VIBRANT ACADEMY
(India) Private Limited

CHEMISTRY

TIME : 2 Hrs. **Total Marks : 60**

FACULTY SELECTION TEST

INSTRUCTIONS :

1. Attempt all questions.
2. Indicate your answer on the question paper itself.
3. Each question has four options. Out of these only one is the correct answer.
4. Each correct answer carries +1 marks. for each wrong answer 0.25 marks will be deducted.

Q.1 The atomic number of Na is 11 and Cl, 17. Na and Cl combine together forming NaCl. In this reaction -
(A) Na is oxidized (B) Cl is reduced
(C) Na is reduced (D) sodium is oxidized and chlorine reduced

Q.2 Carbon tetrachloride is -
(A) soluble in water (B) less soluble in water
(C) not soluble in water (D) highly soluble in water

Q.3 Which of the following compounds is not used as a fertilizer ?
(A) NH_4NO_3 (B) $Ca_3(PO_4)_2$ (C) $(NH_4)_2SO_4$ (D) HNO_3

Q.4 The purest form of *C* is -
(A) diamond (B) wood charcoal (C) coal (D) coke

Q.5 Which of the following forms of C absorbs colour ?
(A) wood (B) coal (C) bone charcoal (D) coke

Q.6 When CO_2 is passed through water containing blue litmus, the resultant solution is -
(A) red (B) blue (C) green (D) milky

Q.7 In which of the following processes is oxygen released into air
(A) photosynthesis (B) combustion of fuels (C) rusting (D) respiration

Q.8 Water glass is -
(A) glass particles dispersed in water (B) sodium silicate
(C) aluminium silicate (D) powdered glass

Q.9 Which of the following properties is different for solids, liquids and gases ?
(A) Movement of molecules (B) Particle size of the substance
(C) Mass of the substance (D) Energy exchanges

Q.10 Which of the following is an example of a mixture ?
(A) Sugar (B) Brass (C) CO_2 (D) NO_2

Q.11 Which of the following is not a chemical change ?
(A) Rusting (B) Converting water into steam
(C) Making curd from milk (D) Heating coal

Q.12 A mixture of ethanol and water can be separated by
(A) Filtration (B) Decantation (C) Fractional distillation (D) Sublimation

Q.13 Salt can be obtained from sea water by
(A) Filtration (B) Decantation (C) Distillation (D) Sublimation

Q.14 Which of the following is not a compound ?
(A) Sugar (B) Sodium chloride (C) Diamond (D) Plaster of paris

Q.15 Sulphur is readily soluble in
(A) Water (B) Alcohol (C) Carbon disulphide (D) HF

Q.16 More ionic character is favoured when the
(A) Size of the cation is small (B) Size of the anion is small
(C) Size of the cation is small and anion is large (D) Size of the cation is large and anion, small

Q.17 Which one of the following bonds is present in HCl ?
(A) Ionic bond (B) 100 % Covalent bond
(C) Polar covalent bond (D) Coordinate covalent bond

Q.18 Which of the following equations is an example of a replacement reaction ?
(A) $Zn + H_2SO_4 \longrightarrow ZnSO_4 + H_2(g)$ (B) $Fe + S \longrightarrow FeS$
(C) $4P + 5O_2 \longrightarrow 2P_2O_5$ (D) $2KClO_3 \longrightarrow 2KCl + 3O_2$

Q.19 Isotopes of an element always have the
(A) same number of protons (B) same number of neutrons
(C) same atomic mass (D) none of the above

Q.20 Whenever a chemical bond is formed, there is -
(A) a decrease of energy of the system (B) an increase in energy of the system
(C) no loss or gain of energy (D) none of the above

Q.21 Two atoms of *A* form a bond with each other. The nature of the bond would be -
(A) ionic (B) covalent (C) coordinate covalent (D) none of the above

Q.22 A sulphide ion (S^{2-}) has valence electron -
(A) six electrons (B) four electrons (C) eight electrons (D) five electrons

Q.23 The sum of pH and pOH in any aqueous solution at 25°C is -
(A) 20 (B) 10 (C) 14 (D) 7

Q.24 The anhydride of H_2SO_4 is -
(A) SO_2 (B) S (C) SO_3 (D) $H_2S_2O_7$

Q.25 Oleum has the formula -
(A) $H_2S_2O_5$ (B) $H_2S_2O_7$ (C) H_2SO_3 (D) $H_2S_2O_6$

Q.26 Which of the following reagents will help to precipitate SO_4^{2-} (sulphate) ions ?
(A) $BaCl_2$ (B) $BaSO_4$ (C) KCl (D) NH_4Cl

Q.27 H_2S can be identified by the
(A) smell of burning sulphur
(B) smell of rotten eggs
(C) deposition of sulphur when it is passed through a solution containing HNO_3
(D) none of the above

Q.28 Which of the following gas is used for purification of drinking water ?
(A) SO_2 (B) Cl_2 (C) F_2 (D) CO_2

Q.29 Which of the following halogens sublimes on heating ?
(A) F_2 (B) Cl_2 (C) Br_2 (D) I_2

Q.30 Which of the following statements about diamond is wrong ?
(A) Diamonds are hard (B) Diamonds are good conductor of electricity
(C) Diamonds are giant molecules (D) Diamonds have compact structure

Q.31 Which of the following substances can conduct electricity in the solid state ?
(A) graphite (B) ice (C) sodium chloride (D) iodine

Q.32 Two elements, *X* and *Y*, have electronic configurations, *X*=$1s^2$, $2s^2 2p^6, 3s^1$ and *Y* = $1s^2$, $2s^2\ 2p^6\ 3s^2$. Which of the following statements is correct ?
(A) *X* is an alkaline earth metal and *Y* is an alkali metal
(B) *X* and *Y* are the electronic configurations of different elements
(C) The ionization potential of *Y* is less than that of *X*
(D) *Y* is an excited state of *X*.

Q.33 In Lothar Meyer's curve, the peaks are occupied by -
(A) alkali metals (B) halogens (C) alkaline earth metals (D) inert gases

Q.34 In the following elements, the atomic size varies as -
(A) Li > B > Be (B) Li > Be > B (C) B > Be > Li (D) Be > B > Li

Q.35 In the I group elements, the atomic size varies as -
(A) Li > Na > K > Rb > Cs (B) Na > Li > K > Cs > Rb
(C) K > Na > Li > Rb > Cs (D) none of the above

Q.36 The basic nature of the following oxides varies as -
(A) ZnO < MgO < Na_2O (B) Na_2O < MgO < ZnO
(C) MgO < Na_2O < ZnO (D) none of the above

Q.37 Li is similar in behaviour to -
(A) C (B) Si (C) Mg (D) Be

Q.38 Which of the following has the smallest size ?
(A) Cl (B) Cl^- (C) Br (D) Br^-

Q.39 K, L and M shells of an atom have 2, 8 and 5 electrons respectively. The number of electrons in its p-orbitals is -
(A) 6 (B) 7 (C) 8 (D) 9

Q.40 Which of the following is correct electronic configuration of argon ?
(A) 2, 8 (B) 2, 8, 8 (C) 2, 8, 1 (D) 8, 2, 8

Q.41 The electronic configuration of Cu^{2+} (Z = 29) ion is
(A) [Ar] $3d^{10}\ 4s^0$ (B) [Ar] $3d^{10}\ 4s^1$ (C) [Ar] $3d^9\ 4s^0$ (D) [Ar] $3d^7\ 4s^2$

Q.42 Isotopes of an element have –
(A) same physical properties (B) different chemical properties
(C) different no. of neutrons (D) different atomic number

Q.43 Bromine can be liberated from KBr solution by the action of
(A) iodine solution (B) chlorine water (C) NaCl (D) Kl

Q.44 Oxygen exhibits (–1) oxidation state in
(A) OF_2 (B) H_2O (C) H_2O_2 (D) HClO

Q.45 The compound that has both ionic and covalent bonds is -
(A) boric acid (H_3BO_3). (B) sodium chloride (NaCl).
(C) ethyl alcohol (C_2H_5OH). (D) sodium phenolate (C_6H_5ONa).

Q.46 Hydrogen fluoride is a liquid at room temperature due to
(A) dimerisation (B) dissociation followed by aggregation
(C) association (D) polymerisation

Q.47 What is the mass of one oxygen molecule in grams?
(A) 2.66×10^{-23} g (B) 5.32×10^{-23} (C) 16.0 g (D) 32.0 g

Q.48 Which one of the following samples contains the smallest number of molecules ?
(A) 1 g carbon dioxide, CO_2 (B) 1 g glucose, $C_6H_{12}O_6$
(C) 1 g naphthalene, $C_{10}H_8$ (D) 1 g octane, C_8H_{18}

Q. 49 One mole of oxalic acid is equivalent to
(A) 0.5 mole of NaOH (B) 1 mole of NaOH (C)1.5 mole of NaOH (D) 2 mole of NaOH

Q.50 8 Grams of oxygen at NTP contain
(A) 1.5×10^{23} molecules (B) 3.0×10^{23} molecules
(C) 6.023×10^{23} molecules (D) 1.5×10^{22} molecules

Q.51 Among Li, Be, N and F, the element having the largest atomic radius, is :
(A) Li (B) Be (C) N (D) F

Q.52 The atomic radii of the alkali metals follow the order
(A) Li > Na > K > Cs (B) K > Cs > Li > Na (C) Na > K > Cs > Li (D) Cs > K > Na > Li

Q.53 Which of the following group elements from the periodic table form electron deficient molecules ?
(A) Group IV (B) Group V (C) Group III (D) Group I

Q.54 The element with electronic configuration $1s^2\ 2s^2\ 2p^6 3s^2$ is a/an -
(A) Metal (B) Non- metal (C) Metalloid (D) Inert gas

Q.55 Number of neutrons in C^{12} is -
(A) 6 (B) 7 (C) 8 (D) 9

Q.56 Which of the following particles has more electrons than neutrons -
(A) C (B) F (C) O^{-2} (D) Al^{+3}

Q.57 In a chemical reaction one molecule of hydrogen sulphide gas reacts with two molecules of nitric acid. The molecules of nitrogen dioxide and water and atoms of sulphur formed has a ratio of -
(A) 1 : 2 : 2 (B) 2 : 1 : 2 (C) 2 : 2 : 1 (D) 1 : 1 : 1

Q.58 Molecular formula of a compound of metal M (equivalent weight 8) is M_2CO_3 . Atomic weight of the metal will be -
(A) 24 (B) 16 (C) 8 (D) 4

Q.59 Correct order of ionisation potentials of B, C, Al, Si is :
(A) B < Al < Si< C (B) B < Si < Al < C (C) Al < B < Si < C (D) Al < Si < B < C

Q.60 Element "X" which is solid and having high melting point, form a Chloride "X Cl_3". This element "X" would be in which group of Periodic table ?
(A) Na (B) Mg (C) Al (D) Si