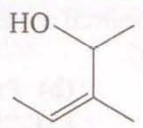


1. In the electronic structure of H_2SO_4 , the total number of unshared electrons is:
- (a) 20 (b) 8
(c) 12 (d) 8
2. The general molecular formula for disaccharide is
- (a) $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ (b) $\text{C}_{10}\text{H}_{20}\text{O}_{10}$
(c) $\text{C}_{12}\text{H}_{20}\text{O}_{10}$ (d) $\text{C}_{12}\text{H}_{22}\text{O}_{10}$
3. The correct order towards bond angle is
- (a) $sp^3 < sp^2 < sp$ (b) $sp < sp^2 < sp^3$
(c) $sp < sp^3 < sp^2$ (d) $sp^2 < sp^3 < sp$
4. The vapour pressure of 100g water reduces from 3000 Nm^{-2} to 2985 Nm^{-2} when 5g of substance 'X' is dissolved in it. Substance 'X' is
- (a) methanol (b) glucose
(c) carbon dioxide (d) Cannot predict
5. Which of the following relation is correct?
- (a) Ist IE of C > Ist IE of B
(b) Ist IE of C < Ist IE of B
(c) IInd IE of C > IInd IE of B
(d) Both (b) and (c)
6. The complex ion which has no d-electrons in the central metal atom is
- (a) $[\text{MnO}_4]^-$ (b) $[\text{Co}(\text{NH}_3)_6]^{3+}$
(c) $[\text{Fe}(\text{CN})_6]^{3-}$ (d) $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$
7. Which of the following configurations corresponds to element of highest ionisation energy?
- (a) $1s^2, 2s^1$ (b) $1s^2, 2s^2, 2p^3$
(c) $1s^2, 2s^2, 2p^2$ (d) $1s^2, 2s^2, 2p^6, 3s^1$
8. White P reacts with caustic soda, the products are PH_3 and NaH_2PO_2 . This reaction is an example of
- (a) hydrolysis (b) reduction
(c) disproportionation (d) neutralisation
9. The solubility of saturated solution of Ag_2CrO_4 is $s \text{ mol L}^{-1}$. What is its solubility product?
- (a) $4s^3$ (b) s^3
(c) $2s^3$ (d) $16s^2$
10. Which of the following has a bond formed by overlap of $sp - sp^3$ hybrid orbitals?
- (a) $\text{CH}_3 - \text{C} \equiv \text{C} - \text{H}$
(b) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3$
(c) $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$
(d) $\text{HC} \equiv \text{CH}$

11. Which one of the following proteins transports oxygen in the blood stream?
 (a) Myoglobin (b) Insulin
 (c) Albumin (d) Haemoglobin
12. The only *o* *p*-directing group which is deactivating in nature is
 (a) $-\text{NH}_2$ (b) $-\text{OH}$
 (c) $-\text{X}$ (halogens) (d) $-\text{R}$ (alkyl groups)
13. Which of the organic compounds will give red colour in Lassaigne test?
 (a) $\text{C}_6\text{H}_5\text{NH}_2$ (b) $\text{NH}_2-\overset{\text{S}}{\parallel}{\text{C}}-\text{NH}_2$
 (c) $\text{NH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}_2$ (d) None of these
14. For a reaction, $A + B \longrightarrow \text{Product}$, the rate is given by,

$$r = k[A]^{1/2}[B]^2.$$
 What is the order of the reaction?
 (a) 0.5 (b) 2
 (c) 2.5 (d) 1
15. The density of a gas is found to be 1.56 g/L at 745 mm pressure and 65°C . What is the molecular mass of the gas?
 (a) 44.2 u (b) 4.42 u
 (c) 2.24 u (d) 22.4 u
16. Considering H_2O as weak field ligand, the number of unpaired electrons in $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$ will be (Atomic number of Mn = 25)
 (a) five (b) two
 (c) four (d) three
17. Ethyl alcohol reacts with thionyl chloride to give
 (a) $\text{CH}_3\text{CH}_2\text{Cl} + \text{HCl}$
 (b) $\text{CH}_3\text{CH}_2\text{Cl} + \text{H}_2\text{O} + \text{SO}_2$
 (c) $\text{CH}_3\text{CH}_2\text{Cl} + \text{HCl} + \text{SO}_2$
 (d) $\text{CH}_3\text{CH}_2\text{Cl} + \text{SO}_2 + \text{Cl}_2$
18. The quantum numbers $+\frac{1}{2}$ and $-\frac{1}{2}$ for the electron spin represent
 (a) rotation of the electron in clockwise and anticlockwise direction respectively
 (b) rotation of the electron in anticlockwise and clockwise direction respectively
 (c) magnetic moment of the electron pointing up and down respectively
 (d) two quantum mechanical spin states which have no classical analogues
19. How long it will take to deposit 1.0 g of chromium when a current of 1.25 A flows through a solution of chromium (III) sulphate? (Molar mass of Cr = 52)
 (a) 1.24 min (b) 1.24 h
 (c) 1.24 s (d) None of these
20. Gabriel phthalimide reaction is used for the preparation of
 (a) primary aromatic amines
 (b) secondary amines
 (c) primary aliphatic amines
 (d) tertiary amines
21. The monomers of terylene are
 (a) phenol and formaldehyde
 (b) ethylene glycol and phthalic acid
 (c) adipic acid and hexamethylenediamine
 (d) ethylene glycol and terephthalic acid
22. If a be the edge length of the unit cell and r be the radius of an atom then for fcc arrangement, the correct relation is
 (a) $4a = \sqrt{3}r$ (b) $4r = \sqrt{3}a$
 (c) $4r = \sqrt{2}a$ (d) $4r = \frac{a}{\sqrt{2}}$
23. CaC_2 and H_2O react to produce
 (a) CH_4 (b) C_2H_4
 (c) C_2H_2 (d) C_2H_6
24. Primary alcohols can be obtained from the reaction of R Mg X with
 (a) CO_2 (b) HCHO
 (c) CH_3CHO (d) H_2O
25. Proteins are composed of
 (a) α -amino acids (b) carbohydrates
 (c) vitamins (d) mineral salts
26. The IUPAC name of the following compound
 , is
 (a) 1, 2-dimethyl-2-butenol
 (b) 3-methylpent-3-en-2-ol
 (c) 3, 4-dimethyl-2-buten-4-ol
 (d) None of the above
27. Ammonia gas can be dried over
 (a) CaCl_2 (b) Conc. H_2SO_4
 (c) P_2O_5 (d) quick lime
28. The number of phase in a colloidal system is
 (a) 1 (b) 2
 (c) 3 (d) 4

29. Which of the following has the highest bond order ?
 (a) N_2 (b) O_2
 (c) He_2 (d) H_2
30. Inorganic benzene is
 (a) $B_3N_6H_3$ (b) $B_3N_3H_6$
 (c) $Al_3N_3H_6$ (d) None of these
31. In long form of Periodic Table, the properties of the elements are a periodic function of their
 (a) atomic size (b) ionisation energy
 (c) atomic mass (d) atomic number
32. Which of the following is a wrong statement ?
 In a given period of the Periodic Table, the s-block element has, in general, a higher value of
 (a) electronegativity (b) atomic radius
 (c) ionisation energy (d) electron affinity
33. What is the ΔH of the reaction
- $$\begin{array}{c} \text{H} \\ | \\ \text{H}-\text{C}-\text{Cl} \\ | \\ \text{Cl} \end{array} (\text{g}) \longrightarrow \text{C}(\text{g}) + 2\text{H}(\text{g}) + 2\text{Cl}(\text{g}) ?$$
- The average bond energies of C—Cl bond and C—H bond are 416 kJ and 325 kJ mol⁻¹ respectively.
 (a) 1482 kJ (b) 1482 J
 (c) 1492 kJ (d) 1492 J
34. Which of the following is a Lewis acid ?
 (a) OH^- (b) H^+
 (c) F^- (d) NH_3
35. Heating of rubber with sulphur is called
 (a) vulcanisation
 (b) galvanisation
 (c) sulphonation
 (d) bessemerisation
36. Which of the following statement is correct ?
 (a) +I group stabilises a carbocation
 (b) +I group stabilises a carbanion
 (c) -I group stabilises a carbocation
 (d) -I group stabilises a free radical
37. Dihedral angle between two methyl groups of n-butane in the *gauche* and *anti* forms are
 (a) 60°, 0° (b) 0°, 60°
 (c) 60°, 180° (d) 180°, 60°
38. A solid AB has the NaCl structure. If radius of cation A^+ is 120 pm, the maximum possible value of the radius of the anion B^- is
 (a) 240 pm (b) 60 pm
 (c) 49.6 pm (d) 290 pm
39. Common alum is
 (a) $K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O$
 (b) $(NH_4)_2SO_4 \cdot FeSO_4 \cdot 6H_2O$
 (c) $K_2SO_4 \cdot Cr_2(SO_4)_3 \cdot 24H_2O$
 (d) $K_2SO_4 \cdot Fe_2(SO_4)_3 \cdot 24H_2O$
40. The bond length of HCl bond is 2.29×10^{-10} m. The percentage ionic character of HCl, if measured dipole moment is 6.226×10^{-30} C-m, is
 (a) 8% (b) 20%
 (c) 17% (d) 50%

Answer – Key

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