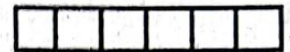


11 - Std

ACHIEVEMENT TEST - 2023 - 2024



Time : 1.30 Hrs

CHEMISTRY

Marks : 100

- (1) Carbon forms two oxides, namely carbon monoxide and carbon dioxide. The equivalent mass of which element remains constant? (a) Carbon (b) oxygen (c) both carbon and oxygen (d) neither carbon nor oxygen
- (2) The equivalent mass of a trivalent metal element is 9 g eq⁻¹ the molar mass of its anhydrous oxide is (a) 102 g (b) 27 g (c) 270 g (d) 78 g
- (3) When 22.4 litres of H₂ (g) is mixed with 11.2 litres of Cl₂ (g), each at 273 K at 1 atm the moles of HCl (g), formed is equal to (a) 2 moles of HCl (g) (b) 0.5 moles of HCl (g) (c) 1.5 moles of HCl (g) (d) 1 moles of HCl (g)
- (4) 7.5 g of a gas occupies a volume of 5.6 litres at 0° C and 1 atm pressure. The gas is (a) NO (b) N₂O (c) CO (d) CO₂
- (5) Two 22.4 litre containers A and B contains 8 g of O₂ and 8g of SO₂ respectively at 273K and 1 atm pressure, then (a) Number of molecules in A and B are same (b) Number of molecules in B is more than that in A. (c) The ratio between the number of molecules in A to number of molecules in B is 2:1 (d) Number of molecules in B is three times greater than the number of molecules in A
- (6) What is the mass of precipitate formed when 50 ml of 8.5 % solution of AgNO₃ is mixed with 100 ml of 1.865 % potassium chloride solution? (a) 3.59 g (b) 7 g (c) 14 g (d) 28 g
- (7) Which of the following compound(s) has /have percentage of carbon same as that in ethylene (C₂H₄)? (a) propene (b) ethyne (c) benzene (d) ethane
- (8) Splitting of spectral lines in an electric field is called (a) Zeeman effect (b) Shielding effect (c) Compton effect (d) Stark effect
- (9) According to the Bohr Theory, which of the following transitions in the hydrogen atom will give rise to he⁺ least energetic photon? (a) n = 6 to n = 1 (b) n = 5 to n = 4 (c) n = 5 to n = 3 (d) n = 6 to n = 5
- (10) **Assertion** : The spectrum of He⁺ is expected to be similar to that of hydrogen.
Reason : He⁺ is also one electron system.
(a) If both assertion and reason are true and reason is the correct explanation of assertion.
(b) If both assertion and reason are true but reason is not the correct explanation of assertion. (c) If assertion is true but reason is false (d) If both assertion and reason are false
- (11) Two electrons occupying the same orbital are distinguished by (a) Azimuthal quantum number (b) Spin quantum number (c) Magnetic quantum number (d) Orbital quantum number
- (12) The maximum number of electrons in a sub shell is given by the expression (a) 2n² (b) 2l + 1 (c) 4l + 2 (d) none of these
- (13) The total number of orbitals associated with the principal quantum number n = 3 is (a) 9 (b) 8 (c) 5 (d) 7
- (14) How many electrons in an atom with atomic number 105 can have (n + l) = 8? (a) 30 (b) 17 (c) 15 (d) unpredictable
- (15) The ratio of de Broglie wavelengths of a deuterium atom to that of an α - particle, when the velocity of the former is five times greater than that of later, is (a) 4 (b) 0.2 (c) 2.5 (d) 0.4
- (16) What would be the IUPAC name for an element with atomic number 222? (a) bibibium (b) bididium (c) didibium (d) bibiblum
- (17) The group of elements in which the differentiating electron enters the anti penultimate shell of atoms are called (a) p-block elements (b) d-block elements (c) s-block elements (d) f-block elements
- (18) Which of the following elements will have the highest electronegativity? (a) Chlorine (b) Nitrogen (c) Cesium (d) Fluorine
- (19) Identify the wrong statement.
(a) Amongst the isoelectronic species, smaller the positive charge on cation, smaller is the ionic radius.
(b) Amongst isoelectronic species greater the negative charge on the anion, larger is the ionic radius.
(c) Atomic radius of the elements increases as one moves down the first group of the periodic table.
(d) Atomic radius of the elements decreases as one moves across from left to right in the 2nd period of the periodic table.
- (20) Which one of the following is the least electronegative element? (a) Bromine (b) Chlorine (c) Iodine (d) Hydrogen
- (21) The element with positive electron gain enthalpy? (a) Hydrogen (b) Sodium (c) Argon (d) Fluorine
- (22) Which of the following is second most electronegative element? (a) Chlorine (b) Fluorine (c) Oxygen (d) Sulphur
- (23) Which of the following pairs of elements exhibit diagonal relationship? (a) Be and Mg (b) Li and Mg (c) Be and B (d) Be and Al
- (24) Which one of the following statements is incorrect with regard to ortho and para hydrogen? (a) They are nuclear spin isomers (b) Ortho isomer has zero nuclear spin whereas the para isomer has one nuclear spin (c) The para isomer is favoured at low temperatures (d) The thermal conductivity of the para isomer is 50% greater than that of the ortho isomer

- (25) Ionic hydrides are formed by
 (a) halogens (b) chalogens (c) Inert gases (d) group one elements
- (26) The hardness of water can be determined by volumetrically using the reagent
 (a) sodiumthiosulphate (b) potasslum permanganate (c) hydrogen peroxide (d) EDTA
- (27) Zeolite used to soften hardness of water is, hydrated (a) Sodium aluminium silicate
 (b) Calcium aluminium silicate (c) Zinc aluminium borate (d) Lithium aluminium hydride
- (28) Volume strength of 1.5 N H_2O_2 is (a) 1.5 (b) 4.5 (c) 16.8 (d) 8.4
- (29) The type of H-bonding present in ortho nitro phenol and p-nitro phenol are respectively (a) inter molecular
 H-bonding and Intra molecular H-bonding
 (b) Intra molecular H-bonding and Inter molecular H-bonding
 (c) Intra molecular H - bonding and no H - bonding
 (d) Intra molecular H - bonding and Intra molecular H - bonding
- (30) Water is a (a) basic oxide (b) acidic oxide (c) amphoteric oxide (d) none of these
- (31) Which of the following compounds will not evolve H_2 gas on reaction with alkalimetals ? (a) ethanoic acid
 (b) ethanol (c) phenol (d) none of these
- (32) Sodium is stored in (a) alcohol (b) water (c) kerosene (d) none of these
- (33) Lithium shows diagonal relationship with (a) sodium (b) magnesium (c) calcium (d) aluminium
- (34) In which process, fused sodium hydroxide is electrolysed for extraction of sodium ?
 (a) Castner's process (b) Cyanide process (c) Down process (d) All of these
- (35) In context with beryllium, which one of the following statements is incorrect ?
 (a) It is rendered passive by nitric acid (b) It forms Be_2C
 (c) Its salts are rarely hydrolysed (d) Its hydride is electron deficient and polymeric
- (36) The suspension of slaked lime in water is known as
 (a) lime water (b) quick lime (c) milk of lime (d) aqueous solution of slaked lime
- (37) Among the following the least thermally stable is (a) K_2CO_3 (b) Na_2CO_3 (c) $BaCO_3$ (d) Li_2CO_3
- (38) Gases deviate from ideal behavior at high pressure. Which of the following statement(s) is correct for non- ideality?
 (a) at high pressure the collision between the gas molecule become enormous
 (b) at high pressure the gas molecules move only in one direction
 (c) at high pressure, the volume of gas become insignificant
 (d) at high pressure the intermolecular Interactions become significant
- (39) When an ideal gas undergoes unrestrained expansion, no cooling occurs because the molecules
 (a) are above inversion temperature (b) exert no attractive forces on each other
 (c) do work equal to the loss in kinetic energy (d) collide without loss of energy
- (40) The temperatures at which real gases obey the ideal gas laws over a wide range of pressure is called
 (a) Critical temperature (b) Boyle temperature (c) Inversion temperature (d) Reduced temperature
- (41) In a closed room of $1000 m^3$ a perfume bottle is opened up. The room develops a smell. This is due to which
 property of gases? (a) Viscosity (b) Density (c) Diffusion (d) None
- (42) A bottle of ammonia and a bottle of HCl connected through a long tube are opened simultaneously at both
 ends. The white ammonium chloride ring first formed will be
 (a) At the center of the tube (b) Near the hydrogen chloride bottle
 (c) Near the ammonia bottle (d) Throughout the length of the tube
- (43) If temperature and volume of an ideal gas is increased to twice its values, the initial pressure P becomes
 (a) $4P$ (b) $2P$ (c) P (d) $3P$
- (44) Maximum deviation from ideal gas is expected from (a) $CH_4(g)$ (b) $NH_3(g)$ (c) $H_2(g)$ (d) $N_2(g)$
- (45) The amount of heat exchanged with the surrounding at constant pressure is given by the quantity
 (a) ΔE (b) ΔH (c) ΔS (d) ΔG
- (46) All the naturally occurring processes proceed spontaneously in a direction which leads to
 (a) decrease in entropy (b) increase in enthalpy (c) increase in free energy (d) decrease in free energy
- (47) In an adiabatic process, which of the following is true ? (a) $q = w$ (b) $q = 0$ (c) $\Delta E = q$ (d) $P \Delta V = 0$
- (48) Heat of combustion is always (a) positive (b) negative (c) zero (d) either positive or negative
- (49) Which of the following is not a thermodynamic function ?
 (a) internal energy (b) enthalpy (c) entropy (d) frictional energy
- (50) The correct thermodynamic conditions for the spontaneous reaction at all temperature is
 (a) $\Delta H < 0$ and $\Delta S > 0$ (b) $\Delta H < 0$ and $\Delta S < 0$ (c) $\Delta H > 0$ and $\Delta S = 0$ (d) $\Delta H > 0$ and $\Delta S > 0$
- (51) The temperature of the system, decreases in an _____
 (a) Isothermal expansion (b) Isothermal Compression
 (c) adiabatic expansion (d) adiabatic compression
- (52) The equilibrium constant for a reaction at room temperature is K_1 and that at 700 K is K_2 . If $K_1 > K_2$, then
 (a) The forward reaction is exothermic (b) The forward reaction is endothermic

- (c) The reaction does not attain equilibrium (d) The reverse reaction is exothermic
- (53) Solubility of carbon dioxide gas in cold water can be increased by
(a) increase in pressure (b) decrease in pressure (c) increase in volume (d) none of these
- (54) Which one of the following is incorrect statement?
(a) for a system at equilibrium, Q is always less than the equilibrium constant
(b) equilibrium can be attained from either side of the reaction
(c) presence of catalyst affects both the forward reaction and reverse reaction to the same extent (d) Equilibrium constant varied with temperature
- (55) An equilibrium constant of 3.2×10^{-6} for a reaction means, the equilibrium is
(a) largely towards forward direction (b) largely towards reverse direction
(c) never established (d) none of these
- (56) Which of the following is not a general characteristic of equilibrium involving physical process
(a) Equilibrium is possible only in a closed system at a given temperature
(b) The opposing processes occur at the same rate and there is a dynamic but stable condition (c) All the physical processes stop at equilibrium (d) All measurable properties of the system remains constant
- (57) Consider the following reversible reaction at equilibrium, $A + B \rightleftharpoons C$, If the concentration of the reactants A and B are doubled, then the equilibrium constant will
(a) be doubled (b) become one fourth (c) be halved (d) remain the same
- (58) The molality of a solution containing 1.8g of glucose dissolved in 250g of water is
(a) 0.2 M (b) 0.01 M (c) 0.02 M (d) 0.04 M
- (59) Which one of the following gases has the lowest value of Henry's law constant? (a) N_2 (b) He (c) CO_2 (d) H_2
- (60) Osmotic pressure (π) of a solution is given by the relation
(a) $\pi = nRT$ (b) $\pi V = nRT$ (c) $\pi RT = n$ (d) none of these
- (61) According to Raoult's law, the relative lowering of vapour pressure for a solution is equal to
(a) mole fraction of solvent (b) mole fraction of solute
(c) number of moles of solute (d) number of moles of solvent
- (62) Two liquids X and Y on mixing gives a warm solution. The solution is
(a) ideal (b) non-ideal and shows positive deviation from Raoult's law
(c) ideal and shows negative deviation from Raoult's Law (d) non-ideal and shows negative deviation from Raoult's Law
- (63) The Van't Hoff factor (i) for a dilute aqueous solution of the strong electrolyte barium hydroxide is
(a) 0 (b) 1 (c) 2 (d) 3
- (64) Phenol dimerises in benzene having van't Hoff factor 0.54. What is the degree of association?
(a) 0.46 (b) 92 (c) 46 (d) 0.92
- (65) Which of the following molecule contain no π bond? (a) SO_2 (b) NO_2 (c) CO_2 (d) H_2O
- (66) When one s and three p orbitals hybridise (a) four equivalent orbitals at 90° to each other will be formed
(b) four equivalent orbitals at $109^\circ.28'$ to each other will be formed
(c) four equivalent orbitals, that are lying the same plane will be formed (d) none of these
- (67) XeF_2 is isostructural with (a) $SbCl_2$ (b) $BaCl_2$ (c) TeF_2 (d) ICl_2
- (68) Of the following molecules, which have shape similar to carbon dioxide? (a) $SnCl_2$ (b) NO_2 (c) C_2H_2 (d) All of these.
- (69) Shape of ClF_3 is (a) Planar triangular (b) Pyramidal (c) 'T' Shaped (d) none of these
- (70) Which of the following conditions is not correct for resonating structures?
(a) the contributing structure must have the same number of unpaired electrons
(b) the contributing structures should have similar energies
(c) the resonance hybrid should have higher energy than any of the contributing structure. (d) none of these
- (71) CaO and $NaCl$ have the same crystal structure and approximately the same radii. If U is the lattice energy of $NaCl$, the approximate lattice energy of CaO is (a) U (b) 2U (c) U/2 (d) 4U
- (72) Select the molecule which has only one π bond.
(a) $CH_3-CH=CH-CH_3$ (b) $CH_3-CH=CH-CHO$ (c) $CH_3-CH=CH-COOH$ (d) All of these
- (73) The general formula for alkadiene is (a) C_nH_{2n} (b) C_nH_{2n-1} (c) C_nH_{2n-2} (d) C_nH_{n-2}
- (74) The number of stereoisomers of 1, 2 - dihydroxy cyclopentane (a) 1 (b) 2 (c) 3 (d) 4
- (75) Which of the following is optically active?
(a) 3-Chloropentane (b) 2-Chloro propane (c) Meso - tartaric acid (d) Glucose
- (76) The isomer of ethanol is (a) acetaldehyde (b) dimethylether (c) acetone (d) methyl carbinol
- (77) How many cyclic and acyclic isomers are possible for the molecular formula C_3H_6O ?
(a) 4 (b) 5 (c) 9 (d) 10
- (78) Ortho and para-nitro phenol can be separated by (a) azeotropic distillation
(b) destructive distillation (c) steam distillation (d) cannot be separated
- (79) The purity of an organic compound is determined by (a) Chromatography (b) Crystallisation
(c) melting or boiling point (d) both (a) and (c)

- (80) A liquid which decomposes at its boiling point can be purified by (a) distillation at atmospheric pressure (b) distillation under reduced pressure (c) fractional distillation (d) steam distillation.
- (81) What is the hybridisation state of benzyl carbonium ion? (a) sp^2 (b) sp^3 (c) sp^2 (d) sp^3
- (82) Homolytic fission of covalent bond leads to the formation of (a) electrophile (b) nucleophile (c) Carbo cation (d) free radical
- (83) Hyper Conjugation is also known as (a) no bond resonance (b) Baker - nathan effect (c) both (a) and (b) (d) none of these
- (84) -I effect is shown by (a) - Cl (b) - Br (c) both (a) and (b) (d) - CH_3
- (85) Assertion: Tertiary Carbocations are generally formed more easily than primary Carbocations ions. Reason: Hyper conjugation as well as Inductive effect due to additional alkyl group stabilize tertiary carbonium ions. (a) both assertion and reason are true and reason is the correct explanation of assertion. (b) both assertion and reason are true but reason is not the correct explanation of assertion. (c) Assertion is true but reason is false (d) Both assertion and reason are false
- (86) Heterolytic fission of C-C bond results in the formation of (a) free radical (b) Carbanion (c) Carbocation (d) Carbanion and Carbocation
- (87) Which of the following species does not act as a nucleophile? (a) ROH (b) ROR (c) PCl_3 (d) BF_3
- (88) The geometrical shape of carbocation is (a) Linear (b) tetrahedral (c) Planar (d) Pyramidal
- (89) The general formula for cyclo alkanes (a) C_nH_n (b) C_nH_{2n} (c) C_nH_{2n-2} (d) C_nH_{2n+2}
- (90) The compound that will react most readily with gaseous bromine has the formula (a) C_3H_6 (b) C_2H_2 (c) C_4H_{10} (d) C_2H_4
- (91) Cis - 2 - butene and trans - 2 - butene are (a) conformational isomers (b) structural isomers (c) configurational isomers (d) optical isomers
- (92) Consider the nitration of benzene using mixed conc. H_2SO_4 and HNO_3 if a large quantity of $KHSO_4$ is added to the mixture, the rate of nitration will be (a) unchanged (b) doubled (c) faster (d) slower
- (93) Which of the following can be used as the halide component for Friedel - crafts reaction? (a) Chloro benzene (b) Bromo benzene (c) chloroethene (d) Isopropyl chloride
- (94) Of the following compounds, which has the highest boiling point? (a) n-Butyl chloride (b) Isobutyl chloride (c) t-Butyl chloride (d) n-propyl chloride
- (95) C - X bond is strongest in (a) Chloromethane (b) Iodomethane (c) Bromomethane (d) Fluoromethane
- (96) Benzene reacts with Cl_2 in the presence of $FeCl_3$ and in absence of sunlight to form (a) Chlorobenzene (b) Benzyl chloride (c) Benzal chloride (d) Benzene hexachloride
- (97) Freon-12 is manufactured from tetrachloro methane by (a) Wurtz reaction (b) Swarts reaction (c) Haloform reaction (d) Gattermann reaction
- (98) The most easily hydrolysed molecule under SN^1 condition is (a) allyl chloride (b) ethyl chloride (c) isopropylchloride (d) benzyl chlorid
- (99) Ethylidene chloride on treatment with aqueous KOH gives (a) acetaldehyde (b) ethyleneglycol (c) formaldehyde (d) glyoxal
- (100) The raw material for Rasching process (a) chloro benzene (b) phenol (c) benzene (d) anisole