LESSON – 1
ATOMIC STRUCTURE-II
BOOK BACK ONE MARKS

01. En = - $\frac{313.6}{n^2}$, if the value of En = - 34.84 to which value 'n' corresponds

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

02. Dual character of an electron was explained by

a) Bohr b) Heisenberg c)de – Broglie d) Pauli

03. De –Broglie equation is

a) $\lambda = mv / h$ b) $\lambda = hmv$ c) $\lambda = hv / m$ d) $\lambda = h / mv$

04. The value of the Bohr radius for hydrogen atom is

a) 0.529×10^{-8} cm b) 0.529×10^{-10} cm

c) 0.529×10^{-9} cm d) 0.529×10^{-12} cm

05. Which of the following particles having same kinetic energy, would have the maximum de- Brogile wave length

a) α – particle b) proton c)β – particle d) neutron

06. If the energy of electron in the second Bohr orbit of H-atom is –E,
What is the energy of electron in the Bohr's first orbit?

a) 2E b) – 4E c) – 2E d) 4E

07. The energy of an electron in an atom is given by En =

a) $-4\pi^2me^4 / n^2h^2$ b) $-2\pi^2me^2 / n^2h^2$

c) $-2\pi^2me^4 / n^2h^2$ d) $-2\pi me^4 / n^2h^2$

08. The bond order of oxygen molecule is

a) 2.5 b) 1 c)3 d) 2

09. The hybridisation in SF_6 molecule is

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

10. The intramolecular hydrogen bonding is present in

a) o-nitrophenol c) p-nitrophenol

b) m-nitrophenol d) none

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11. The type of hybridisation in NH_4^+ ion is

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

12. Molecular orbital with less energy is

a) σ1s b) σ*1s c) π2py d) π*2py

13. Among N_2, Li_2 and H_2 the relatively more stable molecule interms of bond order is

a) Li_2 b) H_2 c) N_2 d) He_2

14. The wave nature of electron can be verified by
a) J.J.Thomson experiment c) G.P.Thomson's experiment
b) Milliken's oil drop experiment d) Black body radiation

15. The circumference of the circular orbit of the electron should be an integral multiple of
a) Planck's constant c) de-broglie wavelength
b) Frequency of light of radiation d) Momentum of the electron

16. A dumb bell shaped orbital is
a) p-orbital b) d_{xy} orbital c) d_{yz} orbital d) s-orbital

17. The type of hybridisation in CO_3^{2-} is
a) sp b) sp^2 c) sp^3 d) sp^3d^2

18. The type of hybridisation in ICl_4^- is
a) sp^3 b) sp^3d c) sp^3d^2 d) sp^3d^3

19. In a set of degenerate orbitals the electrons distribute themselves to retain similar spins as far as possible. This is the statement of
a) Pauli's exclusion principle c) Hund's rule
b) Aufbau principle d) Slater's rule

20. The momentum of particle which has de-Broglie wavelength of $1A^o$ ($h = 6.626 \times 10^{-34}$ kg m^2 s^{-1}) is
a) 6.6×10^{-23} kg ms^{-1} c) 6.6×10^{-34} kg ms^{-1}
b) 6.6×10^{-24} kg ms^{-1} d) 6.6×10^{34} kg ms^{-1}

21. The bond order of nitrogen molecule is
a) 1 b) 2 c) 3 d) 4

22. The nature of hybridisation in IF_7 molecule is
a) sp^3d^2 b) sp^3d^4 c) sp^3d^3 d) sp^2d^4

23. Inter-molecular hydrogen bonding is present in
a) HF b) H_2O c) ethanol d) all of these

24. The hybridisation involved in XeF_6 is
a) sp^3d^3 b) sp^3d^2 c) sp^3d d) sp^3

25. Energy levels of molecular orbitals have been determined experimentally by
a) Spectroscopic studies c) Crystallographic studies
b) X-ray diffraction d) none of these

26. In a molecule eight electrons are present in bonding molecular orbital and four electron in anti-bonding molecular orbital. Its Bond order is
a) 3 b) 4 c) 2.5 d) 2

27. Water exists in liquid state . This is due to

a) High boiling point c) Freezing point is zero

b) Low boiling point d) Hydrogen bond

28. The hybridisation in SO_4^{2-} ion is

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

29. Number of spherical nodes in 2s orbital is

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

30. Inter-molecular hydrogen bonding is present in

a) o-nitro phenol c) o-hydroxy benzaldehyde

b) salicylic acid d) hydrogen fluoride

31. The type of hybridisation of PCl_5 molecule is

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

32. In a molecule when Nb = 8 and Na = 2, Then the bond order is

a) 3 b) 4 c) 2.5 d) 2

1	2	3	4	5	6	7	8	9	10
b	c	d	a	C	b	c	d	b	a
11	12	13	14	15	16	17	18	19	20
c	a	c	c	C	a	b	c	c	b
21	22	23	24	25	26	27	28	29	30
c	c	d	a	A	d	d	a	a	D
31	32								
b	a								

LESSON – 2
PERIODIC CLASSIFICATION - II
BOOK BACK ONE MARKS

01. The value of C-C distance found experimentally in a saturated hydrocarbon is

a) 1.34 A^o b) 1.36 A^o c) 1.54 A^o d) 1.56 A^o

02. On moving down the group, the radius of an ion

a) Decreases b) Increases c) No change d) None

03. Effective nuclear charge (Z*) can be calculated by using the formula

a) Z* = Z – S b) Z* = Z + S c) Z* = S – Z d) Z = Z*– S

04. Pick out the correct statement

a) Carbon is having more nuclear charge than boron

b) The size of carbon atom is larger than boron

c) Carbon forms electron deficient compounds

d) Carbon forms ionic compounds

05. Among the following which has higher electron affinity value ?

a) Fluorine b) Chlorine c) Bromine d) Iodine

06. Comparing the ionization energy of fluorine with carbon, Fluorine has

a) Higher ionization energy
b) Lower ionization energy
c) Same ionization energy
d) None of these

07. Which among the following has the maximum ionization energy ?

a) Alkali metals
b) Alkaline earth metals
c) Halogens
d) Noble gases

08. The electron affinity of an atom is

a) Directly proportional to its size
b) Inversely proportional to its size
c) Independent of its size
d) none of these

09. The scale which is based on an empirical relation between the energy of a bond and the electronegativity of bonded atom is

a) Pauling scale
b) Mulliken's scale
c) Sanderson's scale
d) Alfred and Rochow's scale

10. Electron affinity is expressed in

a) kJ b) J c) kJ mol d) kJ mol^{-1}

11. The bond length of Cl_2 molecule is

a) 0.74 A^o b) 1.44 A^o c) 1.98 A^o d) 2.28 A^o

12. The order of ionization energy is

a) s < p < d < f b) s > p > d > f c) s > d > p > f d) s < d < p < f

13. Across a period, electron affinity

a) Decreases
b) Increases
c) Decreases and then increases
d) Increases and then decreases

14. Noble gases have _____ electron affinity

a) high b) Low c) zero d) very high

15. When $X_A >> X_B$, A-B bond is

a) polar covalent
b) non-polar covalent
c) ionic
d) Metallic

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16. The metal having maximum electron affinity is

a) sodium b) calcium c) gold d) silver

1	2	3	4	5	6	7	8	9	10

c	b	a	a	B	a	d	b	a	d
11	12	13	14	15	16				
c	b	b	c	C	C				

LESSON – 3
p-BLOCK ELEMENTS
BOOK BACK ONE MARKS

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

02. Which of the following is most abundant in earth's crust?
a) C b) Si c) Ge d) Sn

03. An element which was burnt in limited supply of air to give oxide A which on treatment with water gives an acid B. Acid B on heating gives acid C which gives yellow precipitate with $AgNO_3$ solution A is
a) SO_2 b) NO_2 c) P_2O_3 d) SO_3

04. The compound with garlic odour is
a) P_2O_3 b) P_2O_5 c) H_3PO_3 d) H_3PO_4

05. The shape of PCl_5 is
a) pyramidal b) trigonal bipyramidal
c) linear d) tetrahedral

06. The compound used as smoke screen is
a) PCl_3 b) PCl_5 c) PH_3 d) H_3PO_3

07. Which shows only – 1 oxidation state?
a) fluorine b) bromine c) chlorine d) iodine

08. One can draw the map of building on a glass plate by
a) HI b) HF c) HBr d) HCl

09. Among the halogen acid, the weakest acid is
a) HF b) HCl c) HBr d) HI

10. Halogens belong to the group number
a) 14 b) 15 c) 17 d) 18

11. The noble gases are unreactive because they
a) have same number of electrons
b) have an atomicity of one
c) are gases with low densities
d) have stable electronic configuration

12. The shape of XeF_4 is without lonepair is

a) tetrahedral b) octahedral
c) square planar d) pyramidal

13. Which is not known?
a) XeF_6 b) XeF_4
c) XeO_3 d) ArF_6

14. The lightest gas which is non-inflammable is
a) He b) H_2 c) N_2 d) Kr

15. Which of the following has highest first ionisation energy?
a) He b) Ne c) Ar d) Kr

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16. Electronic configuration of 14th group element (Carbon Family) is
a) ns^2np^2 b) ns^1np^1 c) ns^1np^2d d) ns^2np^1

17. The metalloid among the following
a) Pb b) P c) Ge d) Sn

18. The toxic element of Boron Family is
a) Boron b) Indium c) Thallium d) Gallium

19. Which of the following does not belong to group 14?
a) C b) Si c) Ga d) Pb

20. Which of the following has the property of etching on glass ?
a) HI b) HF c) HBr d) HCl

21. The compound used to arrest bleeding is
a) K_2SO_4 b) Potash alum c) $Al_2(SO_4)_3$ d) KI

22. Which of the following shows negative oxidation state only?
a) Br b) F c) Cl d) I

23. An element which belongs to Group 14 is soft in nature, does not react with pure water, dissolves in water containing dissolved air. Then the element is
a) C b) Ge c) Pb d) Ti

24. Inert gas used in beacon lights for safety of air navigation is
a) Helium b) Argon c) Neon d) Xenon

25. Which of the following is the second most abundant element in earth's crust?
a) Carbon b) Silicon c) Germanium d) Tin

26. The hybridisation in PCl_5 molecule is
a) sp^3 b) sp^3d^2 c) sp^3d d) sp^2

27. The compound with garlic taste is
a) H_3PO_4 b) H_3PO_3 c) P_2O_3 d) P_2O_5

1	2	3	4	5	6	7	8	9	10
c	b	c	a	b	c	a	b	a	c
11	12	13	14	15	16	17	18	19	20
d	c	d	a	a	a	c	c	c	b
21	22	23	24	25	26	27			
b	b	c	c	b	c	B			

LESSON – 4
d-BLOCK ELEMENTS
BOOK BACK ONE MARKS

01. The general electronic configuration of d-block elements is
a) $(n-1)\ d^{1-10}\ ns^{0-2}$ b) $(n-1)\ d^{1-5}\ ns^{2}$
c) $(n-1)\ d^{0}\ ns^{1}$ d) $(n-1)\ d^{1-10}\ ns^{1-2}$

02. Formation of coloured ions is possible when compounds contain
a) paired electrons b) unpaired electrons
c) lone pairs of electrons d) none of the above

03. Paramagnetism is common in
a) p-block elements b) d-block elements
c) s-block elements d) f-block elements

04. The colour of $[Ti(H_2O)_6]^{3+}$ ion is due
a) d-d transition b) presence of water molecules
c) inter atomic transfer of electrons d) None of the above

05. The outermost electronic configuration of chromium is
a) $3d^6\ 4s^0$ b) $3d^5\ 4s^1$ c) $3d^4\ 4s^2$ d) $3d^3\ 4s^2\ 4p^1$

06. Paramagnetism is the property of
a) paired electrons b) completely filled electronic subshells
c) unpaired electrons d) completely vacant electronic subshells

07. d-block elements from coloured ions because
a) They absorb some energy for d-s transition
b) They absorb some energy for p-d transition
c) They absorb some energy for d-d transition
d) They do not absorb any energy

08. The correct outer most electronic configuration of copper atom is
a) $3d^{10}\ 4s^1$ b) $3d^{10}\ 4s^2$ c) $3d^9\ 4s^2$ d) $3d^5\ 4s^2\ 4p^4$

09. Copper is extracted from
a) cuprite b) copper glance
c) malachite d) copper pyrites

10. Silver salt used in photography is

a) AgCl b) $AgNO_3$ c) AgF d) AgBr

11. Sodium thiosulphate is used in photography because of its

a) oxidizing behavior b) reducing behavior

c) complexing behavior d) photo chemical behavior

12. Excess of sodium hydroxide reacts with zinc to form

a) ZnH_2 b) Na_2ZnO_2 c) ZnO d) $Zn(OH)_2$

13. Which of the following compounds will not give positive chromyl chloride test?

a) $CuCl_2$ b) $HgCl_2$ c) $ZnCl_2$ d) C_6H_5Cl

14. Which of the ions will give colourless aqueous solution

a) Ni^{2+} b) Fe^{2+} c) Cu^{2+} d) Cu^{+}

15. Which of the following compounds is not coloured?

a) $Na_2[CuCl_4]$ b) $Na_2[CdCl_4]$ c) $K_4[Fe(CN)_6]$ d) $K_3[Fe(CN)_6]$

16. In the extraction of Cu, the reaction which does not take place in the Bessemer converter is

a) $2\ Cu\ FeS_2 + O_2 \longrightarrow Cu_2S + FeS + SO_2$

b) $2\ Cu_2S + 3\ O_2 \longrightarrow 2\ Cu_2O + 2\ SO_2$

c) $2\ Cu_2O + Cu_2S \longrightarrow 6\ Cu + SO_2$

d) $2\ FeS + 3\ O_2 \longrightarrow 2\ FeO + 2\ SO_2$

17. Select the correct statement

a) all cuprous salts are blue in colour

b) transition metals are highly reactive

c) all cuprous salts are white in colour

d) mercury is a liquid metal

18. Choose the wrong statement regarding $K_2Cr_2O_7$

a) it is a powerful oxidizing agent

b) it is used in tanning industry

c) it is soluble in water

d) it reduces ferric sulphate to ferrous sulphate

19. For a transition metal ion, the effective magnetic moment in BM is Given by the formula

a) $\sqrt{n(n-1)}$ b) $\sqrt{n(n+1)}$

c) $\sqrt{n(n+2)}$ d) $\sqrt{n(n+1)(n+2)}$

20. The correct statement in respect of d-block elements is

a) They are all metals

b) They show variable valency

c) They form coloured ions and complex salts

d) All above statements are correct

21. Which compound is formed when excess of KCN is added to an aqueous solution of copper sulphate?

a) $Cu(CN)_2$ b) $K_2[Cu(CN)_6]$

c) $K[Cu(CN)_2]$ d) $Cu_2(CN)_2 + (CN)_2$

22. Which of the following has the maximum number of unpaired electrons?

a) Mn^{2+} b) Ti^{3+} c) V^{3+} d) Fe^{2+}

23. Among the following statement, the incorrect one is

a) Calamine and siderite are carbonates

b) Argentite and cuprite are oxides

c) Zinc blende and pyrites are sulphides

d) Malachite and azurite are ores of copper

24. The chemical composition of slag formed during the smelting process in the extraction of copper is

a) $Cu_2O + FeS$ b) $FeSiO_3$ c) $Cu\ FeS_2$ d) $Cu_2S + FeO$

25. The transition element with the lowest atomic number is

a) Scandium b) Titanium c) Zinc d) Lanthanum

26. Which transition element show highest oxidation state?

a) Sc b) Ti c) Os d) Zn

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27. The catalyst used in the manufacture of

a) V_2O_5 b) Fe c) Pt d) $TiCl_4$

28. Spitting of silver can be prevented by covering the molten metal with

a) Sodium carbonate c) Calcium chloride

b) Charcoal d) Calamine

29. Bordeaux mixture is a mixture of

a) Copper sulphate and lime c) $K_2Cr_2O_7 + H_2SO_4$

b) Silver nitrate and sodium chloride d) $K_2CrO_4 + H_2SO_4$

30. Which of the following pairs have almost equal atomic radii ?

a) Mo, W b) Y, La c) Zr, Hf d) Nb, Ta

31. A d-block metal ion has a magnetic moment of 1.732 BM. The number of unpaired electrons in it is

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

32. Purity of Blister copper is

a) 100% b) 98% c) 90% d) 12%

33. The substance used in making ruby red glass and high class pottery is
a) Colloidal silver c) Ruby silver
b) Purple of cassius d) Ruby copper

34. The metal used in galvanising iron sheets is
a) Chromium b) zinc c) copper d) Silver

35. $K_2Cr_2O_7$ reacts with KI and dilute sulphuric acid and liberates
a) O_2 b) I_2
c) H_2 d) SO_2

36. Ferrochrome is an alloy of
a) Cr, C, Fe, Ni b) Cr, Co, Ni, C
c) Fe, Cr d) Cr,Ni, Fe

37. The colour of Purple of cassius is
a) Purple b) Blue c) Bluish green d) Apple green

38. Silver obtained from silver coin is purified by fusion with
a) $AgNO_3$ b) HNO_3 c) H_2SO_4 d) Borax

39. The number of unpaired electrons in Ti^{3+} is 1. Its magnetic moment in BM is
a) 1.414 b) 2 c) 1.732 d) 3

40. A metal which precipitates gold from its aurocyanide complex is
a) Cr b) Ag c) Pt d) Zn

41. The reagent which is added first in the separation of silver from silver coin is
a) Con.Sulphuric acid c) Con.Nitric acid
b) Con.Hydrochloric acid d) Aqua regia

42. If the magnetic moment value is 5.92 BM, the number of unpaired electrons is
a) 5 b) 3 c) 4 d) 6

43. Which one of the following will have maximum magnetic moment ?
a) $3d^2$ b) $3d^6$ c) $3d^7$ d) $3d^9$

44. The most malleable and ductile of all the metals is
a) Silver b) Gold c) Copper d) Chromium

45. The metals present in Nichrome alloy is
a) Cr, Ni, Fe b) Cr, Co, Ni
c) Cr, Fe d) Cr, Fe, Cu

46. The alloy used in the manufacture of resistance wires is
a) Ferro-chrome b) Bronze
c) Nichrome d) Stellite

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

LESSON – 5
f-BLOCK ELEMENTS
BOOK BACK ONE MARKS

01. The electronic configuration of Lanthanides is

a)[Xe] $4f^0\ 5d^0\ 6s^0$ b) [Xe] $4f^{1-7}\ 5d^1\ 6s^1$

c)[Xe] $4f^{1-14}\ 5d^{0-1}\ 6s^2$ d) [Xe] $4f^{1-14}\ 5d^{1-10}\ 6s^2$

02. The electronic configuration of Actinides is

a) [Rn] $5f^{0-14}\ 6d^0\ 7s^0$ b) [Rn] $5f^{0-14}\ 6d^{0-2}\ 7s^0$

c) [Rn] $5f^{0-14}\ 6d^{0-2}\ 7s^1$ d) [Rn] $5f^{0-14}\ 6d^{0-2}\ 7s^2$

03. The lanthanide contraction is responsible for the fact that

a) Zr and Y have about the same radius

b) Zr and Nb have similar oxidation state

c) Zr and Hf have about the same radius

d) Zr and Zn have the same oxidation state

04. The most common oxidation state of lanthanides is

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

05. Lanthanides are extracted from

a) Limonite b) Monazite c) Magnetite d) Cassiterite

06. The elements in which the extra electron enters (n -2) f orbitals are called

a) s block elements b) p block elements

c) d block elements d) f block elements

07. The Lanthanides contraction is due to

a) Perfect shielding of 4f electron b) lmperfect shielding of 4f electron

c) Perfect shielding of 3d electron d) imperfect shielding of 3d electron

08. Ceria is used in

a) toys b) tracer bullets c) gas lamp materials d) none

09. ……. is used in gas lamp material.
a) MnO_2 b) CeO_2 c) N_2O_5 d) Fe_2O_3

10. Alloys of Lanthanides are called as
a) Mish-metals b) Metalloids c) Plate metals d) Actinides

11. Metallothermic processes involving Lanthanides are called as
a) Aluminothermic process b) Lanthanido-thermic process
d) Reduction process d) Oxidation process

12. …… from oxocations.
a) lanthanides b) Actinides c) Noble gases d) Alkalimetals

13. Maximum oxidation state exhibited by Lanthanides is
a) +1 b) +2 c) +3 d) +4

14. Lanthanides are separated by
a) Fractional distillation b) Steam distillation
c) Fractional Crystallisation d) Sublimation

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15. The oxidation state of Uranium in UO_2Cl_2 is
a) +2 b) +4 c) +3 d) +6

16. The fuel in nuclear power plants is
a) U-235 b) Pu-238 c) CeO_2 d) Np-238

17. The actinide contraction is due to
a) Perfect shielding of 5f electron b) Imperfect shielding of 4f electron
c) Imperfect shielding of 5f electron d) Perfect shielding of 4f electron

18. Which element in Lanthanides is radioactive ?
a) Terbium b) Lutetium
c) Promethium d) Gadolinium

19. The isotope used in nuclear fission reaction is
a) Copper b) Uranium
c) Lead d) Radium

20. The most common oxidation state among actinides is
a) +4 b) +2 c) +3 d) +1

21. _____ is used as a power source in long mission space probes
a) U-235 b) U-232 c) Pu-238 d) Pu-241

22. Among the Lanthanide elements, with the increase in atomic number the tendency to act as reducing agent

a) Increase b) Decrease

c) Nochange d) None

23. Thoria is used in

a) Toys b) Tracer bullets

c) Gas lamp materials d) Dyeing cotton

24. _____ is the oxidation state of U in UF_6

a) +6 b) +4 c) +3 d) 0

25. According to Fajan's rule decreases in size of Ln^{3+} ion in $Ln(OH)_3$

a) Increase the covalent character b) Decreases the covalent character

c) Increase the basic character d) Increases the ionic character

26. Which of the following lanthanides have no partly filled 4f sub-shell but have the electrons in 5d sub-shell?

a) Ce b) Lu c) Pm d) Nd

1	2	3	4	5	6	7	8	9	10
c	d	c	c	b	d	b	c	b	a
11	12	13	14	15	16	17	18	19	20
b	b	d	c	d	a	c	c	b	a
21	22	23	24	25	26				
c	b	c	a	a	b				

LESSON – 6
CO-ORDINATION COMPOUNDS
BOOK BACK ONE MARKS

01. Which is a double salt?

a) $K_2SO_4.Al_2(SO_4)_3.24H_2O$ b) NaCl

c) $K_4[Fe(CN)_6]$ d) KCl

02. An example of a complex comound having coordination number 4

a) K_4 [Fe (CN)$_6$] b) [Co (en)$_3$] Cl_3

c) [Fe (H_2O)$_6$] Cl_3 d) [Cu (NH_3)$_4$] Cl_2

03. The geometry of $[Cu(NH_3)_4]^{2+}$ complex ion

a) Linear b) Tetrahedral c) Square planar d) Angular

04. An example of a chelating ligand is

a) NO_2^- b) Chloro c) Bromo d) en

05. The geometry of complex ion $[Fe(CN)_6]^{4-}$ is

a) tetrahedral b) square planar

c) octahedral d) triangular

06. The oxidation number of Nickel in the complex ion $[NiCl_4]^{2-}$ is

a) + 1 b) -1 c) +2 d) -2

07. Which is not anionic complex?

a) $[Cu(NH_3)_4]Cl_2$ b) $K_4[Fe(CN)_6]$ c) $K_3[Fe(CN)_6]$ d) $[NiCl_4]^{2-}$

08. The geometry of $[Ni\ (CN)_4]^{2-}$ is

a) Tetrahedral b) Square planar c) Triangular d) Octahedral

09. An example of an ambidentate ligand is

a) CN^- b) Cl^- c) NO_2^- d) I^-

10. $[FeF_6]^{4-}$ is paramagnetic because

a) F^- is a weaker ligand b) F^- is a strong ligand

c) F^- is a flexidentate ligand d) F^- is a chelating ligand

11. In $[Fe^{II}(CN)_6]^{4-}$, the central metal ion is

a) Fe b) Fe^{+2} c) Fe^{+3} d) CN^-

12. The coordination number of Ni (ll) in $[Ni\ (CN)_4]^{2-}$ is

a) 2 b) 4 c) 5 d) 6

13. The name of $[Pt^{IV}(NH_3)_2Cl_2]^{2+}$ is

a) Diamminedichloroplatinum (lV) ion

b) Diamminedichloroplatinate (IV)

c) Diamminedichloroplatinum

d) Dichlorodiammineplatinum (IV) ion

14. For a compound $K_4[Fe\ (CN)_6]$ the complex ion is

a) K^+ b) CN^- c) Fe^{2+} d) $[Fe\ (CN)_6]^{4-}$

15. A metal ion from the first transition series forms an octahedral complex with magnetic moment of 4.9 BM and another octahedral complex which is diamagnetic. The metal ion is

a) Fe^{2+} b) Co^{2+} c) Mn^{2+} d) Ni^{2+}

16. Paramagnetic moment is expressed in

a) Debye unit b) K joules c) BM d) ergs

17. The type of isomerism found in the complexes $[Co(NO_2)(NH_3)_5]\ SO_4$ and $[Co(SO_4)(NH_3)_5]\ NO_2$

a) Hydrate isomerism b) Coordination isomerism

c) Linkage isomerism d) Ionisation isomerism

18. Valence bond theory does not explain the property of complex compound

a) geometry b) magnetic

c) nature of ligand d) colour

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19. The complex used for electron transfer is
    a) Haemoglobin b) Ferredoxin
    c) Chlorophyll d) Myoglobin
20. The type of isomerism found in the complexes $[Pt(NH_3)_4][CuCl_4]$ and$[Cu(NH_3)_4][PtCl_4]$ is
    a) ionization isomerism c) co-ordination isomerism
    c) linkage isomerism d) ligand isomerism
21. Which of the following is cationic complex ?
    a) $K_4[Fe(CN)_6]$ b) $[Cu(NH_3)_4]Cl_2$ c) $K_3[Cr(C_2O_4)_3]$ d) $K_3[Fe(CN)_6]$
22. The co-ordination number of Cr(III) in $[Cr(H_2O)_4Cl_2]Cl.2H_2O$ is
    a) 3 b) 4 c) 6 d) 2
23. An example oh bidentate chelating ligand is
    a) NO_2^- b) NO_3^- c) en d) SO_4^{2-}
24. The co-ordination number of Nickel in the complex ion $[NiCl_4]^{2-}$ is
    a) +1 b) +4 c) +2 d) +6
25. Chlorophyll is a _____ complex
    a) Magnesium – Porphyrin b) Iron – Porphyrin
    c) Copper – Porphyrin d) Nickel – Porphyrin

1	2	3	4	5	6	7	8	9	10
a	d	c	d	c	c	a	b	c	a
11	12	13	14	15	16	17	18	19	20
b	b	a	d	a	c	d	b	b	b
21	22	23	24	25					
b	c	c	b	a					

LESSON – 7
NUCLEAR CHEMISTRY
BOOK BACK ONE MARKS

01. The phenomenon of radioactivity was discovered by
    a) Madam curie b) Pierre curie
    c) Henry Becquerrel d) Rutherford
02. The most penetrating radiations are
    a) α rays b) β rays
    c) γ *rays* d) all are equally penetrating

03. In the nuclear reaction $_{92}U^{238} \rightarrow {}_{82}Pb^{206}$, the number of α and β particles emitted are
a) 7α , 5β b) 6α , 4β
c) 4α , 3β d) 8α , 6β

04. Which one of the following particles is used to bombard $_{13}Al^{27}$ to give $_{15}p^{30}$ and a neutron?
a) α particle b) deuteron
c) proton d) neutron

05. The reaction $_{5}B^{8} \rightarrow {}_{4}Be^{8}$ takes place due to
a) α decay b) β decay
c) γ emission d) position decay

06. Radioactivity is due to
a) Stable electronic configuration b) Stable nucleus
c) Unstable nucleus d) Unstable electronic configuration

07. In the following radioactive decay , $_{92}X^{232} \rightarrow {}_{89}y^{220}$, how many α and β particles are ejected.
a)3α and 3β b) 5α and 3β c) 3α and 5 β d) 5α and 5β

08. $_{92}U^{235}$ nucleus absorbs a neutron and disintegrates into $_{54}Xe^{139}$, $_{38}Sr^{94}$ and x. What will be the product x?
a) 3 neutrons b) 2 neutrons c)α particle d) β-particle

09. Loss of a β – particle is equivalent to
a) Increase of one proton only
b) Decrease of the one neutron only
c) Both (a) and (b)
d) None of these

10. Which of the following is used as neutron absorber in the nuclear reactor?
a) water b) Deuterium
c) some compounds of uranium d) cadmium

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11. After 24 hours 0.125 g of the initial quantity 1 g of a radioactive isotope is left out. The half life period is
a) 24 hours b) 12 hours c) 8 hours d) cannot be determined

12. When $_{7}N^{15}$ is bombarded with a proton it gives $_{6}C^{12}$ and
a) α-particle b) β-particle
c) neutron d) proton

13. In nuclear reaction _____ is / are balanced on both sides

a) mass b) number of atoms

c) mass number d) atomic number and mass number

14. Half life period of a radioactive element is 1500 years. The value of disintegration constant in terms of second^{-1} is

a) $0.1465 \times 10^{-10}\ s^{-1}$ b) $0.2465 \times 10^{-10}\ s^{-1}$

c) $0.1465 \times 10^{-8}\ s^{-1}$ d) $0.3465 \times 10^{-10}\ s^{-1}$

15. Half life period of a radioactive element is 100 seconds. Its average life period is

a) 100 seconds b) 50 seconds

c) 200 seconds d) 144 seconds

16. Half life period of $_{79}Au^{198}$ nucleus is 150 days. The average life is

a) 216 days b) 21.6 days

c) 261 days d) 26.1 days

17. Radioactive element of lanthanide is

a) Thorium b) Lanthanum

c) Uranium d) Promethium

18. β-particle is represented as

a) $_{+1}e^{0}$ b) $_{-1}e^{0}$ c) $_{1}H^{1}$ d) $_{2}He^{4}$

19. In the nuclear reaction, $_{90}Th^{232} \rightarrow {}_{82}Pb^{208}$, the number of α and β- particles emitted are

a) 1α, 4β b) 2α, 2β c) 6α, 4β d) 8α, 4β

1	2	3	4	5	6	7	8	9	10
c	c	d	a	d	c	a	a	c	d
11	12	13	14	15	16	17	18	19	
c	a	d	a	d	a	d	b	C	

LESSON – 8
SOLID STATE – II
BOOK BACK ONE MARKS

01. The number of chloride ions that surrounds the central Na^{+} ion in NaCl crystal is _____

a) 2 b) 8 c) 6 d) 4

02. The Bragg's equation is

a) $\lambda = 2d \sin\theta$ b) $nd = 2\lambda \sin\theta$

c) $2\lambda = nd \sin\theta$ d) $n\lambda = 2d \sin\theta$

03. A regular three dimensional arrangement of identical points in space is called

a) Unit cell b) Space lattice

c) Primitive d) Crystallography

04. The smallest repeating unit in space lattice which when repeated over and again results in the crystal of the given substance is called

a) space lattice b) crystal lattice

c) unit cell d) lsomorphism

05. The crystal structure of CsCl is

a) Simple cubic b) face- centered cubic

c) Tetragonal d) Body centered cubic

06. An example for frenkel defect is

a) NaCl b) AgCl

c) CsCl d) FeS

07. Semiconductors which exhibit conductivity due to the flow of excess negative electrons are called

a) Super conductors b) n-type semiconductors

c) p-type semiconductors d) Insulators

08. In the Bragg's equation for diffraction of X-rays, 'n' representss

a) The number of moles b) Avogadro number

c) A quantum number d) Order of reflection

09. The number of close neighbours in a body centred cubic lattice of identical spheres is

a) 6 b) 4 c) 12 d) 8

10. The crystals which are good conductors of electricity and heat are

a) lonic crystals b) Molecular crystals

c) Metallic crystals d) Covalent crystals

11. In a simple cubic cell, each point on a corner is shared by

a) One unit cell b) Two unit cell

c) 8 unit cell d) 4 unit cell

12. The ability of certain ultra cold substances to conduct electricity without resistance is called

a) Semiconductor b) Conductor

c) Superconductor d) Insulator

13. The total number of atoms per unit cell is bcc is

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

14. Rutile is

a) TiO_2 b) Cu_2O c) MoS_2 d) Ru

15. Semiconductors are used as

a) rectifiers b) transistors

c) solar cells d) all the above

16. An example of metal of metal deficiency defect

a) NaCl b) AgCl c) CsCl d) FeS

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17. When an ion leaves its regular site occupies a position in the space between the lattice sites are called

a) Schottky defect b) Frenkel defect

c) Impurity defect d) Vacancy defect

18. The 8 : 8 type of packing is present in

a) MgF_2 b) CsCl c) KCl d) NaCl

19. The total number of atoms per unit cell in fcc system is

a) 1 b) 4 c) 6 d) 8

20. Which one of the following has AB type crystal with co-ordination number 4 ?

a) CsCl b) TiO_2 c) ZnS d) BN

21. The size of the anion in Frenkel defect crystal is

a) Larger than the cation c) Smaller than the cation

c) Equal in size with cation d) Both are larger in size

22. The crystal lattice with co-ordination number four is

a) CsCl b) ZnO c) BN d) NaCl

1	2	3	4	5	6	7	8	9	10
c	d	b	c	d	b	b	d	d	c
11	12	13	14	15	16	17	18	19	20
c	c	b	a	d	d	b	b	b	c
21	22								
a	b								

LESSON – 9
THERMODYNAMICS – II
BOOK BACK ONE MARKS

01. The amount of heat exchanged with the surrounding at constant temperature and pressure is called

a) ΔE b) ΔH

c) ΔS d) ΔG

02. All the naturally occurring processes proceed spontaneously in a direction which leads to

a) Decrease of entropy b) increase in enthalpy

c) increase in free energy d) decrease of free energy

03. In an adiabatic which of the following is true?

a) q=W b) q=0 c) $\Delta E = q$ d) $P\Delta V = 0$

04. When a liquid boils, there is

a) an increase in entropy c) an increase in heat of vapourisation

b) a decrease in entropy d) an increase in free energy

05. If ΔG for a reaction is negative, the change is

a) Spontaneous b) Non-spotaneous

c) Reversible d) Equilibrium

06. Which of the following does not result in an increase in the entropy?

a) Crystallisation of sucrose from solution

b) rusting of iron

c) conversion of ice to water

d) vapourisation of camphor

07. In which of the following process, the process is always non-Feasible?

a) $\Delta H > O, \Delta S > O$ b) $\Delta H < O, \Delta S > O$

c) $\Delta H > O, \Delta S < O$ d) $\Delta H < O, \Delta S < O$

08. Change in Gibb's free energy is given by

a) $\Delta G = \Delta H + T\Delta S$ b) $\Delta G = \Delta H - T\Delta S$

c) $\Delta G = \Delta H \times T\Delta S$ d) None of the above

09. For the reaction $2Cl_{(g)} \rightarrow Cl_{2(g)}$ the signs of ΔH and ΔS respectively are

a) +,- b) +,+ c) -,- d) -,+

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10. A process accompanied by increase in entropy tends to be

a) isothermal b) adiabatic c) spontaneous d) Non-spontaneous

11. The entropy of vapourisation of an ideal liquid is equal to

a) 20 cal deg^{-1} mol^{-1} b) 25 cal deg^{-1} mol^{-1}

c) 21 cal deg^{-1} mol^{-1} d) 30 cal deg^{-1} mol^{-1}

12. Which one of the following is a state function

a) q b) Δq c) w d) ΔS

13. The SI unit of entropy is

a) cal K^{-1} mol^{-1} b) erg cal mol^{-1} c) J deg^{-1} mol^{-1} d) J K^{-1} mol^{-1}

14. The network obtained from a system is given by

a) w - PΔV b) w + PΔV c) -w + PΔV d) -w - PΔV

15. The maximum percentage efficiency possible from an engine working between 127°C and 27°C

a) 25% b) 100% c) 78.7% d) 67%

16. The change of entropy for the process $H_2O_{(liq)} \rightarrow H_2O_{(vap)}$ involving ΔH_{vap} = 40850 J mol-1 at 373 K

a) 120 J mol^{-1} b) 9.1 x 10^{-3} J mol^{-1} K^{-1}

c) 109.52 J mol^{-1} K^{-1} d) 9.1 x 10^{-4} J mol^{-1} K^{-1}

17. The entropy change involved in the process of $H_2O_{(s)} \rightarrow H_2O_{(l)}$ at 0oC and 1 atm pressure involving ΔH_{fusion} = 6008 J mol^{-1} is

a) 22.007 J mol^{-1} K^{-1} b) 22.007 J mol K^{-1}

c) 220.07 J mol K^{-1} d) 2.2007 J mol K^{-1}

18. Entropy (S) and the entropy change (ΔS) of a process

a) are path functions b) are state functions

c) are constants d) have no values

19. $H_2O_{(l)} \rightarrow H_2O_{(g)}$. In this process the entropy

a) remains constant b) decreases

c) increases d) becomes zero

20. Thermodynamics condition for irreversible spontaneous process ar constant T and P is

a) ΔG < 0 b) ΔS > 0

c) ΔG > 0 d) ΔH > 0

21. Standard free energies of formation of elements are taken as

a) Positive b) Negative c) Zero d) All of these

22. Free energy (G) and the Free energy change (ΔG) corresponds to the

a) System only b) Surrounding only

c) System and Surrounding d) All of these

23. In SI unit 1 eu is

a) 41.84 EU b) 4.184 EU c) 418.4 EU d) 4184 EU

24. A process accompanied by increase in energy tends to be

a) isothermal b) adiabatic

c) spontaneous d) non-spontaneous

25. The entropy change for the following process processing $\Delta H_{(Transition)}$ as 2090 J mol^{-1}

1 mole Sn(α, 13°C) $\rightleftharpoons$ 1 mole of Sn(β, 13°C) is

a) 22.007 J mol^{-1} K^{-1} c) 0.314 J mol^{-1} K^{-1}

b) 7.307 J mol^{-1} K^{-1} d) 109.52 J mol^{-1} K^{-1}

26. For an isothermal process, the entropy change of the universe during a reversible process is

a) Zero b) More c) Less d) None

27. The change in entropy for a system and surroundings are -0.228 JK^{-1} and +0.260 JK^{-1} respectively. Then entropy change of the universe is

a) -0.0313 JK^{-1} b) +0.0313 JK^{-1}

c) +0.877 JK^{-1} d) -0.877 JK^{-1}

1	2	3	4	5	6	7	8	9	10
B	D	b	a	a	a	c	b	c	c
11	12	13	14	15	16	17	18	19	20
c	d	d	a	a	c	a	b	c	a
21	22	23	24	25	26	27			
c	a	b	c	b	a	b			

LESSON – 10
CHEMICAL EQUILIBRIUM – II
BOOK BACK ONE MARKS

01. State of chemical equilibrium is

a) Dynamic b) stationary

c) none d) both

02. If the equilibrium constants of the following reactions are $2A \rightleftharpoons B$ is K_1 and $B \rightleftharpoons 2A$ is K_2 then.

a) $K_1 = 2K_2$ b) $K_2 = 1/K_2$

c) $K_1 = 1/K_2$ d) $K_1 = 1/K_2^2$

03. In the reversible reaction $2HI \rightleftharpoons H_2+I_2$, K_p is

a) Greater than K_c b) less than K_c

c) Equal to K_c d) Zero

04. In the equilibrium $N_2+3H_2 \rightleftharpoons 2NH_3$ the maximum yield of ammonia will be obtained with the process having

a) Low pressure and high temperature

b) Low pressure and low temperature

c) High temperature and high pressure

d) High pressure and low temperature

05. For the homogeneous gas reaction at 600K

$4NH_{3(g)}+5O_{2(g)} \rightleftharpoons 4NO_{(g)}+ 6H_2O_{(g)}$ the equilibrium constant K_c has the unit

a) $(moldm^{-3})^{-2}$ b) $(moldm^{-3})$

c) $(moldm^{-3})^{10}$ d) $(moldm^{-3})^{-9}$

06. Two moles of ammonia gas are introduced into a previously evacuated 1.0 dm^3 vessel in which it partially dissociates at high temperature.At equilibrium 1.0 mole of ammonia remains.The equilibrium constant K_c for the dissociation is

a) $27/16(mole\ dm^{-3})^2$ b) $27/8(mole\ dm^{-3})^2$

c) $27/4(mole\ dm^{-3})^2$ d) None of these

07. An equilibrium reaction is endothermic if K_1 and K_2 are the equilibrium constants at T_1 and T_2 temperatures respectively and if T_2 is greater then T_1 then

a) K_1 is less then K_2 b) K_1 is greater than K_2

c) K_1 is equal than K_2 d) None

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08. In an equilibrium reaction , if Δng is positive then

a) Kc = Kp b) Kc < Kp c) Kc > Kp d) Kc = 0

09. The fraction of total number of moles of reactants dissociated is called

a) Dissociation equilibrium b) Degree of association

c) Degree of dissociation d) Dissociation consatant

10. The maximum yield of ammonia in Haber's process is nearly

a) 47% b) 73% c) 27% d) 37%

11. The rate constant of the forward reaction and reverse reaction are 8×10^{-5} and 2×10^{-4} respectively. Then Kc is

a) 0.004 b) 0.02 c) 0.2 d) 0.4

12. In which of the following equilibrium Kp < Kc

a) $CO_{(g)} + H_2O_{(g)} \rightleftharpoons CO_{2(g)} + H_{2(g)}$ b) $N_{2(g)} + O_{2(g)} \rightleftharpoons 2NO_{(g)}$

c) $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI_{(g)}$ d) $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$

13. For the equilibrium $2H_2O_{(g)} + 2Cl_{2(g)} \rightleftharpoons 4HCl_{(g)} + O_{2(g)}$, Kp and Kc are related as

a) Kp = Kc b) Kp > Kc c) Kp < Kc d) Cannot be related

14. In the equilibrium constant for the formation of a product is 25, the equilibrium constant for the decomposition of the same product is

a) 25 b) 1/25 c) 5 d) 625

15. Which of the following gaseous equilibria is favoured by increase in temperature ?

a) $N_2O_{4(g)} \rightleftharpoons 2NO_{(g)}$: $\Delta H = +59\ KJ\ mol^{-1}$

b) $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$: $\Delta H = -22\ KJ\ mol^{-1}$

c) $2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_{3(g)}$: $\Delta H = -47\ KJ\ mol^{-1}$

d) Both (a) and (b)

16. In the synthesis of NH_3 between N_2 and H_2 reaction the unit of Kp is
a) $lit^2\ mol^{-2}$ b) atm^{-2} c) $lit\ atm^{-1}$ d) atm^{-1}

17. Which one of the following has negative value for Δng
a) $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI_{(g)}$ b) $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$
c) $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$ d) $2H_2O_{(g)} + 2Cl_{2(g)} \rightleftharpoons 4HCl_{(g)} + O_{2(g)}$

18. $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI_{(g)}$. The equilibrium constant Kc for this reaction is 16. Kp value is
a) 1 / 16 b) 16 c) 4 d) 1

19. The optimum range of temperature used in contact process for the manufacture of SO_3 is
a) 400ºC to 450ºC b) 1800ºC to 2700ºC
c) 500ºC to 550ºC d) 350ºC to 450ºC

20. In Haber's process the yield of ammonia is greater
a) at high pressure b) at low pressure
c) at high temperature d) in absence of catalyst

21. The equilibrium constant for the reaction $2A \rightleftharpoons B$ is 25 $mol^{-1}\ dm^3$ at 900 K. What is the equilibrium constant for the reaction $B \rightleftharpoons 2A$ in dm^{-3} mol at the same temperature ?
a) 25 b) 625 c) 0.04 d) 0.4

22. Forward reaction takes place, when
a) Q < Kc b) Q > Kc c) Q = Kc d) Kc = 1 / Q

23. The equilibrium constant Kc for $A \rightleftharpoons B$ is 2.5×10^{-2}. The rate constant of forward reaction is 0.05 sec^{-1}. Therefore, the rate constant of the reverse reaction is
a) 2 sec^{-1} b) 0.2 sec^{-1} c) 2 min^{-1} d) 0.2 min^{-1}

24. In an equilibrium reaction, Q < Kc then
a) forward reaction is favoured
b) reverse reaction is favoured
c) both forward and reverse reactions are favoured
d) none of these

25. In the manufacture of ammonia by Haber's process, the maximum yield of ammonia will be obtained with the process having
a) low pressure and high temperature
b) low pressure and low temperature
c) high pressure and high temperature
d) high pressure and low temperature

26. In the formation of HI from H_2 and I_2, $Kp = Kc \cdot \Delta ng$ is equal to

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

27. Presence of moisture in contact process

a) Activates the catalyst b) deactivates the catalyst

c) increases the catalyst d) makes the catalyst porous

28. The maximum yield of SO_3 in contact process is

a) 97% b)37% c) 50% d) 47%

1	2	3	4	5	6	7	8	9	10
a	b	c	d	b	a	a	b	c	d
11	12	13	14	15	16	17	18	19	20
d	d	b	b	a	b	c	b	a	a
21	22	23	24	25	26	27	28		
c	a	a	a	d	c	b	a		

LESSON – 11
CHEMICAL KINETICS – II
BOOK BACK ONE MARKS

01. Hydrolysis of an ester by dilute HCl is an example for

a) Second order reaction b) zero order reaction

c) pseudo first order reaction d) first order reaction

02. The unit of zero rate constant is

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

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

03. The excess energy which a molecule must posses to become active is known as

a) kinetic energy b) threshold energy

c) potential energy d) activation energy

04. Arrhenius equation is

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

05. The term A in Arrhenius equation is called as

a) Probability factor b) Activation of energy

c) Collision factor d) Frequency factor

06. The sum of the powers of the concentration terms that occur in the rate equation is called

a) molecularity b) order c) rate d) rate constant

07. Reaction in which the reacting molecules react in more than one way yielding different set of products are called

a) consecutive reactions b) parallel reactions

c) opposing reactions d) chain reactions

08. The half life period of a first order reaction is 10 minutes. Then its rate constant is

a) 6.93×10^{2} min^{-1} b) 0.693×10^{-2} min^{-1}

c) 6.932×10^{-2} min^{-1} d) 69.3×10^{-1} min^{-1}

09. For a reaction aA→bB, the rate of reaction is doubled when the concentration of A is increased by four times. The rate of reaction is equal to

a) $k\,[A]^{a}$ b) $k\,[A]^{1/2}$ c) $k\,[A]^{1/a}$ d) $k\,[A]$

10. $2N_2O_5 \rightarrow 4\,NO_2 + O_2$, $\frac{-d[N_2O_5]}{dt} = k_1[N_2O_5]$, $\frac{d[NO_2]}{dt} = k_2\,[N_2O_5]$ and $\frac{d[O_2]}{dt} = k_3[N_2O_5]$, the relation between k_1,k_2 and k_3 is

a) $2k_1=4k_2=k_3$ b) $k_1=k_2=k_3$ c) $2k_1=k_2=4k_3$ d) $2k_1=k_2=k_3$

11. For a reaction, $E_a=0$ and $k=4.2 \times 10^{5}$ sec^{-1} at 300K, the value of k at 310K will be

a) 4.2×10^{5} sec^{-1} b) 8.4×10^{5} sec^{-1} c) 7.4×10^{4} sec^{-1} d) unpredictable

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12. The first order rate constant of a reaction is 0.0693 min^{-1}. The time required for 75% completion is

a) 10 min b) 1 min c) 100 min d) 50 min

13. 50% of a first order reaction is completed in 20 minutes. The time required for 75% completion is

a) 60 minutes b) 10 minutes c) 40 minutes d) 80 minutes

14. Half life period of a first order reaction is 20 min. The time taken for the completion of 99.9% of the reaction is

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

15. In a first order reaction the concentration of the reactant is increased by 2 times. The rate of the reaction is increased by

a) 2 times b) 4 times

c) 10 times d) 6 times

16. Decomposition of nitrogen pentoxide in CCl_4 is an example for

a) Second order reaction b) Third order reaction

c) Zero order reaction d) First order reaction

17. The half life of a first order reaction is 100 minutes. The rate constant of the reaction is

a) 6.93×10^{3} min^{-1} b) 0.693×10^{-3} min^{-1}

c) 6.93×10^{-3} min^{-1} d) 69.3×10^{-2} min^{-1}

18. If the activation energy is high, then the rate of the reaction is

a) high b) moderate c) low d) Cannot be predicted

19. The rate constant for a first order reaction is 1.54×10^{-3} sec^{-1}. Its half life period is

a) 540 seconds b) 450 seconds c) 45 seconds d) 54 seconds

1	2	3	4	5	6	7	8	9	10
c	b	d	c	d	b	b	c	b	c
11	12	13	14	15	16	17	18	19	
a	a	c	a	a	D	d	a	b	

LESSON – 12
SURFACE CHEMISTRY
BOOK BACK ONE MARKS

01. The migration of colloidal particles under the influence of an electric field is known as

a) electroosmosis b) electrolysis

c) electrodialysis d) electrophoresis

02. Which one is the correct fctor that explains the increase rate of reaction by a catalyst?

a) shape selectivity b) particle size

c) increase of free energy d) lowering of activation energy

03. Fog is a colloidal solution of

a) gas in liquid b)liquid in gas

c) gas in soild d) solid in gas

04. The phenomenon of Tyndall effect is not observed in

a) emulsion b) colloidal solution

c) true solution d) None

05. The Tyndall,s effect associated with colloidal particles is due to

a) presence of charge b) scattering of light

c) absorption of light d) reflection of light

06. In case of physical adsorption, there is desorption when

a) temperature increases b) temperature decreases

c) pressure increases d) concentration increases

07. Colloidal medicines are more effective because

a) they are clean

b) they are easy to prepare

c) they are soluble in water

d) they are easily assimilated and adsorbed

08. When an oil soluble dye is mixed with emulsion and emulsion remains colourless then, the emulsion is

a) O/W b) W/O c) O/O d) W/W

09. For selective hydrogenation of alkynes into alkene the catalyst used is
a) Ni at 250°C
b) Pt at 25°C
c) Pd, partially inactivated by quinoline
d) Raney nickel

10. For chemisorptions, which is wrong?
a) irreversible
b) it requires activation energy
c) it forms multimolecular layers on adsorbate
d) surface compounds are formed

11. An emulsion is a colloidal solution of
a) two solids
b) two liquids
c) two gases
d) one solid and one liquid

12. Colloids are purified by
a) Precipitation
c) Dialysis
c) Coagulation
d) fitration

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13. The catalyst used for the decomposition of $KClO_3$ is
a) MnO_2 b) Cl_2 c) V_2O_5 d) Pt

14. A catalyst which enhances the speed of the reaction is
a) Promoter
b) Negative catalyst
c) Positive catalyst
d) Catalytic poison

15. The auto catalyst used in the oxidation of oxalic acid by acidified $KMnO_4$ is
a) K_2SO_4 b) $KMnO_4$ c) $MnSO_4$ d) CO_2

16. The iron catalyst used in the Haber's process is poisoned by
a) Pt b) H_2 c) H_2S d) As_2O_3

17. The emulsion used for stomach disorder is
a) Argyrol
b) Milk of magnesia
c) Colloidal gold
d) Colloidal antimony

18. The emulsifying agent used in O/W emulsion is
a) Protein
b) Long chain alcohol
c) Lampblack
d) Heavy metal salts of fatty acids

19. The principal emulsifying agents for W/O emulsion
a) Proteins b) Gums c) Synthetic soaps d) Lam black

20. An example for gel type colloid is

a) Paint b) Curd c) Cloud d) Cork

21. For the decomposition of hydrogen peroxide the positive catalyst is
a) Glycerol b) MnO_2 c) Pt d) Alcohol

22. The negative and positive catalyst for the decomposition of hydrogen peroxide are respectively
a) Pt and As_2O_3 b) As_2O_3 and MnO_2
c) $C_3H_5(OH)_3$ and Pt d) Alcohol and MnO_2

23. Curd is a colloidal solution of
a) Liquid in Liquid b) Liquid and Solid
c) Solid and Liquid d) Solid and Solid

24. Which one of the following factors is false regarding catalyst ?
a) Small quantity is enough
b) Initiate the reaction
c) Remains unchanged in mass and chemical composition
d) Specific in its action

25. Smoke is a colloidal solution of
a) gas in solid b) solid in gas c) gas in liquid d) liquid in gas

26. Which type of colloid is a sol ?
a) solid in liquid b) liquid in solid
c) solid in solid d) gas in solid

27. The platinum catalyst used in the oxidation of SO_2 by contact process is poisoned by
a) As_2O_3 b) V_2O_5 c) Fe_2O_3 d) $CuCl_2$

28. Coconut charcoal has a great capacity of the _____ of gases
a) Adsorption b) Absorption
c) Desorption d) All of these

29. Emulsifying agent is used for
a) Precipitation of an emulsion b) Coagulation of an emulsion
c) Stabilisation of an emulsion d) none of these

30. The function of $FeCl_3$ in the conversion of $Fe(OH)_3$ precipitate into a colloid is
a) peptizing agent b) emulsifying agent
c) reducing agent d) precipitating agent

31. An example of lyophilic colloid is
a) Sulphur in water b) Phosphorus in water
c) starch d) All of these

32. The blue colour of the sky is due to
a) Tyndall effect b) Brownian movement

c) Electrophoresis d) Electro osmosis

33. Catalyst used in Deacon's method of manufacture of chlorine is

a) NO b) $CuCl_2$

c) Fe_2O_3 d) Ni

34. Argyrol is

a) colloidal silver b) colloidal antimony

c) colloidal gold d) milk of magnesia

35. The oxidation of sodium sulphate by air is retorted by

a) MnO_2 b) H_2S

c) Alcohol d) As_2O_3

36. Medicine used as an eye lotion is

a) Silver sol b) Colloidal gold

c) Colloidal antimony d) Milk of magnesia

37. The rate of decomposition of hydrogen peroxide decreases in the presence of

a) Platinum b) iron c) MnO_2 d) glycerine

38. Silica gel is utilized for the _____ of the number of gases

a) Adsorption b) Absorption

c) Desorption d) All of these

39. Ruby glass is a colloidal solution of

a) Solid-sol b) Gel

c) Emulsion d) Sol

40. Electrophoresis is

a) a method of purification of colloid b) a kinetic property of colloid

c) an electrical property of colloid d) the movement of dispersion medium

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

LESSON – 13
ELECTRO CHEMISTRY-I
BOOK BACK ONE MARKS

01. The process in which chemical change occurs on passing electricity is termed as _____

a) neutralization c) electrolysis

b) hydrolysis d) ionization

02. The laws of electrolysis were enunciated first by

a) Dalton c) Kekule

b) Faraday d) Avogadro

03. When one coulomb of electricity is passed through an electrolytic solution, the mass deposited on the electrode is equal to

a) equivalent weight b) molecular weight

c) electrochemical equivalent d) one gram

04. Faraday's laws of electrolysis are related to

a) atomic number of the cation

b) atomic number of the anion

c) equivalent weight of the electrolyte

d) speed of the cation

05. The specific conductance of a 0.01 M solution of KCl is 0.0014 ohm^{-1} cm^{-1} at 25°C. its equivalent conductance is

a) 14 ohm^{-1} cm^2 eq^{-1} b) 140 ohm^{-1} cm^2 eq^{-1}

c) 1.4 ohm^{-1} cm^2 eq^{-1} d) 0.14 ohm^{-1} cm^2 eq^{-1}

06. The equivalent conductivity of CH_3COOH at 25°C is 80$ohm^{-1}cm^2eq^{-1}$ and at infinite dilution 400 ohm^{-1} cm^2 eq^{-1}. The degree of dissociation of CH_3COOH is

a) 1 b) 0.2 c) 0.1 d) 0.3

07. When sodium acetate is added to acetic acid, the degree of ionization of acetic acid _____

a) Increases b) decreases

c) does not change d) becomes zero

08. NH_4OH is a weak base because

a) it has low vapour pressure c) it is completely ionized

b) it is only partially ionized d) it has low density

09. Which one of the following formula represents Ostwald,s dilution law for a binary electrolyte whose degree of dissociation is α and concentration C?

a) $K = \frac{(1-\alpha)C}{\alpha}$ b) $K = \frac{\alpha^2 C}{1-\alpha}$ c) $K = \frac{(1-\alpha)C}{\alpha^2}$ d) $K = \frac{\alpha^2 C}{(1-\alpha)C}$

10. Ostwald,s dilution law is applicable in the case of the solution of

a) CH_3COOH b) NaCl c) NaOH d) H_2SO_4

11. Which one of the following relationship is correct?

a) pH = $\frac{1}{[H^+]}$ b) pH = $\log_{10}[H^+]$

c) $\log_{10}$ pH = $[H^+]$ d) pH = $\log_{10}\frac{1}{[H^+]}$

12. When 10^{-6} mole of a monobasic strong acid is dissolved in one litre of solvent, the pH of the solution is

a) 6 b) 7 c) less than 6 d) more than 7

13. When pH of a solution is 2, the hydrogen ion concentration in moles litre^{-1} is

a) 1 x 10^{-2} b) 1 x 10^{-2} c) 1 x 10^{-7} d) 1 x 10^{-4}

14. The pH of a solution containing 0.1 N NaOH solution is

a) 1 c) 13

b)10^{-1} d)10^{-13}

15. A solution which is resistant to change of pH on addition of small amount of an acid or a base is known as

a) buffer solution b) true solution

c) isohydric solution d) ideal solution

16. The hydrogen ion concentration of a buffer solution consisting of a weak acid and its salt is given by

a) $[H^+] = K_a \frac{[Acid]}{[Salt]}$ b) $[H^+] = K_a$ [Salt]

c) $[H^+] = K_a$ [Acid] d) $[H^+] = K_a \frac{[Salt]}{[Acid]}$

17. Indicators used in acid-base titrations are

a) strong organic acids

b) strong organic bases

c) weak organic acids or weak organic bases

d) non-electrolyte

18. For the titration between oxalic acid and sodium hydroxide, the indicator used is

a) potassium permanganate b) phenolphthalein

c) litmus d) methyl orange

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19. The value of enthalpy of neutralization of strong acid by strong base is

a) 57.32 kJ equiv^{-1} b) -57.32 kJ equiv^{-1}

c) -72.57 kJ equiv^{-1} d) -72.23 kJ equiv^{-1}

20. The indicator used in the titration of ammonium hydroxide with hydrochloric acid is

a) Potassium permanganate b) Methyl orange

c) Phenolphthalein d) Litmus

21. If 0.2 ampere can deposit 0.1978 g of copper in 50 minutes, how much of copper will be deposited by 600 coulombs?

a) 19.78g b) 1.978 g c) 0.1978 g d) 197.8 g

22. For the titration between HCl and sodium carbonate the indicator used is

a) Potassium permanganate b) Phenolphthalein

c) Litmus d) Methyl orange

23. The number of moles of electrons required to discharge one mole of Al^{3+} is

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

1	2	3	4	5	6	7	8	9	10
c	b	c	c	b	b	b	b	b	a
11	12	13	14	15	16	17	18	19	20
d	a	b	c	a	a	c	B	b	b
21	22	23							
c	b	a							

LESSON – 16
HYDROXY DERIVATIVES
BOOK BACK ONE MARKS

01. Which has the highest boiling point?

a) CH_3CH_3 b) CH_3OH c) C_2H_5OH d) C_3H_8

02. Which is soluble in H_2O?

a) Phenol b) Alkanes c) Alcohols d) Alkenes

03. Order of reactivity of alcohol towards sodium metal is

a) primary < secondary > tertiary c) primary < secondary < tertiary

b) primary > secondary > tertiary d) primary > secondary < tertiary

04. The boiling point of ethyl alcohol should be less than that of

a) propane b) formic acid

c) dimethyl ether d) None of the above

05. Ethyl alcohol cannot be used as a solvent for CH_3MgI because

a) CH_3MgI reacts with alcohol giving methane

b) The reaction between them is explosive in nature

c) CH_3MgI is converted to C_2H_5MgI

d) Alcohol is immicible with CH_3MgI

06. When alcohols are converted to alkyl chlorides by thionyl chloride in the presence of pyridine the intermediate formed is

a) sulphonium ion
b) chlorosulphonic acid
c) alkyl chlorosulphite
d) chlorosulphite

07. On oxidation of an alcohol gives an aldehyde having the same number of carbon atoms as that of alcohol. The alcohol is
a) 1^o alcohol
c) 3^o alcohol
b) 2^o alcohol
d) None

08. A compound that gives a positive iodoform test is
a) 1-pentanol
c) 3-pentanone
b) 2-pentanone
d) pentanal

09. The compound that reacts fastest with Luces reagent is
a) butan-1-ol
b) butan-2-ol
c) 2-methyl propan -1ol
d) 2-methyl propan-2-ol

10. The ionization constant of phenol is higher than that of ethanol because
a) phenoxide ion is bulkier than ethoxide
b) phenoxide ion is stronger base than ethoxide
c) phenoxide ion is stabilized through delocalization
d) phenoxide ion is less stable than ethoxide ion

11. Among the following compounds strongest acid is
a) $HC\equiv CH$
b) C_6H_6
c) C_2H_6
d) CH_3OH

12. p-nitrophenol is having lowerpK_a value than phenol because
a) phenol is more acidic than p-nitro phenol
b) anion of p-nitrophenol is more stabilized by resonance than that of phenol
c) degree of ionization of p-nitro phenol is less than that of phenol
d) anion of p-nitrophenol is less stable than of phenol

13. The reaction of Lucas reagent is fast with
a) $(CH_3)_3COH$
c) $CH_3(CH_2)_2OH$
b) $(CH_3)_2CHOH$
d) CH_3CH_2OH

14. When phenol is distilled with Zn dust it gives
a) benzaldehyde
c) toluene
b) benzoic acid
d) benzene

15. A compound that undergoes bromination easily is
a) benzoic acid
c) phenol
b) benzene
d) toluene

16. Isomerism exhibited by ethylene glycol is

a) position isomerism b) chain isomerism
c) functional isomerism d) both (a) and (c)

17. Ethylene diamine is converted to ethylene glycol using
a) Na_2CO_3 solution b) nitrous acid
c) $NaHCO_3$ (aqueous) d) Baeyer's reagent

18. Ethylene glycol forms terylene with
a) adipic acid b) phthalic anhydride
c) terephthalic acid d) oxalic acid

19. 1-propanol and 2-propanol can be best distinghished by
a) oxidation with alkaline $KMnO_4$ followed by reaction with Fehling solution
b) oxidation with acidic dichromate followed by reaction with Fehling solution
c) oxidation by heating with copper followed by reaction with Fehling solution
d) oxidation with concentrated H_2SO_4 followed by reaction with Fehling solution

20. Glycerol is used
a) as a sweetening agent
b) in the manufacture of good quality soap
c) in the manufacture of nitro glycerin
d) all the above

21. The alcohol obtained by the hydrolysis of oils and fats is
a) pentanol b) propanol c) glycerol d) glycol

22. The number of secondary alcoholic group in glycerol is
a) 1 b) 2 c) 3 d) 0

23. The active component of dynamite is
a) Keiselghur b) Nitro glycerine
c) Nitro benzene d) Trinitro toluene

24. The reaction of ethylene glycol with Pl_3 gives
a) ICH_2CH_2I b) $CH_2 = CH_2$ c) $CH_2 = CHI$ d) ICH = CHI

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25. Which of the following is used in the treatment of asthma and whooping cough?
a) Benzyl benzoate b) Phenyl benzoate
c) Benzyl acetate d) Phenyl acetate

26. Oxidation of glycerol using bismuth nitrate gives
a) Tartaric acid b) Mesoxalic acid
c) Oxalic acid d) Glyceric acid

27. The characteristic odour of lower phenols is

a) Carbolic acid b) Fruity

c) Oil of bitter almonds d) Rotten fish

28. The number of primary alcoholic groups in glycerol is

a) 0 b) 1 c) 2 d) 3

1	2	3	4	5	6	7	8	9	10
c	c	b	b	a	c	a	B	d	c
11	12	13	14	15	16	17	18	19	20
d	b	a	d	c	c	b	C	c	d
21	22	23	24	25	26	27	28		
c	a	b	B	a	b	a	C		

LESSON – 17
ETHERS
BOOK BACK ONE MARKS

01. The isomerism exhibited by $C_2H_5OC_2H_5$ and CH_3-O-$CH(CH_3)_2$ is

a) Functional b) metamerism

c) position d) chain

02. Which one of the following is simple ether?

a) $CH_3 – O – C_2H_5$ b) $C_2H_5 – O – CH_3$

c) $C_2H_5 – O – C_2H_5$ d) $C_3H_7 – O – C_2H_5$

03. Diethyl ether can be decomposed with

a) HI c) NaOH

b) $KMnO_4$ d) H_2O

04. Oxygen atom of ether is

a) very active b) Replacable

c) oxidizing d) Comparatively inert

05. According to Lewis concept of acids and bases, ethers are

a) Neutral c) Basic

b) Acidic d) Amphoteric

06. Intermolecular hydrogen bonds are not present in

a) CH_3COOH c) CH_3CH_2OH

b) $C_2H_5OC_2H_5$ d) $C_2H_5NH_2$

07. When ethyl iodide is treated with dry silver oxide it forms

a) Ethyl alcohol b) diethylether

c) silver ethoxide d) ethylmethyl ether

08. Williamson's synthesis is an example of
a) nucleophilic addition b) electrophilic addition
c) electrophilic substitution d) Nucleophilic substitution reaction

09. When ether is exposed to air for sometime an explosive substance produced is
a) peroxide c) TNT
b) oxide d) superoxide

10. Ether is formed when alkylhalide is treated with sodium alkoxide. This method is known as
a) Hoffmann reaction b) Williamson's synthesis
c) Wurtz synthesis d) Kolbe's reaction

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11. Which one of the following is unsymmetrical ether?
a) CH_3-O-CH_3 b) CH_3-O-C_2H_5 c) C_2H_5-O-C_2H_5 d) C_6H_5-O-C_6H_5

12. Which of the following forms ether when heated with con.sulphuric acid at 413 K?
a) Organic acid b) Aldehyde c) Alcohol d) Ketone

13. Higher ethers can be prepared from lower members by the action of
a) Con.H_2SO_4 b) AgOH c) NaOR d) Grignard reagent

14. Ethers should never be evaporated to dryness because
a) they form explosive peroxide b) they are volatile
c) thery are inert d) they are lighter than water

15. Which one of the following ethers is used in perfumery?
a) dimethylether b) diethylether
c) Ethyl methyl ether d) methylphenyl ether

16. Anisole on bromination gives
a) o and p-bromo anisole b) m-bromo anisole
c) p-bromo anisole only d) 2,4,6-tribromo anisole

17. The IUPAC name of phenatole is
a) Phenoxy ethane b) ethoxy benzene
c) ethyl phenyl ether d) benzoxy ethane

18. The compound mixed with ethanol to serve as substitute for petrol is
a) methoxy methane b) ethoxy ethane
c) methanol d) ethanal

19. When ethers are exposed to air for a long time, they form
a) Peroxides b) halides
c) oxides d) superoxides

20. The isomerism exhibited by 1-propanol and methoxy methane is
a) chain b) position
c) functional d) metamerism

21. Diethyl ether behaves as
a) Lewis acid b) Lewis base
c) neutral compound d) Bronsted acid

22. The Zeisel's method of detection and estimation of alkoxy group in alkaloids involves the reaction of ether with
a) HI b) Cl_2
c) PCl_5 d) $AlCl_3$

23. The number of ether isomers possible for $C_4H_{10}O$ is
a) 7 b) 5
c) 4 d) 3

24. In the formation of oxonium salt when ethereal oxygen reacts with strong mineral acid is called
a) electronation b) protonation
c) deprotonation d) dehydration

25. How many alcohol isomers are possible for the formula $C_4H_{10}O$
a) 4 b) 2 c) 3 d) 7

26. The solvent used for the Grignard reagent is
a) ethyl alcohol b) diethylether
c) acetone d) benzene

27. When diethylether reacts with chlorine in presence of sunlight it gives
a) α-chlorodiethyl ether b) α, α '-dichlorodiethyl ether
c) perchloro diethyl ether d) both (a) and (b)

28. Strong mineral acids _____ the ethereal oxygen forming oxonium salts
a) electronate b) protonate
c) deprotonate d) dehydrate

29. Which of the following does not form peroxide easily ?
a) Diethyl ether b) Ethylmethyl ether
c) Dimethyl ether d) Anisole

1	2	3	4	5	6	7	8	9	10
b	c	a	d	c	b	b	d	a	B

11	12	13	14	15	16	17	18	19	20
b	c	d	a	d	a	b	b	a	c
21	22	23	24	25	26	27	28	29	
b	a	d	b	a	b	c	b	D	

LESSON – 18
CARBONYL COMPOUNDS
BOOK BACK ONE MARKS

01. The chain isomer of 2-methyl propanal is
a) 2-butanone b) butanal
c) 2-methyl propanol d) but-3-ene-2-ol

02. Schiffs reagent gives pink colour with
a) acetone b) acetaldehyde
c) ethyl alcohol d) methyl acetate

03. Isopropyl alcohol vapours with air over silver catalyst at 520K give
a) tert.butyl alcohol b) acetaldehyde
c) acetone d) 2-propanol

04. Methyl ketones are usually characterized by
a) the Fehling's solution b) the iodoform test
c) the Schiff's test d) the Tollen's reagent

05. Which of the following compounds is oxidized to give ethyl methyl ketone?
a) 2-propanol b) 2-pentanone
c) 1-butanol d) 2-butanol

06. Formaldehyde polymerises to give
a) paraldehyde b) paraformaldehyde
c) formalin d) formic acid

07. Tollen's reagent is
a) ammoniacal cuprous chloride b) ammoniacal cuprous oxide
c) ammoniacal silver nitrate d) ammoniacal silver chloride

08. When acetaldehyde is heated with Fehling's solution, it gives a precipitate of
a) Cu_2O b) CuO c) CuO + Cu_2O d) Cu

09. The compound that does not undergo Cannizzaro reaction is
a) formaldehyde b) acetaldehyde
c) benzaldehyde d) trimethyl acetaldehyde

10. The formation of cyanohydrin from a ketone is an example
a) electrophilic addition b) nucleophilic addition

c) nucleophilic substitution d) electrophilic substitution

11. Hydrogenation of benzoyl chloride in the presence of Pd on $BaSO_4$ gives

a) phenol b) benzoic acid c) benzyl alcohol d) benzaldehyde

12. Form which of the following, tertiary butyl alcohol is obtained by the action of methyl magnesium iodide?

a) HCHO b) CH_3CHO c) CH_3COCH_3 d) CO_2

13. During reduction of aldehydes with hydrazine and C_2H_5ONa the product formed is

a) $R - CH = N - NH_2$ b) RCN

c) $RCONH_2$ d) $R\text{-}CH_3$

14. Aldol obtained from acetaldehyde is

a) 2-hydroxy butanol b) 3-hydroxy butanol

c) 3-hydroxy butanal d) 2-hydroxy butanal

15. In the reduction of acetaldehyde using $LiAlH_4$ the hydride ion acts as

a) electrophile b) nucleophile

c) both (a) and (b) d) a free radical

16. Which of the following statement is wrong?

a) 2-pentanone and 3-pentanone are position isomers

b) aqueous solution of formaldehyde is known as formalin

c) aldehydes and ketones undergo nucleophilic substitution

d) aldehydes act as reducing agents

17. A cyanohydrin of a compound X on hydrolysis gives lactic acid. The X is

a)HCHO c) $(CH_3)_2CO$

b) CH_3CHO d) $C_6H_5CH_2CHO$

18. The IUPAC name of $CH_3\text{-}C(CH_3)=CH\text{-}COCH_3$ is

a)4-methylpent-3-en-2-one c) 3-methylpent-3-en-1-one

b) 2-methylpent-3-en-2-one d) none of these

19. Which of the following does not give iodoform test?

a) aceto phenone b) benzophenone

c) $CH_3CH(OH)CH_3$ d) $CH_3CH(OH)CH_2CH_2CH_3$

20. The compound which does not reduce Fehling solution is

a) formaldehyde b) acetaldehyde

c) benzaldehyde d) propionaldehyde

21. CH_3COCH_3in the presence of con. H_2SO_4.The product is

a) mesitylene b) mesityl oxide

c) phorone d) paraldehyde

22. Which compound on strong oxidation gives propionic acid?

a) $CH_3CH(OH)CH_3$ b) $CH_3 – CO – CH_3$

c) $(CH_3)_3$ C-OH d) $CH_3\ CH_2\ CH_2\ OH$

23. The compound used in the preparation of the tranquilizer, Sulphonal is

a) Acetone b) acetophenone

c) isopropyl alcohol d) glycol

24. Calcium acetate + calcium benzoate on distillation it gives

a) benzophenone b) benzaldehyde

c) acetophenone d) phenyl benzoate

25. Bakelite is a product of reaction between

a) formaldehyde and NaOH b) phenol and methanal

c) aniline and NaOH d) phenol and chloroform

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26. The compound that does not answer iodoform test

a) Acetophenone b) Isopropyl alcohol

c) 2-pentanol d) Benzophenone

27. The compound used in the preparation of triphenyl methane dye is

a) Methanol b) phenyl methanol

c) Phenyl methanol d) Ethanol

28. Propanone is usually characterized by

a) Fehling's solution b) Iodoform test

c) Schiff's test d) Tollen's reagent

1	2	3	4	5	6	7	8	9	10
b	b	c	b	d	b	c	a	B	b
11	12	13	14	15	16	17	18	19	20
d	c	d	c	b	c	b	a	B	c
21	22	23	24	25	26	27	28		
a	d	a	c	B	d	b	B		

LESSON – 19

CARBOXYLIC ACIDS

BOOK BACK ONE MARKS

01. Which of the following is least acidic

a) C_2H_5OH b) CH_3COOH c) C_6H_5OH d) $ClCH_2COOH$

02. Weakest acid among the following is

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

03. Ester formation involves the reaction of
   a) an aldehyde and a ketone
   b) An alcohol with RMgX
   c) Two molecules of an acid with dehydrating agent
   d) An acyl halide with an alcohol

04. Heating a mixture of sodium acetate and soda lime gives
   a) methane b) ethane
   c) acetic acid d) benzene

05. The acid which reduces Tollen's reagent is
   a) acetic acid b) benzoic acid
   c) formic acid d) oxalic acid

06. The IUPAC name of CH_3-CH_2-$CH(CH_3)$-COOH is
   a) α-methyl butyric acid b) 3-methyl butanoic acid
   c) 2-methyl butanoic acid d) iso pentanoic acid

07. The isomerism exhibited by CH_3CH_2COOH and CH_3COOCH_3 is
   a) metamerism b) position
   c) chain d) functional

08. The acid that cannot be prepared by using Grignard reagent is
   a) acetic acid b) formic acid
   c) butyric acid d) benzoic acid

09. Which order of arrangement is correct in terms of the strength of the acid
   a) $CH_3CH_2COOH > CH_3COOH < HCOOH < ClCH_2COOH$
   b) $ClCH_2COOH < HCOOH < CH_3COOH < CH_3CH_2COOH$
   c) $CH_3CH_2COOH < CH_3COOH < HCOOH < ClCH_2COOH$
   d) $HCOOH > CH_3CH_2COOH < CH_3COOH > ClCH_2COOH$

10. The compound which does not undergo intermolecular Dehydration with P_2O_5 is
   a) Acetic acid b) formic acid
   c)Propionic acid d) butyric acid

11. HCOOH is heated at 160°C.The product formed is
   a) $CO + H_2O$ b) HCOOH c) $H_2 + CO_2$ d) $HCHO + O_2$

12. When chlorine is passed through acetic acid in presence of red P,It forms
   a) Acetyl chloride b) trichloro acetaldehyde
   c) trichloro acetic acid d) methyl chloride

13. Which of the following compounds will react with $NaHCO_3$ solution to give sodium salt and CO_2 ?
   a) acetic acid b) n-hexanol c) phenol d) both (a) and (c)

14. When propanoic acid is treated with aqueous sodium bicarbonate, CO_2 is liberated. The "C" of CO_2 comes from

a) methyl group b) carboxylic acid group

c) methylene group d) bicarbonate

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

a) inter molecular hydrogen bonding

b) formation of dimmers

c) highly acidic hydrogen

d) greater resonance stabilization of their conjugate base

16. Among the following the strongest acid is

a) $ClCH_2COOH$ b) Cl_3CCOOH

c) CH_3COOH d) $Cl_2CHCOOH$

17. Which of the following compound is optically active?

a) CH_3CH_2COOH b) $HOOC\ CH_2\ COOH$

c) $CH_3CH(OH)COOH$ d) $Cl_2CHCOOH$

18. $CH_3CH(OH)COOH$ is treated in the presence of H_2O_2/Fe^{2+} The product is

a) $CH_3COCOOH$ b) CH_3CH_2COOH

c) $CH_3CHOHCHO$ d) $HOOCCH_2COOH$

19. The compound found in some stony deposit in kidneys is

a) potassium oxalate b) oxalic acid

c) potassium succinate d) calcium oxalate

20. Ethylene dicyanide on hydrolysis using acid gives

a) oxalic acid b) succinic acid

c) adipic acid d) propionic acid

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21. Aspirin is

a) acetyl salicylic acid b) acetic anhydride

c) salicylic acid d) ethyl salicylic acid

22. concentrated solution of sodium acetate on electrolysis gives

a) ethane b) Propane

c) methane d) Butane

23. The order of reactivity of carboxylic acid derivatives is

a) Acid chloride > Ester > Amide > Acid anhydride

b) Acid chloride > Acid anhydride > Ester > Amide

c) Acid chloride > Amide > Acid anhydride > Ester

d) Acid anhydride > Ester > Amide > Acid chloride

1	2	3	4	5	6	7	8	9	10
a	d	d	a	c	c	d	B	c	b
11	12	13	14	15	16	17	18	19	20
c	c	a	d	d	b	c	A	d	B
21	22	23							
a	a	B							

LESSON – 20
ORGANIC NITROGEN COMPOUNDS
BOOK BACK ONE MARKS

01. Bromo ethane reacts with silver nitrite to give
    a) $C_2H_5NO_2$ b) C_2H_5-O-NO
    c) C_2H_5Ag + NaBr d) C_2H_5NC
02. The isomerism exhibited by $CH_3 –CH_2–NO_2$ and $CH_3CH_2–O–N=O$ is
    a) position b) chain c) functional d) tautomerism
03. In nitro alkanes $–NO_2$ group is converted to $–NH_2$ group by the reaction with
    a) Sn/HCl b) Zn dust
    c) Zn/NH_4Cl d) Zn/NaOH
04. When nitromethane is reduced with Zn dust + NH_4Cl in neutral medium, we get
    a) CH_3NH_2 b) $C_2H_5NH_2$
    c) CH_3NHOH d) C_2H_5COOH
05. The compound that is most reactive towards electrophilic nitration is
    a) Toluene b) benzene
    c) benzoic acid d) nitrobenzene
06. Nitromethane condenses with acetaldehyde to give
    a) nitro propane b) 1-nitro-2-propanol
    c) 2-nitro-1-propanol d) 3-nitro propanol
07. Which of the following compounds has the small of bitter almonds?
    a) aniline b) nitro methane
    c) benzene sulphonic acid d) nitrobenzene
08. Nitration of nitrobenzene results in
    a) o-dinitro benzene b) 1,3,5-trinitro benzene

c) p-dinitro benzene d) m-dinitro benzene

09. Nitrobenzene on electrolytic reduction in conc. sulphuric acid, the intermediate formed is

a) C_6H_5 NH – NH C_6H_5 b) C_6 H_5 – NHOH

c) C_6H_5 – N = N – C_6H_5 d) C_6 H_5 . HSO_4

10. Electrophile used in the nitration of benzene is

a) hydronium ion b) sulphonic acid

c) nitronium ion d) bromide ion

11. The reduction of $CH_3 – CH_2 – C \equiv N$ with sodium and alchol results In the formation of

a) CH_3-CH(NH_2)-CH_3 b) $CH_3CH_2CH_2$ OH + N_2

c) $CH_3CH_2CH_2NH_2$ d) $CH_3CH_2NH_2$

12. The basic character of amines is due to the

a) tetrahedral structure

b) presence of nitrogen atom

c) lone pair of electrons on nitrogen atom

d) high electronegativity of nitrogen

13. The organic compound that undergoes carbylamines reaction is

a) $(C_2H_5)_2NH$ b) $C_2H_5NH_2$

c) $(C_2H_5)_3N$ d) $(C_2H_5)_4N^+I^-$

14. Primary amine acts as

a) Electrophile b) Lewis base

c) Lewis acid d) Free radical

15. Oxidation of aniline with acidified potassium dichromate gives

a) p-benzo quinine b) benzoic acid

c) benzaldehyde d) benzyl alcohol

16. Which one of the following is a secondary amine?

a) aniline b) diphenyl amine

c) sec.butylamine d) tert.butylamine

17. $C_6H_5NH_2$ is treated with $NaNO_2$ / HCl it forms X.Identify X.

a) C_6H_5Cl b) C_6H_5NHOH

c) $C_6H_5N_2Cl$ d) C_6H_5OH

18. Which of the following will not undergo diazotization?

a) m-toluidine b) aniline

c) p-amino phenol d) benzyl amine

19. Aniline differs from ethylamine by the reaction with

a) metallic sodium b) an alkyl halide

c) chloroform and caustic potash d) nitrous acid

20. When aqueous solution of benzene diazonium chloride is boiled the product formed is

a) benzyl alcohol b) benzene + N_2

c) phenol d) phenyl hydroxylamine

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21. Oil of mirbane is

a) methyl nitrite b) m-dinitrobenzene

c) m-nitro toluene d) nitro benzene

22. Which of the following reagent cannot be used for the conversation of nitrobenzene to aniline

a) Sn / HCl b) $LiAlH_4$ c) H_2/Ni d) Zn / NaOH

23. The reaction between a primary amine, chloroform and alcoholic KOH is known as

a) Sandmeyer reaction b) Hoffmann's reaction

c) Wurtz reaction d) Carbylamine reaction

24. Chloropicrin is

a) CCl_3NOH b) CCl_3N_2Cl c) CCl_3NH_2 d) CCl_3NO_2

25. Which of the following compounds is called "Oil of mirbane"?

a) $C_6H_5NO_2$ b) $C_2H_5NO_2$ c) $C_6H_5NH_2$ d) C_6H_5NO

26. Which one of the following is a secondary amine?

a) aniline b) diphenyl amine

c) sec-butyl amine d) tert-butyl amine

27. When aniline is treated with sodium nitrite and HCl at 0^oC it forms _____

a) Chlorobenzene b) Phenyl hydroxylamine

c) Benzene diazonium chloride d) Phenol

28. Which of the following nitro compounds behave as an acid in the presence of strong alkali ?

a) Primary only b) Secondary only

c) Tertiatry only d) Both (a) and (b)

29. Conversion of benzene diazonium chloride to chloro benzene is called

a) Sandmeyer's reaction b) Stephen's reaction

c) Gomberg reaction d) Schotten – Baumann reaction

30. The compound that does not show tautomerism is

a) nitrobenzene b) nitromethane c) nitroethane d) 2-nitropropane

31. The nitrogen compound used in the preparation of sulpha drugs is

a) methyl amine b) nitromethane c) amino benzene d) nitrobenzene

32. The nitro group can be reduced to primary amino group by
a) Sn / HCl b) Zn dust c) Zn / NH_4Cl d) Zn / NaOH

33. Aniline differs from ethylamine in its reaction with
a) CH_3I b) $CHCl_3$ and caustic KOH c) HNO_2 d) CH_3COCl

34. Nitro-acinitro tautomerism is exhibited by
a) nitromethane b) nitrobenzene c) chloropicrin d) o-toluidine

35. CCl_3NO_2 is used as
a) Soil sterilizing b) organic synthesis
c) good solvent d) antioxidant

36. The reaction between benzene diazonium chloride and benzene in the presence of NaOH is
a) Perkin's reaction b) Gattermann's reaction
c) Sandmeyer reaction d) Gomberg-Bachmann reaction

37. Use of chloropicrin is as
a) Explosive b) Dye c) Anaesthetic d) Sterilizing agent

38. Which of the following will not undergo Hoffmann's bromamide reaction?
a) Ethanamide b) Propanamide c) Methanamide d) Phenyl methanamide

39. The tertiary nitro compound is
a) 2-nitropropane b) 1-nitropropane
c) 1-nitro-2,2-dimethyl propane d) 2-nitro-2-methyl propane

40. The intermediate formed in the nitration of benzene is
a) Arrhenium ion b) Carbanion c) Oxonium ion d) Nitrite ion

41. Aniline reacts with benzoyl chloride in the presence of sodium hydroxide and gives benzanilide. This reaction is known as
a) Gattermann reaction b) Sandmeyer's reaction
c) Schotten-Baumann reaction d) Gomberg-Bachmann reaction

42. The product obtained when nitrobenzene is treated with Zn / NaOH is
a) aniline b) azoxy benzene c) azo benzene d) hydrazo benzene

43. Which one of the following is the most basic ?
a) ammonia b) methylamine c) dimethylamine d) aniline

44. Methyl isocyanide on reduction using $LiAlH_4$ is
a) Methyl amine b) Ethyl amine c) Dimethyl amine d) Trimethyl amine

1	2	3	4	5	6	7	8	9	10
a	c	A	c	a	b	d	d	b	c
11	12	13	14	15	16	17	18	19	20

c	c	B	b	a	b	c	d	d	C
21	22	23	24	25	26	27	28	29	30
d	d	d	d	a	b	c	d	a	a
31	32	33	34	35	36	37	38	39	40
c	a	c	a	a	d	d	c	d	a
41	42	43	44						
c	d	c	C						

LESSON – 21
BIOMOLECULES
BOOK BACK ONE MARKS

01. Which is a mono saccharide among the following?
a) Sucrose b) Cellulose c) Maltose d) Glucose

02. Identify the reducing sugar.
a) Sucrose b) Cellulose c) Starch d) Glucose

03. Sucrose is not
a) a di saccharide
b) a non-reducing sugar
c) hydrolysed to only glucose
d) hydrolysed to glucose & fructose.

04. Sucrose contains glucose and fructose linked by
a) $C_1 - C_1$ b) $C_1 - C_2$ c) $C_1 - C_4$ d) $C_1 - C_6$

05. Glucose is not oxidized to gluconic acid by
a) Br_2/H_2O b) Fehling solutions
c) Tollen's reagent d) Conc. HNO_3

06. Inversion of sucrose refers to
a) oxidation of sucrose
b) reduction of sucrose
c) hydrolysis of sucrose to glucose and fructose
d) polymerization of sucrose

07. Glucose forms _____ with acetic anhydride and sodium acetate.
a) di acetate b) tetra acetate c) penta acetate d) hexa acetate

08. The amino acid without chiral carbon is
a) Glycine b) Alanine c) Proline d) Thyrosine

09. The building block of proteins are
a) α – hydroxy acids b) α – amino acids

c) β – hydroxy acids d) β – amino acids

10. Which is not true of amino acid?
    a) amino acid forms Zwitter ion
    b) has isoelectric point
    c) dual behaviors
    d) amino acid is insoluble in NaOH solution

11. Two amino acids A,B- react to give
    a) two dipeptides b) three dipeptides
    c) four dipeptides d) only one

12. A di peptide does not have
    a) two peptide units b) portion of two amino acids
    c) an amido group d) salt like structure

13. Proteins are not sensitive to
    a) acids c) elevated temperature
    b) bases d) water

14. Denaturation does not involve
    a) breaking up of H- bonding in proteins
    b) the loss of biological action of enzyme
    c) the loss of secondary structure
    d) loss of primary structure of proteins

15. Specificity of enzyme is due to
    a) The sequence of amino acids
    b) secondary structure
    c) tertiary structure
    d) all of the above

16. Ultimate products of hydrolysis of proteins is
    a) aniline b) aliphatic acid
    c) amino acid d) aromatic acid

17. Proteins are
    a) polypeptides b) poly acids
    c) poly phenols d) poly esters

18. Which of the following contains a lipid?
    a) starch b) mineral oil c) edible oil d) peptide

19. Which among the following contains triglyceride?

a) Wax b) Cooking oil
c) Essential oil d) Albumin

20. Which contains a long chain ester?
a) wax b) cooking oil
c) turpentine oil d) cellulose

21. An example of a fatty acid obtained from a cooking oil is
a) acetic acid b) stearic acid
c) benzoic acid d) oxalic acid

22. Which is not a saturated fatty acid?
a) Palmitic acid b) Stearic acid
c) Oleic acid d) Glyceric acid

23. Alkaline hydrolysis of cooking oil gives
a) soap b) glycerol c) fatty acid d) both (a) and (b)

24. Hair and nail contains
a) cellulose b) fat c) keratin d) lipid

25. Important constituent of cell wall is
a) lipid b) cellulose c) protein d) vitamin

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26. Peptide bond is the key feature of
a) poly saccharides b) Proteins c) Lipids d) Vitamins

27. Glucose reacts with acetic anhydride in the presence of pyridine to give
a) mono acetate b) diacetate c) penta acetate d) no reaction

28. A mixture of D(+) glucose and D(-) fructose is known as
a) cane sugar b) sweetless sugar c) invert sugar d) starch sugar

29. Starch when heated to 200-250^{o}C changes into
a) dextrin b) glucose c) Fructose d) Cellulose

30. The precipitation of proteins is known as
a) denaturation b) renaturation c) coagulation d) peptisation

31. The protective agent on the surface of animals and plants is
a) carbohydrates b) vitamin c) nucleic acids d) wax

32. Cephalins have been implicated in the process of
a) metabolism b) organization of the body
c) blood purification d) blood coagulation

33. The optically inactive amino acid is
a) glycine b) Alanine c) proline d) thyrosine

34. Sorbitol and Mannitol are

a) isomers b) polymers c) epimers d) dimmers

35. _____ occur in white matter of the brain and of all nervous tissue

a) Lacithin b) Cephalin c) Galactolipids d) Aminoacid

1	2	3	4	5	6	7	8	9	10
d	d	c	B	d	c	c	a	b	d
11	12	13	14	15	16	17	18	19	20
a	a	d	A	d	c	a	c	b	a
21	22	23	24	25	26	27	28	29	30
b	c	d	C	b	b	c	c	a	a
31	32	33	34	35					
d	d	a	c	c					

ALL THE BEST