite adduct is:
(a) Yellow ppt (b) Crystalline white ppt
(c) Greenish Crystalline (d) Red solid

38. The IUPAC name of $CH_3COCH(CH_3)_2$ is:
(a) 4-Methylisopropy ketone (b) 3-Methyl-2-butanone
(c) Isopropylmethyl ketone (d) 2- Methyl-2 butanone

39. Which of the following reagents will react with both Aldehydes and Ketones?
(a) Fehling's reagent (b) Tollen's reagent
(c) Grignard's reagent (d) Benedicts reagent

40. Tollen's regent is:
(a) Alkaline solution containing Potassium tartarate
(b) Alkaline solution containing Potassium citrate
(c) Ammonical $AgNO_3$
(d) Ammonical Cu_2Cl_2

41. Which compounds will not give Iodoform test on treatment with I_2/NaOH?
(a) Acetaldehyde (b) Acetone
(c) Butanone (d) 3 – Pentanone

42. The carbon atom of the carbonyl group is:
(a) sp hybridized (b) sp^2 hybridized
(c) sp^3 hybridized (d) None of these

43. Ketones are prepared by the oxidation of:
(a) Primary alcohols (b) Secondary alcohols
(c) Tetiary alcohols (d) None

44. Acetone reacts with HCN to form cyanohydrin. It is an example of:
(a) Electrophilic addition (b) Electrophilic substation
(c) Nucleophilic addition (d) Nucleophlic substitution

45. Catalyst used for the laboratory preparation of formaldehyde is:
(a) ZnO (b) Al_2O_3 (c) Platinized Asbestos (d) None

46. Hybridization of carbon in carbonyl group is: (FSD 2010, GRW 2011)
(a) sp^3 (b) sp^2 (c) dsp^2 (d) sp

47. Cannizzaro's reaction is not given by: (GRW 13, 14, LHR 12, 13, BWP 15)
(a) Formaldehyde (b) Acetaldehyde
(c) Benzaldehyde (d) Trimethyl acetaldehyde

48. Ketones are always reduced to: **(RWP 2008)**

(a) Primary alcohol (b) Secondary alcohol
(c) Tertiary alcohol (d) None of these

49. Aldol product on heating undergoes: **(RWP 2009)**

(a) Decomposition (b) Dehydration
(c) Rearrangement (d) None of these

50. Acidified oxidizing agent for the laboratory preparation of acetaldehyde is: (RWP 2010)

(a) $K_2Cr_2O_7+H_2O$ (b) $Na_2Cr_2O_7+H_2SO_4$
(c) $K_2Cr_2O_7+H_2S$ (d) $Na_2Cr_2O_7+NO_2$

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
a	d	c	b	c	d	c	d	a	c
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
a	a	b	c	c	a	a	b	d	a
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
b	b	d	d	b	a	b	d	b	c
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
a	c	c	d	d	c	b	b	c	c
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
d	b	b	c	c	b	b	b	b	b

CHAPTER 13

CARBOXYLIC ACIDS

1. Which acid of the following is not a fatty acid?
(a) Propanoic acid (b) Phthalic acid
(c) Butanoic acid (d) Acetic acid

2. Which reagent is used to reduce a carboxylic group to an alcohol?
(a) H_2/Ni (b) H_2/Pt
(c) H_2/Pd (d) $LiAlH_4$

3. Sodium acetate and Acetyl chloride react to give:
(a) Acetic acid (b) Acetone
(c) Acetic anhydride (d) None

4. Acetic acid and formic acid, both exist as cyclic dimer in vapour state because of:
(a) Hydrogen bonding (b) Polymerization
(c) Condensation (d) Distillation

5. Nature of Glycine amino acid is:
(a) Neutral (b) Acidic
(c) Basic (d) None

6. Acetic acid is obtained when
(a) CH_3OH is oxidized (b) Calcium acetate is distilled
(c) Ethanol is oxidized (d) Ammonium carbonate is heated

7. Which one of the following products is not formed when acetic acid reacts with PCl_5?
(a) CH_3COCl (b) HCl
(c) $POCl_3$ (d) CH_3Cl

8. Which of following derivative cannot be prepared directly from acetic acid?
(a) Acetamide (b) Acetyl chloride
(c) Acetic anhydride (d) Ethyl acetate

9. Acetamide is prepared by:
(a) Heating ammonium acetate (b) Heating methyl cyanide
(c) Hydrazine (d) Mixture of NH_4Cl and acetic acid

10. Which Ester is used for the flavor of Banana:
(a) Benzyl acetate (b) Amyl acetate
(c) Isobutyl formate (d) Ethyl butyrate

11. Freezing point of acetic acid is:
(a) -17°C (b) 17°C
(c) -118°C (d) Room temperature

12. Glacial acetic acid is miscible in all proportions with:
(a) Water (b) Ether
(c) Alcohol (d) All of these

13. The carbon atom of a carbonyl group is:
(a) Unhybridized (b) sp hybridized
(c) sp^2 hybridized (d) sp^3 hybridized

14. The boiling points of the Carboxylic acid are:
(a) High (b) Low
(c) Extremely low (d) Extremely high

15. Carboxylic acids on reaction with Lithium hydride are reduced to:
(a) Aldehyde (b) Alkene
(c) Alcohol (d) Ester

16. Which of following is commonly known as vinegar:
(a) Formic acid (b) Butanoic acid
(c) Formaldehyde (d) Acetic acid

17. When Ethyl alcohol is oxidized with $K_2Cr_2O_7$ and dilute H_2SO_4 , which of the following is produced:

(a) Formaldehyde (b) Acetic acid
(c) Butanoic acid (d) Formic acid

18. Zwitterion is also called:

(a) Dipolar ion (b) Internal Salt (c) both a and b
(d) Non polar ion

19. Amino acids can be synthesized by reaction of α-Bromo acid with:

(a) Ammonia (b) Urea (c) Ammonium Chloride
(d) Formaldehyde

20. Reaction of acids with alcohols is known as:

(a) Esterification (b) Saponification (c) Neutralization
(d) None

21. Toluene can be oxidized to Benzoic acid by:

(a) $KMnO_4$ (acidic medium) (b) $K_2Cr_2O_7$ (acidic medium)
(c) Both a and b (d) None

22. When two moles of acetic acid are heated with P_2O_5 the product formed is:

(a) 2 moles of ethyl alcohol (b) Two moles of Acetone
(c) Acetic anhydride (d) Ethyl acetate ester

23. Of the following four reactions, formic acid and acetic acid differ in which respect?

(a) Replacement of hydrogen by sodium (b) Formation of ester with alcohol
(c) Reduction of Fehling solution (d) Blue litmus reaction

24. Glacial Acetic acid at 17°C is:

(a) Colourless liquid (b) Ice like solid
(c) Waxy solid (d) A gas

25. Weakest acid among the followings is:

(a) Acetic acid (b) Phenol
(c) Water (d) Acetylene

26. Ethyl alcohol reacts with acetyl chloride to form:

(a) Ethyl chloride (b) Acetic acid
(c) Methyleacetate (d) Ethyl acetate

27. Which of the following is the strongest acid:

(a) CF_3COOH (b) CBr_3COOH
(c) CH_3COOH (d) CCl_3COOH

28. HCOOH reacts with conc. H_2SO_4 to produce:

(a) $CO+H_2O$ (b) CO_2+H_2
(c) HCHO (d) None

29. Hydrolysis of an ester gives a carboxylic acid which on Kolbe's electrolysis yields ethane, the ester is

(a) Ethyl methonoate (b) Methyl ethanoate
(c) Ethyl acetate ester (d) None

30. Carboxylic acids are more acidic than phenol and alcohol because of:

(a) Intermolecular hydrogen bonding
(b) Formation of Dimers
(c) Highly acidic hydrogen
(d) Resonance stabilization of their conjugate base (Carboxylate ion)

31. Organic compounds having fruity smell are:

(a) Carboxylic acids (b) Alcohols
(c) Ethers (d) Esters

32. The solution of the acid used for seasoning of food is:

(a) Formic acid (b) Acetic acid
(c) Benzoic acid (d) Butanoic acid

33. Which of the following is not a fatty acid?

(a) Propanoic acid (b) Acetic acid
(c) Phthalic acid (d) Butanoic acid

34. Acetic acid was first isolated from:
(a) Butter (b) vinegar (c) Milk (d) Red ant

35. Acetic acid was first isolated from:
(a) Butter (b) Vinegar (c) Milk (d) Red ant

36. The molecular mass of protein is:
(a) Less than 10,000 (b) Greater than 10,000
(c) Equal to 10,000 (d) Equal to 9,000

37. Amino acids are prepared by:
(a) Williamson's synthesis (b) Strecker's synthesis
(c) Wurtz's synthesis (d) Perkin's reaction

38. The molecular mass of protein is:
(a) Less than 10,000 (b) Greater than 10,000
(c) Equal to 10,000 (d) Equal to 9000

39. Molar mass of CH_3COOH obtained by elevation of boiling point method is: (LHR 2011)
(a) 30 (b) 60
(c) 120 (d) 180

40. Which compound is polyprotic acid?
(a) CH_3COOH (b) $C_6H_4(OH)COOH$
(c) $(COOH)_2$ (d) C_6H_5OH

41. Dipolar structure of zwitterions is also called:
(a) Double salt (b) Health salt
(c) Internal salt (d) External salt

42. The flavor of amyl acetate is:
(a) Orange (b) Apricot
(c) Pine apple (d) Banana

43. Acetic acid is manufactured by: (LHR 14, GRW 14,15, RWP 10)
(a) Distillation (b) Fermentation
(c) Ozonolysis (d) Esterification

44. The organic acid that does not have carboxyl group is:
(a) Formic acid (b) Picric acid
(c) Formaldehyde (d) Acetone

45. Tyrosine was first isolated from. (RWP 2008)
(a) Sugar (b) Cheese
(c) Butter (d) Milk

46. Phathalic acid is a: (RWP 2009)
(a) Monocarboxylic acid (b) Dicarboxylic acid
(c) Tricarboxylic acid (d) None of these

47. The reagent used to convert carboxylic acid directly to alkane is (RWP 2008)
(a) HI/P (b) $NaBH_4$
(c) $LiAlH_4$ (d) H_2/Ni

48. Which acid is used in the manufacture of synthetic fiber? (MTN 2015)
(a) Formic acid (b) Oxalic acid
(c) Carbonic acid (d) Acetic acid

49. The amino acids which cannot be synthesized by our body are: (MTN 2008)
(a) 5 (b) 10
(c) 15 (d) 20

50. Which one of the following is an unsaturated carboxylic acid? (MTN 2009)
(a) Malonic acid (b) Oxalic acid
(c) Succinic acid (d) Maleic acid

ANSWER KEY

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
b	d	c	a	a	c	d	a	a	b
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
b	d	c	a	c	d	b	c	a	a
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
c	c	c	b	c	d	a	a	c	d
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
d	b	c	b	b	b	b	b	b	c
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
c	d	b	b	b	b	a	d	b	d

CHAPTER 14

MACROMOLECULES

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1. Which of these polymers is a synthetic polymer:
(a) Aminal fat (b) Starch
(c) Cellulose (d) Polyester

2. Which one of the following enzymes brings about the hydrolysis of fats:
(a) Urease (b) Maltase
(c) Zymase (d) Lipase

3. To which class of compounds cholesterol belongs:
(a) Steroids (b) Phospholipids
(c) Vitamins (d) Triglycerides

4. Which of the following is an ester:
(a) Soap (b) Starch
(c) PVC (d) Triglyceride

5. Which one of the following is an inorganic polymer:
(a) Graphite (b) Rubber
(c) DNA (d) Protein

6. The linear sequence of amino acids in a protein is called:
(a) Primary Structure (b) Secondary Structure
(c) Tertiary Structure (d) Quaternary structure

7. In which of these processes are small organic molecules made into macromolecule:
(a) The cracking of petroleum fractions (b) The fractional distillation of crude oil
(c) Formation of Polyethene (d) The hydrolysis of proteins

8. Which of these polymers is synthetic:
(a) Animal fat (b) Starch
(c) Cellulose (d) Polyester

9. Which Carbohydrate can be used for silvering of mirror:
(a) Glucose (b) Fructose
(c) Maltose (d) all

10. Monosaccharide contains ____ carbon atoms:
(a) 3 to 6 (b) 3 to 7
(c) 6-7 (d) 7-10

11. Which of the following is not obtained by condensation polymerization:
(a) Polyester (b) Nylon
(c) Polystyrene (d) None

12. Which of the following is a Polyamide:
(a) Polyester (b) Orlon
(c) Polystyrene (d) Nylon

13. Orlon is polymer of:
(a) T.F.E (b) Acrylonitrile
(c) Ethanoic acid (d) Benzene

14. The raw material used to from Nylon is ____
(a) Adipic acid (b) Butadiene
(c) Isoprene (d) Ethylene

15. The example of Copolymer:
(a) Polyester (b) Polystyrene
(c) Polyethene (d) None

16. Poly vinyl acetate is used as:
(a) Explosive material (b) Adhesive material
(c) Rubber (d) Filler

17. Polyamide resins are formed by condensation of poly amines with aliphatic:
(a) Carboxylic acid (b) Alcohol
(c) Aldehydes (d) Dicarboxylic acid

18. The Epoxy resin is made by condensation of Epichlorohydrin with:
(a) Diphenylol propane (b) Phenyl propane
(c) Phenyl acetate (d) Dicarboxylic acid

19. The table sugar is:
(a) Glucose (b) Sucrose
(c) Maltose (d) Lactose

20. Raffinose is an example of :
(a) Mono saccharide (b) Disaccharide
(c) Trisaccharide (d) None

21. The example of compound protein is:
(a) Phosphoprotein (b) Peptones
(c) Albumin (d) Globulins

22. The optimum PH of salivary amylase is from 6.4 to:
(a) 6.8 (b) 6.9
(c) 7.0 (d) None

23. The reagent which forms crystalline glucosazone derivative when treated with glucose is:
(a) Fehling solution (b) Phenyl hydrazine
(c) Benedict solution (d) Hydroxyl amine

24. Ascorbic acid is a chemical name of:
(a) Vitamin D (b) Vitamin A
(c) Vitamin C (d) Vitamin B_6

25. The main structural feature of proteins is:
(a) An ester linkage (b) An ether linkage
(c) The peptide linkage (d) All

26. The fiber which is made from acrylonitrile as monomer is: (LHR-09)
(a) PVC (b) Rayon fiber
(c) Acrylic resins (d) Polyester fiber

27. The disaccharide present in milk is:
(a) Sucrose (b) Maltose
(c) Lactose (d) Cellobiose

28. On hydrolysis of starch, we finally get:
(a) Glucose (b) Fructose
(c) Both a and b (d) Sucrose

29. Enzymes in the living systems:
(a) Provide energy (b) Provide immunity
(c) Transport oxygen (d) Catalyze biochemical processes

30. Bakelite is obtained from phenol by reacting with:
(a) Acetaldehyde (b) Acetal
(c) Formaldehyde (d) Chlorobenzene

31. Enzyme used for the treatment of blood cancer in children is: (GRW-10)
(a) Cellulose (b) Urease
(c) L-asparaginase (d) lactic dehydrogenase

32. Which of the following is not present in nucleotide:
(a) Guanine (b) Cytosine
(c) Adenine (d) Tyrosine

33. Which of the following has magnesium in its structure:
(a) Carbonic anhydrase (b) Haemocyanin
(c) Chlorophyll (d) Vitamin B_{12}

34. The number of amino acids found in proteins that a human body can synthesize is
(a) 20 (b) 10
(c) 5 (d) 14

35. Which of the following is an example of Ketohexose:
(a) Glucose (b) Raffinose
(c) Maltose (d) Fructose

36. The group linkage present in Carbohydrates:
(a) Peptide linkage (b) Ester linkage
(c) Glycosidic linkage (d) Diester linkage

37. Teflon, styrene and Neoprene are all:
(a) Copolymers (b) Condensation polymers
(c) Homopolymers (d) Monomers

38. Which of the following is fully fluorinated polymer?
(a) Neoprene (b) Teflon
(c) Thiokol (d) PVC

39. The degree of unsaturation of a fat or an oil is checked by its:
(a) Hydrogenation number (b) Iodine number
(c) Saponification number (d) Octane number

40. Starch is a polymer of:
(a) Fructose (b) α-D-Glucose
(c) Sucrose (d) Lactose

41. Which one of the following enzymes brings about the hydrolysis of fats?
(a) Urease (b) Maltase
(c) Zymase (d) Lipase

42. Which of these polymers is an addition polymer?
(a) Nylon-6,6 (b) Polystyrene
(c) Terylene (d) Epoxy resin

43. Epoxy resins are fundamentally:
(a) Polyamide (b) Polyethers
(c) Polyesters (d) Polyvinyl

44. Which one of the following acid is used to prepare synthetic fiber?
(a) Carbonic acid (b) Formic acid
(c) Acetic acid (d) Butyric acid

45. Which statement about glucose and sucrose is incorrect?
(a) Both are soluble in water (b) Both occur naturally
(c) Both are carbohydrates (d) Both are disaccharides

46. The fiber which is made from acrylonitrile as monomer is:
(a) PVC (b) Rayon fiber (c) Acrylic Fiber (d) polyester fiber

47. Which of these polymers is an addition polymer?
(a) Polystyrene (b) Nylon-6,6 (c) Polyester (d) Epoxy resin

48. Enzyme used for the treatment of blood cancer in children is:
(a) Cellulose (b) Urease
(c) L-Asparginase (d) Lactic dehydrogenase

49. Nylon-6,6 is obtained by heating hexa methylene diamine with: (FSD 2010)
(a) Adipic acid (b) Acetic acid
(c) Vinyl chloride (d) Acrylic acid

50. Polymerization of acrylonitrile give: (FSD 2011)
(a) PVC (b) Rayon Fiber
(c) Acrylic fiber (d) Polyester fiber

ANSWER KEY

1	2	3	4	5	6	7	8	9	10
d	d	a	d	a	a	c	d	a	b
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
c	d	b	a	a	b	d	a	b	c
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
a	b	b	c	c	c	c	a	d	c
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
c	d	c	b	d	c	c	b	b	b
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
d	b	b	c	d	c	a	c	a	c

CHAPTER 15

COMMON CHEMICAL INDUSTRIES IN PAKISTAN

1. The percentage of nitrogen in NH_3 is:
(a) 46% (b) 60%
(c) 82% (d) 100%

2. Potassium fertilizers are useful for:
(a) Tobacco (b) Coffee
(c) Potato (d) all of these

3. Which one of the following raw materials is not used in the cement manufacture:
(a) Lime stone (b) Gypsum
(c) Blast furnace slag (d) Lead

4. White water is:
(a) Hard water
(b) Water obtained from a crystal by heating
(c) Water which is obtained from pulp, through screen at Fourdrinier table
(d) Water which is removed from amino acids when they from peptide bond

5. The % of Nitrogen in Ammonium Nitrate is: (GRW 2009)
(a) 46% (b) 82%
(c) 33% (d) 16%

6. Which is not a calcareous material? (SGD 14, MTN 11,13, LHR 14,15)
(a) lime (b) clay
(c) marble (d) marine shell

7. The nitrogenous fertilizer easily taken up by plants is: (LHR 2011)
(a) Urea (b) Ammonium nitrate
(c) Liquid ammonia (d) Ammonia solution

8. Ammonium nitrate fertilizer is not used for which crops? (LHR 2010)
(a) Cotton (b) Wheat
(c) Sugarcane (d) Paddy rice

9. Point out raw material which is most suitable for manufacturing of urea:
(a) CO_2, N_2, H_2 (b) N_2, H_2, CO
(c) CH_4, N_2, H_2 (d) H_2, N_2

10. Which one of the following fertilizers has maximum manufacturing plants in Pakistan:
(a) Urea (b) Ammonia
(c) Ammonium phosphate (d) Ammonium nitrate

11. Phosphorous helps the growth of in early stage: **(LHR 14, MTN, FSD, SWL 15)**
(a) Root (b) Leave
(c) Stem (d) Seed

12. Which of the following nitrogen fertilizer contains more nitrogen:
(a) $NaNO_3$ (b) KNO_3
(c) NH_4NO_3 (d) Urea

13. Urea contains about
(a) 48% Nitrogen (b) 46% Nitrogen
(c) 44% Nitrogen (d) 42% Nitrogen

14. Potassium nitrate is prepared by direct reaction between potassium chloride and
(a) Nitric acid (b) Nitrosyl chloride
(c) Sodium nitrate (d) Nitrate ions

15. The total production of urea fertilizer in Pakistan is:
(a) 56,20,10 metric tons /annum (b) 56,25,100 metric tons/ annum
(c) 56, 23,100 metric tons/annum (d) 56, 30,100 metric tons /annum

16. For Chemical pulping, the principal methods used are:
(a) Five (b) Four
(c) Three (d) Two

17. During setting of cement, Tricalcium silicate and tri-calcium aluminate are get hydrolyzed to produce calcium hydroxide and
(a) $Ca(OH)_2.2H_2O$ (b) $CaCO_3.2H_2O$
(c) $Al(OH)_3$ (d) $CaCO_2$

18. For manufacture of Portland cement main materials are:
(a) Lime and Silica (b) Alumina and Magnesia
(c) Silica and FeO (d) Clay and Shale

19. In cement manufacture, 75% Lime stone is used to get:
(a) 62% Lime (b) 60% Lime
(c) 75% Lime (d) None

20. The natural fertilizer is called:
(a) Manure (b) Urea
(c) Super phosphate (d) Ammonium sulphate

21. Which of the following elements is not a micro nutrient? (RWP 2009)
(a) Cu (b) Fe (c) Mg (d) Mo

22. Macronutrients are required for an acre of land in quantity ranging from: (SGD 14, RWP 10)
(a) 2-200Kg (b) 3-200Kg
(c) 4-200Kg (d) 5-200Kg

23. Calendar stock is the stage of paper making where?
(a) Paper is stored (b) Thickness is reduced
(c) water is removed (d) Stock is reduced to 1%

24. Which non-woody raw material is used for making pulp and paper?
(a) Fur (b) Rice/wheat straw (c) Eucalyptus (d) Poplar

25. The hottest zone in rotary kiln is: (MTN 2008)
(a) Drying (b) Pre-heating
(c) Burning (d) Decomposition

26. Which sequence of steps is correct for the manufacture of cement?
(a) Mixing, heating, grinding, crushing
(b) Crushing, heating, mixing, grinding
(c) Crushing, heating, mixing, grinding
(d) Crushing, grinding, mixing, heating

27. It is not used in paper and pulp industry: (MTN 2009)
(a) Bamboo (b) Cotton stalk (c) Poplar (d) He gas

28. A manure is: (MTN 2009)
(a) An organic compound (b) An inorganic compound
(c) A mixture of organic and inorganic compounds (d) A mixture of inorganic compounds

29. The fertilizer that contains largest amount of nitrogen nutrient is:
(a) Liquid nitrogen (b) Urea
(c) Liquid ammonia (d) Ammonium nitrate

30. Argillaceous material in the following is: (MTN 2011)
(a) Lime (b) Clay
(c) Marble (d) Marine shell

31. Which substance in cement has greater percentage? (BWP 2008)
(a) Silica (SiO_2) (b) Lime (CaO)
(c) Iron Oxide (Fe_2O_3) (d) Alumina (Al_2O_3)

32. Which one is an organic fertilizer: **(BWP 2009)**

(a) Manure (b) Ammonium nitrate
(c) Urea (d) both a & c

33. Which one is a micronutrient? **(BWP 2010)**

(a) Boron (b) Nitrogen
(c) Phosphorous (d) Potassium

34. The fertilizer which contains 46% nitrogen is: **(DGK 2009)**

(a) Urea (b) Ammonia
(c) Ammonium nitrate (d) none of these

35. Argillaceous material used for the manufacture of cement provides

(a) Basic components (b) Amphoteric compounds
(c) Acidic components (d) both acidic and basic component

36. Diammonium Phosphate contains: **(BWP 2012)**

(a) 18% Nitrogen (b) 48% P_2O_5
(c) 88% plant nutrients (d) 10% Nitrogen

37. The % of lime (CaO) in Portland cement is: **(SGD 2012)**

(a) 1.0 (b) 2.5
(c) 62.0 (d) 60.0

38. The % of gypsum in Portland cement is: **(LHR 2012)**

(a) 4-5% (b) 9-4%
(c) 2-3% (d) 1-2%

ANSWER KEY

1	2	3	4	5	6	7	8	9	10
c	d	d	c	c	b	c	d	a	a
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
a	d	b	c	d	c	c	a	a	a
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
c	d	b	b	c	d	d	a	c	b
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**		
b	d	a	a	c	b	c	a		

CHAPTER 16

ENVIRONMENTAL CHEMISTRY

1. Disinfection of water by chlorine is done by the production of: (LHR 2005)

(a) NH_2Cl (b) NCl_3
(c) HOCl (d) $NHCl_2$

2. Following is better to disinfect water: (LHR 2011)

(a) Cl_2 (b) O_2
(c) O_3 (d) $KMnO_4$

3. In which layer of the atmosphere is Ozone present:

(a) Thermosphere (b) mesosphere
(c) Stratosphere (d) Troposphere

4. Which one of the following is not a pollutant:

(a) CO_2 (b) NO_2
(c) CO (d) SO_2

5. The smog which has high contents of SO_2 in it, is called:

(a) Reducing smog (b) Oxidizing smog
(c) Natural smog (d) Neutral smog

6. Which one of the following diseases is not eradicated by the pesticides:

(a) Sleeping sickness (b) Rickets
(c) Malaria (d) Yellow fever

7. C.O.D of water can be determined directly:

(a) $Cr_2O_3^{-2}$ (b) CrO_4^{-}
(c) Cr^{+3} (d) $Cr_2O_7^{-2}$

8. Cracking of Polyethene at high temperature gives:

(a) Allotropes (b) Isomorphs
(c) Polymers (d) Monomers

9. The residual ash after incineration of industrial waste is disposed off in a landfill, which is lined with: (LHR 2011)

(a) Portland cement (b) Clay and plastic
(c) Stone-ware (d) Methyl silicone

10. The temperature in the non-rotating chamber in the incineration of industrial hazardous waste process has a range: (DGK 09, GRW 08)

(a) 950 to 1300℃ (b) 900 to 1000℃
(c) 250 to 500℃ (d) 500 to 900℃

11. The thickness of atmosphere is: (BWP 2015)

(a) 1500 Km (b) 1000 Km
(c) 500 Km (d) 100 Km

12. The fresh water being used for domestic purpose is: (FSD-10, BWP-09)

(a) 8% (b) 23%
(c) 69% (d) 100%

13. The normal amount of overhead ozone is: (FSD-10, MTN-08,10, DGK-08)

(a) 300 Du (b) 350 Du
(c) 400 Du (d) 450 Du

14. The normal amount of overhead Ozone is about:

(a) 250 D.U (b) 300 D.U
(c) 350 D.U (d) 400 D.U

15. The mean residence time of methane in the atmosphere:

(a) 3-6 years (b) 3-5 years
(c) 3-7 years (d) 3-8 years

16. Photochemical smog consists of high concentration of:

(a) Oxidants (b) Reductants
(c) Acids (d) Bases

17. The boiling point of Ozone is very:
(a) High (b) Low
(c) 10 °C (d) -10 °C

18. In clean water, molecular oxygen ranges from:
(a) 4-7 ppm (b) 4-9 ppm
(c) 4-8 ppm (d) 4-10 ppm

19. The recycling of plastic involves:
(a) Re-processing (b) Depolymerization
(c) Transformation (d) All

20. Which of following is three times lighter than air:
(a) Carbon monoxide (b) Carbon dioxide
(c) Both a and b (d) None

21. Atmosphere of big/metropolitan cities is polluted most by:
(a) Automobile exhausts (b) Pesticide residue
(c) Household waste (d) Radio-active fall out

22. Chief air pollutant which is likely to deplete Ozone layer:
(a) Sulphur dioxide (b) Carbon monoxide
(c) Carbon dioxide (d) NO_x + CFC's

23. Pollutant of automobile exhausts that affects nervous system and produces mental disease is:
(a) Mercury (b) Lead
(c) Nitrogen oxide (d) Sulphur oxide

24. SO_2 and NO_2 produce air pollution in the form of:
(a) Smog (b) Acidic Rain
(c) Both a and b (d) None

25. Carbon monoxide is a pollutant as it:
(a) Inactivates nerves (b) Inhibits glycolysis
(c) Combines with oxygen (d) Combines with hemoglobin

26. Acid rains are produced by:
(a) Excess NO_2 and SO_2 from burning fossil fuels
(b) Excess production of NH_3 by industry and coal gas
(c) Excess release of carbon monoxide by incomplete combustion
(d) Excess formation of CO_2 by combustion and animal respiration

27. Atmospheric pollutant is:
(a) CO_2 (b) CO
(c) O_2 (d) N_2

28. Increased asthmatic attacks in certain seasons are related to :
(a) Inhalation of seasonal pollen (b) Eating of seasonal vegetables
(c) Low temperature (d) Wet and dry environment

29. Ozone depletion in stratosphere results in:
(a) Forest fires (b) Increased incidence of skin cancer
(c) Global warming (d) None

30. Pollution is:
(a) Removal of top soil
(b) Release of toxic/undesirable materials in environment
(c) Wastage of energy
(d) All of above

31. Which causes water pollution:
(a) Smoke (b) Automobile exhausts
(c) Pesticides (d) All

32. BOD is connected with:
(a) Organic matter (b) Microbes
(c) Microbes and organic matter (d) None

33. UV radiations bring about:
(a) Skin cancer (b) Mouth cancer
(c) Lung cancer (d) Liver cancer

34. BOD is:
(a) Biological oxygen deficit (b) Biosphere oxygen demand
(c) Biological oxygen demand (d) None of the above

35. Water pollution is mainly due to
(a) Sulphur dioxide (b) Carbon dioxide
(c) Carbon particles (d) Industrial discharges

36. Chlorofluorocarbon releases _____ harmful to ozone:
(a) Free radicals (b) -Ve ions
(c) +Ve ions (d) All

37. Increasing skin cancer and high mutation rate are due to:
(a) Acid rain (b) Ozone depletion
(c) CO (d) Smog

38. Ozone hole is largest over:
(a) Europe (b) Antarctica
(c) Asia (d) Africa

39. Ozone hole refers to:
(a) Physical hole in ozone layers
(b) Reduction in thickness of ozone layer in stratosphere
(c) Reduction of thickness of ozone in troposphere
(d) Increase concentration of ozone

40. Environmental pollution affects:
(a) Biotic components
(b) Plants only
(c) Man only
(d) Biotic and abiotic components of environment

41. Water is often treated with chlorine to:
(a) Increase oxygen content (b) Kill germs
(c) Remove hardness (d) Remove suspended particles

42. Result of ozone hole is
(a) Greenhouse effect (b) Global warming
(c) Acid rain (d) UV rays reach the earth

43. Co-ordination number of Fe in $[Fe(CN)_6]^{4-}$:
(a) 4 (b) 2
(c) 6 (d) –4

44. Disinfection of water by chlorine is done by the production of:
(a) NH_2Cl (b) NCl_3 (c) HOCl (d) $NHCl_2$

45. The residence time of NO in atmosphere is: **(SGD 2010)**
(a) 30 minutes (b) one day (c) Three days (d) Four days

46. In purification of potable water the coagulant used is: **(BWP 11, LHR 13)**
(a) Nickle sulphate (b) Copper sulphate
(c) Barrium sulphate (d) Alum

47. Atmosphere contains carbon dioxide:
(a) 0.01% (b) 0.02% (c) 0.03% (d) None

48. Biochemical oxygen demand is the capacity of organic matter in natural water to consume oxygen with in a period of: **(RWP 2008)**
(a) 3 days (b) 4 days (c) 5 days (d) 6 days

49. Half of the mass of the atmosphere is concentrated in lower: **(RWP 2009)**
(a) 4.6 Km (b) 5.6 Km (c) 3.6 Km (d) 15 Km

50. Lithosphere extends in Earth up to the depth of: **(RWP 2009)**
(a) 50 Km (b) 100 Km (c) 150 Km (d) 30 Km

51. Chlorofluorocarbons play an effective role in removing O_3 in the:
(a) Troposphere (b) Stratosphere (c) Polar region (d) Equator

52. Lithosphere is mainly made up of 11 elements, the element found in highest percentage is: (RWP 11, BWP 10)
(a) Sodium (b) Calcium (c) Carbon (d) Silicone

53. Which one of the following is not the affect of acid rain? (MTN 2008)
(a) It increases the percentage of CO_2 in the atmosphere
(b) It leaches metal like aluminum, mercury and lead from soil
(c) It damages the buildings
(d) It decreases the pH of natural

54. How much Earth's water is present in Oceans: (MTN 2008)
(a) 97% (b) 87% (c) 77% (d) 67%

55. Detergent greatly affects: (MTN 2009)
(a) Aquatic life (b) modern life
(c) Terrestrial life (d) plant's life

56. The Ozone layer is:
(a) 25-28 Km high (b) 26-29 Km high
(c) 24-27 Km high (d) 20-28 Km high

57. The region of earth capable of supporting life is called: (BWP 2008)
(a) Atmosphere (b) Biosphere
(c) Lithosphere (d) Hydrosphere

58. The decrease in ozone concentration in overhead atmosphere is occurring due to human activity. Half of the ozone over Antarctica has been depleted up to the year:
(a) 1960 (b) 1970
(c) 1980 (d) 1990

59. Component of environment which consists of all water bodies is: (DGK 2010)
(a) Biosphere (b) Hydrosphere
(c) Lithosphere (d) Atmosphere

60. Newspaper can be recycled again and again for how many times? (LHR 12,15)
(a) 2 (b) 3 (c) 4 (d) 5

61. Which one is secondary pollutant?
(a) SO_2 (b) H_2CO_3 (c) CO (d) CO_2

62. Which one is most toxic? (LHR 2015)
(a) SO_2 (b) NO_2 (c) CO (d) CO_2

63. The pH of unpolluted rain water should be: (LHR 2014)
(a) 5.00 (b) 5.60 (c) 6.50 (d) 7.00

ANSWER KEY

1	2	3	4	5	6	7	8	9	10
c	c	c	a	a	b	d	d	b	a
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
b	a	b	c	c	a	b	c	d	a
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
a	d	b	c	d	a	b	a	b	b
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
c	c	a	c	d	a	b	b	b	d
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
b	d	c	c	d	d	c	c	b	b
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**
c	d	a	a	a	a	b	c	b	d
61	**62**	**63**							
b	c	b							