## CHEMISTRY

46. The number of electrons present on the oil drop which has the static electric charge of $-3.02044 \times 10^{-19} \mathbf{C}$ is
1) 2
2) 5
3) 7
4) 8
47. Electrons are emitted with zero velocity from a metal surface when it is exposed to radiation of wavelength $4000 A^{0}$. The threshold frequency is
1) $5 \times 10^{34} \mathrm{sec}^{-1}$
2) $7.5 \times 10^{14} \mathrm{sec}^{-1}$
3) $9.2 \times 10^{14} \mathrm{sec}^{-1}$
4) $7.5 \times 10^{34} \mathrm{sec}^{-1}$
48. An element $\mathbf{Z}=\mathbf{1 2 0}$ has not yet been discovered. In which group would you place this element
1) IV A
2) VII A
3) II A
4) V A
49. The correct matching is
1) $I E_{1}: \quad \mathrm{Rb}>\mathrm{K}>\mathrm{Na}$
2) Radius : $I^{+}<I>I^{-}$
3) $E . N: F<C l<B r$
4) $E A \quad: \quad S>S e>O$
50. In a molecule of type $\left(A B_{2} L_{3}\right)$, the central atom (A) contains two bond pairs (B) and three lone pairs $(\mathrm{L})$. Then the shape of that molecule is
1) T-shape
2) See saw
3) V-shape
4) Linear
51. At a given temperature, the ratio of Kinetic energy of 3 gram of hydrogen and 4 gram of oxygen is
1) $1: 12$
2) $12: 1$
3) $5: 6$
4) $3: 4$
52. The prefix "pico" represents the multiple of
1) $10^{-9}$
2) $10^{-12}$
3) $10^{-18}$
4) $10^{-21}$
53. The specific gravity of $\mathbf{8 4 \%}\left(\frac{w}{w}\right) \mathrm{H}_{2} \mathrm{SO}_{4}$ is $\mathbf{1 . 7 5 2}$. The normality of solution is
1) 30.03 N
2) 2.05 N
3) 39.5 N
4) 4.5 N
54. The Oxidation State of Fe in $\left[\mathrm{Fe}\left(\mathrm{H}_{2} \mathrm{O}\right)_{5} \mathrm{NO}\right]^{+2}$ (Brown ring) is
1) +1
2) +2
3) +3
4) +6
55. In which of the following $\Delta H>\Delta E$
1) $\underset{(\mathrm{g})}{\mathrm{H}_{2}}+\underset{(\mathrm{g})}{\mathrm{I}_{2}} \rightleftharpoons 2 \underset{(\mathrm{~g})}{\mathrm{HI}}$
2) $\underset{(\mathrm{g})}{\mathrm{N}_{2}}+\underset{(\mathrm{g})}{3 \mathrm{H}_{2}} \rightleftharpoons 2 \underset{(\mathrm{~g})}{\mathrm{NH}_{3}}$
3) $\underset{(\mathrm{g})}{ } \mathrm{PCl}_{5} \rightleftharpoons \underset{(\mathrm{~g})}{ } \mathrm{PCl}_{3}+\underset{(\mathrm{g})}{\mathrm{Cl}_{2}}$
4) $2 \underset{(\mathrm{~g})}{\mathrm{SO}_{2}}+\underset{(\mathrm{g})_{2}}{\mathrm{O}} \rightleftharpoons \underset{(\mathrm{g})}{ } \mathrm{SO}_{3}$
56. Identify the salt whose aqueous solution is basic
1) $\mathrm{NH}_{4} \mathrm{Cl}$
2) $\mathrm{CuSO}_{4}$
3) $\mathrm{Al}_{2}\left(\mathrm{SO}_{4}\right)_{3}$
4) KCN
57. The $P^{H}$ of the water that comes out from cation exchange resin in synthetic resin method is
1) $<7$
2) $>7$
3) 7
4) 10
58. The cation which shows high conductivity in aqueous solution is
1) $\underset{(a q)}{\mathrm{Li}^{+}}$
2) $\underset{(a q)}{K^{+}}$
3) $\underset{(a q)}{R b^{+}}$
4) $\underset{(a q)}{\mathrm{Cs}^{+}}$
59. For a good quality cement, the ratio of silica to Alumina should be between
1) 1 to 2
2) 2.5 to 4
3) 5 to 7
4) 4.5 to 7.5
60. $B_{2} \mathrm{H}_{6}+2 \mathrm{NH}_{3} \xrightarrow{120^{\circ} \mathrm{C}} A$ where ' $\mathbf{A}$ ' is formulated as
1) $\left[\mathrm{BH}_{4}\right]^{+}\left[\mathrm{BH}_{2}\left(\mathrm{NH}_{3}\right)_{2}\right]^{-}$
2) $\left[\mathrm{BH}_{2}\left(\mathrm{NH}_{3}\right)_{2}\right]^{+}\left[\mathrm{BH}_{4}\right]^{-}$
3) $\left[\mathrm{BH}_{3}\left(\mathrm{NH}_{3}\right)\right]^{+}\left[\mathrm{BH}_{4}\left(\mathrm{NH}_{3}\right)\right]^{-}$
4) $\left[\mathrm{BH}_{4}\left(\mathrm{NH}_{3}\right)_{2}\right]^{+}\left[\mathrm{BH}_{2}\right]^{-}$
61. The basic unit of pyrosilicate is
1) $\mathrm{SiO}_{4}^{-4}$
2) $\left(\mathrm{SiO}_{3}\right)_{n}^{-2 n}$
3) $\mathrm{Si}_{2} \mathrm{O}_{7}^{-6}$
4) $\left(\mathrm{Si}_{2} \mathrm{O}_{5}\right)_{n}^{-2 n}$
62. The pollutant that causes methemoglobinemia (blue baby syndrome) is
1) $P b^{+2}$
2) $\mathrm{SO}_{4}^{-2}$
3) $\mathrm{NO}_{3}^{-}$
4) $\mathrm{AsO}_{3}^{-3}$
63. The IUPAC name of

1) 3-Formyl-3-methyl Pentane
2) 2 - ethyl 2 - methyl butanal
3) 2 - ethyl - 2 formylbutane
4) 2,2 - Diethyl propanal
64. $\mathrm{CH}_{2}=\mathrm{CH}-\mathrm{CH}_{2} \mathrm{OH}$ and $\mathrm{CH}_{2}=\mathrm{CH}-\mathrm{O}-\mathrm{CH}_{3}$ are
1) Chain isomers
2) Position isomers
3) functional group isomers 4) metamers
65. $A \underset{\mathrm{Pd}_{2} / \mathrm{HaSO}_{4}}{\stackrel{\mathrm{H}_{2}}{ }} R-C \equiv C-R \xrightarrow[\substack{\mathrm{Na/NH}_{3} \\ 200^{\circ} \mathrm{C}}]{\mathrm{H}_{2}} B$. Where A and B are respectively
1) Trans alkene, cis alkene
2) cis alkene, Trans alkene
3) cis alkene, cis alkene
4) Trans alkene, Trans alkene
66. 



1) $A=$ chlorobenzene
$\mathrm{B}=$ Chlorobenzene
2) A=Lindane
B=Chlorobenzene
3) $A=B H C$
$\mathrm{B}=\mathrm{BHC}$
4) $A=$ Chlorobenzene $B=$ Lindane
67. Glycerol is purified by
1) Crystallisation
2) Fractional distillation
3) Vacuum distillation
4) sublimation
68. The charge heated in the blast furnace contains ore, coke and limestone in the ratio by weight of
1) $1: 2: 3$
2) $1: 4: 8$
3) $8: 4: 1$
4) $2: 2: 2$
69. The outer electronic configuration of the element with $\mathrm{Z}=\mathbf{4 2}$ is
1) $5 s^{2} 4 d^{4}$
2) $5 s^{1} 4 d^{5}$
3) $5 s^{2} 5 p^{4}$
4) $4 s^{2} 3 d^{4}$
70. The catalyst used in the preparation of High density polythene (HDP) is
1) $\mathrm{R}_{3} \mathrm{Al}+\mathrm{TiCl}_{4}$
2) $\mathrm{SnCl}_{4}$
3) Ni
4) $P t$
71. The complex $\mathrm{Fe}(\mathrm{CO})_{x}$ follows the EAN rule. Then the value of ' $x$ ' is
1) 3
2) 4
3) 5
4) 6
72. The sum of coordination number and oxidation number of the metal ' $M$ ' in the complex $\left[\mathrm{M}(\mathrm{en})_{2}\left(\mathrm{C}_{2} \mathrm{O}_{4}\right)\right] \mathrm{Cl}$ is
1) 6
2) 7
3) 8
4) 9
73. The IUPAC name of the wilkinsons catalyst $\left[\operatorname{RhCl}\left(P P h_{3}\right)_{3}\right]$ is
1) Chlorotris (triphenyl phosphine) rhodium (I)
2) Chlorotris (triphenyl phosphine) rhodium (IV)
3) Chlorotris (triphenyl phosphine) rhodium (O)
4) Chlorotris (triphenyl phosphine) rhodium (VI)
74. Which of the following is $\mathbf{1 0 0}$ times sweeter than sugar
1) sucralose
2) saccharin
3) Aspartame
4) Alitame
75. Which of the following does not exhibit the phenomenon of mutarotation
1) (+) sucrose
2) (+) Lactose
3) (+) Maltose
4) (-) Fructose
76. Which of the following varies from species to species
1) $A=T$
2) $C=G$
3) $\mathrm{A}+\mathrm{G}=\mathrm{C}+\mathrm{T}$
4) $\frac{A T}{G C}$ ratio
77. Which of the following is fully fluorinated polymer
1) PVC
2) Thiokol
3) Teflon
4) Neoprene
78. Which of the following can undergo both aldol condensation and haloform reaction?
1) $\mathrm{CH}_{3}-\mathrm{CH}_{2}-\mathrm{CHO}$
2) $\mathrm{CH}_{3}-\mathrm{CO}-\mathrm{CH}_{3}$
3) $\mathrm{Cl}_{3} \mathrm{C}-\mathrm{CHO}$
4) $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CHO}$
79. Primary, secondary and tertiary alcohols are distinguished by which of the following methods?
1) Oxidation method
2) Lucas test
3) Victor meyer's method
4) All of the above
80. $\left(\mathrm{CH}_{3}\right)_{3} \mathrm{C}-\mathrm{O}-\mathrm{CH}_{3}$ reacts with dil.HI gives
1) $\left(\mathrm{CH}_{3}\right)_{3} \mathrm{I}+\mathrm{CH}_{3} \mathrm{OH}$
2) $\left(\mathrm{CH}_{3}\right)_{3} \mathrm{COH}+\mathrm{CH}_{3} \mathrm{I}$
3) $\left(\mathrm{CH}_{3}\right)_{2} \mathrm{CHOH}+\mathrm{CH}_{3} \mathrm{I}$
4) $\left(\mathrm{CH}_{3}\right)_{3} \mathrm{I}+\mathrm{CH}_{3} \mathrm{I}$
81. 



 $\xrightarrow[\text { Heat, } \mathrm{H}_{3} \mathrm{O}^{+}]{\mathrm{KMnO} / \mathrm{KOH}}$ B

In these reactions $A$ and $B$ are

1) $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{COOH}$ and $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{COOH}$
2) $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{COOH}$ and $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{OH}$
3) $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{COOH}$ and $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CH}_{2} \mathrm{CHO}$
4) $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{COOH}$ and $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CH}_{2} \mathrm{CH}_{2} \mathrm{CHO}$
82. Which of the following would not react with benzene sulphonyl chloride in aq. NaOH ?
1) Aniline
2) Methylamine
3) N,N-Dimethylaniline
4) N-Methyl ethanamine
83. Atoms of element ' $B$ ' form hcp lattice and those of the element ' $A$ ' occupy $\frac{2}{3}$ rd of tetrahedral voids. What is the formula of the compound formed by the elements $A$ and $B$.
1) AB
2) $A_{2} B$
3) $A_{2} B_{3}$
4) $A_{4} B_{3}$
84. The molar conductivity of $0.025 \mathrm{~mol} . \mathrm{lit}^{-1}$ methanoic acid is $46.1 \mathrm{s.cm}^{2} . \mathrm{mole}^{-1}$. The degree of dissociation is? $\left(\lambda_{\left(\mathrm{H}^{+}\right)}^{0}=349.6\right.$ s.cm $\mathrm{cmole}^{-1}$ and $\lambda_{\left(\mathrm{HCOO}^{-}\right)}^{0}=54.6$ s.cm $\left.\mathrm{cm}^{2} . \mathrm{mile}^{-1}\right)$
1) 0.114
2) 21.3
3) 3.66
4) 0.35
85. A first order reaction is $50 \%$ complete in 23 min . The time required to complete $\mathbf{9 0 \%}$ of the reaction is
1) 23 min
2) 56 min
3) 76.5 min
4) 92 min
86. Among $\left[\mathrm{Fe}(\mathrm{CN})_{6}\right]^{-4}, \mathrm{PO}_{4}^{-3}, \mathrm{SO}_{4}^{-2}$ and $\mathrm{Cl}^{-}$, which coagulates positive sol readily
1) $\left[\mathrm{Fe}(\mathrm{CN})_{6}\right]^{-4}$
2) $\mathrm{PO}_{4}^{-3}$
3) $\mathrm{SO}_{4}^{-2}$
4) $\mathrm{Cl}^{-}$
87. Identify the correct matching
1) Thermal Stability

- $\mathrm{NH}_{3}<\mathrm{PH}_{3}<\mathrm{AsH}_{3}<\mathrm{SbH}_{3}$

2) Reducing Power

- $\mathrm{NH}_{3}>\mathrm{PH}_{3}>\mathrm{AsH}_{3}>\mathrm{SbH}_{3}$

3) Basic Character - $\mathrm{NH}_{3}<\mathrm{PH}_{3}>\mathrm{AsH}_{3}<\mathrm{SbH}_{3}$
4) Volatile nature

- $\quad \mathrm{PH}_{3}>\mathrm{AsH}_{3}>\mathrm{NH}_{3}>\mathrm{SbH}_{3}$

88. Identify acidic oxide
1) $\mathrm{Cl}_{2} \mathrm{O}_{7}$
2) $\mathrm{CO}_{2}$
3) $\mathrm{N}_{2} \mathrm{O}_{5}$
4) All the above
89. Among the following which one has the highest oxidizing power
1) HOCl
2) $\mathrm{HClO}_{2}$
3) $\mathrm{HClO}_{3}$
4) $\mathrm{HClO}_{4}$
90. The hybridization and number of lone pairs present around ' $X e^{\prime}$ atom in $X e F_{4}$ is
1) $s p^{3} d, 3$
2) $s p^{3} d^{2}, 2$
3) $s p^{3} d^{3}, 1$
4) $s p^{3}, 1$

## BIOLOGY

91. Which of the following taxonomic categories includes all the other categories?
1) order
2) kingdom
3) species
4) family
92. Muscles which regulate the diameter of pupil are
1) Ectodermal striated
2) Mesodermal striated
3) Ectodermal unstriated
4) Mesodermal unstriated
93. Which of the following is not related to Rock weed
1) It is a Rhodophyceae member
2) It contains chl.a and chl.c
3) Diplontic life cycle is present
4) Two unequal lateral flagella are present
94. The following are associated with nerve fibres in Peripheral Nervous System
A) Axolemma
B) Neurilemma
C) Endoneurium
D) Myelin sheath
E) Axoplasm

The correct sequence of the above from inside to outside w.r.to the nerve fibre is

1) $E, A, B, D, C$
2) $\mathrm{E}, \mathrm{A}, \mathrm{D}, \mathrm{C}, \mathrm{B}$
3) $E, A, C, B, D$
4) $E, A, D, B, C$
95. How many sentences are correct related to Terror of Bengal
i) Vegetative propagation takes place through offset
ii) It is free floating hydrophyte
iii) Pulvinus petiole is present
iv) It drains $\mathrm{CO}_{2}$ from the water
1) All are correct
2) Three are correct
3) Two are correct
4) one is correct
96. Identify the correct statements
A) Thyroxine can decrease rate of heart beat and cardiac output
B) Neural signals through the sympathetic nerves can increase rate of heart beat and cardiac output
C) Epinephrine and norepinephrine can increase rate of heart beat and cardiac output
D) Parasympathetic neural signals can increase rate of heart beat and cardiac output
1) $A, B$
2) B,C
3) C,D
4) A,D
97. Mismatch is
1) Lycopsida - Selaginella
2) Sphenopsida - Lycopodium
3) Pteropsida - Adiantum
4) Psilopsida- (psilotum)
98. Choose the incorrect combinations from the following
A) R.C.Dagar - Polyblend
B) Kyoto protocol - Depletion of $O_{3}$
C) Amrita Devi - Conservation of wildlife in urban areas
D) Burning of plastics - Polychlorinated biphenyls
1) all the above
2) $A, B$
3) C,D
4) $A, B, C$
99. Ascospores and Basidiospores produced in the following manner
1) Endogenously, Endogenously
2) Exogenously, Endogenously
3) Endogenously, Exogenously
4) Exogenously, Exogenously
100. Defects in ADH receptors or inability to secrete ADH cause
1) Diabetes mellitus
2) Diabetes insipidus
3) Uremia
4) Renal Calculi
101. Pneumatophores are present in
1) Rhizopus
2) Rhizobium
3) Vanda
4) Rhizophora
