



CAREER POINT

PRE FOUNDATION DIVISION

FACULTY SELECTION TEST

CHEMISTRY

[Time : 2 Hr.]

[Max. Marks : 60]

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** The boiling point of hydrogen fluoride (HF) is high. This is due to the presence of -
(A) an ionic bond (B) a covalent bond
(C) a hydrogen bond (D) a coordinate covalent bond
- Q.3** An atom A has four electrons in its outermost shell. The formula of its hydride is -
(A) AH (B) AH₄ (C) AH₃ (D) AH₂
- Q.4** The structure of a molecule of methane is -
(A) triangular (B) tetrahedral (C) linear (D) octahedral
- Q.5** The bond angle in a tetrahedral structure measures -
(A) 109° 28' (B) 120° (C) 180° (D) 90°
- Q.6** The number of electrons in N³⁻ is -
(A) 7 (B) 4 (C) 10 (D) 8
- Q.7** Carbon tetrachloride is -
(A) soluble in water (B) less soluble in water
(C) not soluble in water (D) highly soluble in water
- Q.8** Which of the following compounds is not used as a fertilizer ?
(A) NH₄NO₃ (B) Ca₃(PO₄)₂ (C) (NH₄)₂SO₄ (D) HNO₃
- Q.9** The purest form of C is -
(A) diamond (B) wood charcoal (C) coal (D) coke
- Q.10** Which of the following forms of C absorbs colour ?
(A) wood (B) coal (C) bone charcoal (D) coke
- Q.11** When CO₂ is passed through water containing blue litmus, the resultant solution is -
(A) red (B) blue (C) green (D) milky

- Q.12** In which of the following processes is oxygen released into air
 (A) photosynthesis (B) combustion of fuels
 (C) rusting (D) respiration
- Q.13** Water glass is -
 (A) glass particles dispersed in water (B) sodium silicate
 (C) aluminium silicate (D) powdered glass
- Q.14** 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.15** Which of the following is an example of a mixture ?
 (A) Sugar (B) Brass (C) CO₂ (D) NO₂
- Q.16** 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.17** A mixture of ethanol and water can be separated by
 (A) Filtration (B) Decantation (C) Fractional distillation (D) Sublimation
- Q.18** Salt can be obtained from sea water by
 (A) Filtration (B) Decantation (C) Distillation (D) Sublimation
- Q.19** Which of the following is not a compound ?
 (A) Sugar (B) Sodium chloride (C) Diamond (D) Plaster of paris
- Q.20** Sulphur is readily soluble in
 (A) Water (B) Alcohol (C) Carbon disulphide (D) HF
- Q.21** 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.22** 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.23** Aluminium has a valency of 3 and sulphate has valency of 2. Therefore, the correct formula for aluminium sulphate is -
 (A) Al₂S₂O₄ (B) Al₂(SO₄)₃ (C) Al₃(SO₄)₂ (D) AlSO₄
- Q.24** Which of the following equations is an example of a replacement reaction ?
 (A) Zn + H₂SO₄ → ZnSO₄ + H₂(g) (B) Fe + S → FeS
 (C) 4P + 5O₂ → 2P₂O₅ (D) 2KClO₃ → 2KCl + 3O₂

- Q.25** Which of the following species are isoelectronic ?
 (A) Cl^- and Br^- (B) Na^+ and Mg^{++} (C) Ar and Ne (D) Mg^{++} and Ca^{++}
- Q.26** An element has n neutrons and p protons. Therefore, its atomic weight will be-
 (A) $n - p$ (B) $p - n$ (C) $n + p$ (D) n/p
- Q.27** Which of the following electronic configurations is wrong ?
 (A) Li (3) = 2, 1 (B) O(8) = 2, 6 (C) S (16) = 2, 6, 8 (D) P (15) = 2, 8, 5
- Q.28** Which of the following electronic configuration represents a noble gas ?
 (A) 2, 8, 2 (B) 2, 8, 6 (C) 2, 8 (D) 2, 8, 8, 2
- Q.29** ${}_{17}\text{Cl}^{35}$ and ${}_{17}\text{Cl}^{37}$ are examples of -
 (A) isobars (B) isotopes (C) isotones (D) none of the above
- Q.30** 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.31** 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.32** Water is liquid because its molecule possesses -
 (A) an ionic bond (B) a coordinate covalent bond
 (C) a hydrogen bond (D) a covalent bond
- Q.33** 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.34** All molecules in the following set are allotropes of carbon -
 (A) Charcoal, lead, coke (B) Galena, glassy carbon, graphite
 (C) Fullerene, graphite, diamond (D) Charcoal, wood, soot
- Q.35** The ratio of σ and π -bonds in benzene is -
 (A) 2 (B) 6 (C) 4 (D) 8
- Q.36** A molecule of N_2 has -
 (A) a single bond (B) a double bond
 (C) a triple bond (D) a coordinate covalent bond
- Q.37** The NH_3 molecule has -
 (A) no lone pair (B) one lone pair (C) two lone pairs (D) three lone pairs
- Q.38** A water molecule has -
 (A) no lone pairs (B) one lone pair (C) two lone pairs (D) three lone pairs
- Q.39** A molecule of acetylene has -
 (A) one σ bond (B) two σ bonds
 (C) three σ bonds (D) three σ bonds and two π bonds

- Q.40** A sulphide ion (S^{2-}) has valence electron -
 (A) six electrons (B) four electrons (C) eight electrons (D) five electrons
- Q.41** The sum of pH and pOH in any aqueous solution at $25^{\circ}C$ is -
 (A) 20 (B) 10 (C) 14 (D) 7
- Q.42** The anhydride of H_2SO_4 is -
 (A) SO_2 (B) S (C) SO_3 (D) $H_2S_2O_7$
- Q.43** Oleum has the formula -
 (A) $H_2S_2O_5$ (B) $H_2S_2O_7$ (C) H_2SO_3 (D) $H_2S_2O_6$
- Q.44** 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.45** 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.46** 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.47** Which of the following halogens sublimes on heating ?
 (A) F_2 (B) Cl_2 (C) Br_2 (D) I_2
- Q.48** Which of the following oxides of nitrogen is known as laughing gas ?
 (A) N_2O (B) NO (C) N_2O_5 (D) NO_2
- Q.49** 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.50** Which of the following substances can conduct electricity in the solid state ?
 (A) graphite (B) ice (C) sodium chloride (D) iodine
- Q.51** 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.52** In Lothar Meyer's curve, the peaks are occupied by -
 (A) alkali metals (B) halogens (C) alkaline earth metals (D) inert gases

- Q.53** The element with atomic number 15 is-
 (A) monovalent (B) bivalent (C) trivalent (D) tetravalent
- Q.54** In the following elements, the atomic size varies as -
 (A) $\text{Li} > \text{B} > \text{Be}$ (B) $\text{Li} > \text{Be} > \text{B}$ (C) $\text{B} > \text{Be} > \text{Li}$ (D) $\text{Be} > \text{B} > \text{Li}$
- Q.55** In the I group elements, the atomic size varies as -
 (A) $\text{Li} > \text{Na} > \text{K} > \text{Rb} > \text{Cs}$ (B) $\text{Na} > \text{Li} > \text{K} > \text{Cs} > \text{Rb}$
 (C) $\text{K} > \text{Na} > \text{Li} > \text{Rb} > \text{Cs}$ (D) none of the above
- Q.56** The basic nature of the following oxides varies as -
 (A) $\text{ZnO} < \text{MgO} < \text{Na}_2\text{O}$ (B) $\text{Na}_2\text{O} < \text{MgO} < \text{ZnO}$
 (C) $\text{MgO} < \text{Na}_2\text{O} < \text{ZnO}$ (D) none of the above
- Q.57** Li is similar in behaviour to -
 (A) C (B) Si (C) Mg (D) Be
- Q.58** Which of the following has the smallest size ?
 (A) Cl (B) Cl^- (C) Br (D) Br^-
- Q.59** The modern periodic table is based on -
 (A) atomic mass (B) atomic number
 (C) the number of neutrons (D) equivalent weight
- Q.60** Inert gases have the electronic configuration -
 (A) ns^2np^2 (B) ns^2np^4 (C) ns^2np^6 (D) ns^2np^7