

1. How many moles are present in 2.5L of 0.2 M H_2SO_4 ?

- (A) 0.25
- (B) 0.5
- (C) 0.75
- (D) 22.10

Answer : (B)

2. The number of molecules in 4.25 g of NH_3 is

- (a) 1.5×10^{23}
- (b) 2.5×10^{23}
- (c) 3.0×10^{23}
- (d) 8×10^{23}

Answer : (a)

3. What is the wavelength associated with an electron moving with a velocity of 10^6 m/s?

(given: $h = 6.63 \times 10^{-34}$ Js)

- (a) 0.727 nm
- (b) 0.27 nm
- (c) 0.36 nm
- (d) 72.7 nm

Answer : (a)

4. When the electrons of hydrogen atoms return to " L " shell from shells of higher energy levels, we get a series of lines in the spectrum. This series is called

- (a) lyman series
- (b) Balmer series
- (c) Paschen series
- (d) Brackett series

Answer : (b)

5. Which of the following has highest ionisation potential?

- (a) Al^+
- (b) Mg^+
- (c) Ne
- (d) Li^+

Answer : (d)

6. Which of the following has the largest size?

(a) Br^-

(b) Br

(c) Cl

(d) Cl^-

Answer : (a)

7. IF_7 has bond pairs and lone pairs respectively

(a) 5, 2

(b) 2, 3

(c) 4, 3

(d) 7, 0

Answer : (d)

8. The formation of ammonia boron trifluoride adduct is an example of

(a) Covalent bond

(b) Coordinate covalent bond

(c) Ionic bond

(d) Hydrogen bond

Answer : (b)

9. The temperature at which a real gas obeys ideal gas laws over a wide range of pressure is called

(a) Critical temperature

(b) Inversion temperature

(c) Curie temperature

(d) Boyle temperature

Answer : (d)

10. At constant pressure a gas at $27^\circ C$ is heated so that final volume is 25% more than initial volume. What is the final temperature?

(a) $33.75^\circ C$

(b) $252^\circ C$

(c) $77^\circ C$

(d) $102^\circ C$

Answer : (d)

11. Equal volume of 1M HCl and 1M H_2SO_4 are separately neutralised by adding excess NaOH. The heat

evolved is x kJ and y kJ respectively. Then

(a) $x=y$

(b) $x=y/2$

(c) $x=2y$

(d) $x=y/4$

Answer : (b)

12. 4 grams of methane burns to give 2.5 k.cals of heat. The heat of combustion of methane would be

(a) 20 k.cals

(b) 10 k.cals

(c) 2.5 k.cals

(d) 5 k.cals

Answer : (b)

13. The forward reaction proceeds towards near completion if the equilibrium constant of a reaction is

(a) $k = 10^3$

(b) $K = 10^{-3}$

(c) $K = 10$

(d) $K = 1$

Answer : (a)

14. For the equilibrium $2NO_2(g) = N_2O_4(g) + 14.6k.cal$, the increase in temperature would

(a) favours the formation of N_2O_4

(b) favour the decomposition of N_2O_4

(c) not alter the equilibrium

(d) stop the reaction

Answer : (b)

15. The concentration of CrO_4^{2-} in a saturated solution of Na_2CrO_4 is 2×10^{-4} . Solubility product of sodium chromate is

(a) 16×10^{-12}

(b) 4×10^{-8}

(c) 8×10^{-12}

(d) 32×10^{-12}

Answer : (d)

16. Lewis acids are those substances

(a) which accept an electron pair

(b) which provide H^+ ion in the solution

(c) which give an electron pair

(d) which accept OH^- ion

Answer : (a)

17. If three electrons are lost by a metal ion M^{+2} , its final oxidation number would be

- (a) Zero
- (b) +5
- (c) +2
- (d) +4

Answer : (b)

18. Oxidation number of *S* in $Na_2S_4O_6$ (sodium tetrathionate) is

- (a) +1.5
- (b) +2.5
- (c) +3
- (d) +2

Answer : (b)

19. The number of electrons required to balance the following equation $NO_3 + 4H^+ + e^- \rightarrow 2H_2O + NO$ is

- (a) 5
- (b) 4
- (c) 3
- (d) 2

Answer : (c)

20. Blackened oil painting can be restored into original form by treating with

- (a) BaO_2
- (b) MnO_2
- (c) Chlorine
- (d) H_2O_2

Answer : (d)

21. Which of the following processes will produce hard water?

- (a) addition of sodium sulphate to water
- (b) saturation of water with $CaCO_3$
- (c) saturation of water with $CaSO_4$
- (d) saturation of water with $MgCO_3$

Answer : (c)

22. Dead burnt plaster is

- (a) CaSO_4
- (b) $\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$
- (c) $\text{CaSO}_4 \cdot \text{H}_2\text{O}$
- (d) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

Answer : (a)

23. What are the products formed when Li_2CO_3 undergoes decomposition?

- (a) $\text{Li}_2\text{O}_2 + \text{CO}$
- (b) $\text{Li}_2\text{O} + \text{CO}$
- (c) $\text{Li}_2\text{O}_2 + \text{CO}_2$
- (d) $\text{LiO}_2 + \text{CO}$

Answer : (c)

24. Boric acid is an acid because its molecule

- (a) contains replaceable H^+ ion
- (b) gives up a proton
- (c) accepts OH^- from water releasing proton
- (d) combines with proton from water molecule

Answer : (c)

25. Catenation i.e., linking of similar atoms depends on size and electronic configuration of atoms. The tendency of catenation in group 14 elements follows the order:

- (a) $\text{C} < \text{Si} > \text{Ge} > \text{Sn}$
- (b) $\text{C} > \text{Si} > \text{Ge} \approx \text{Sn}$
- (c) $\text{Si} > \text{C} > \text{Sn} > \text{Ge}$
- (d) $\text{Ge} > \text{Sn} > \text{Si} > \text{C}$

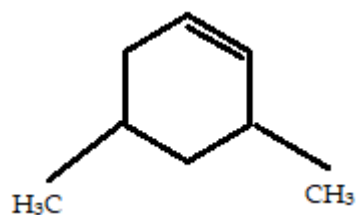
Answer : (b)

26. How much of Sulphur is present in an organic compound if 0.53 g of compound gave 1.158g of BaSO_4 on analysis?

- (a) 10%
- (b) 15%
- (c) 20%
- (d) 30%

Answer : (d)

27. The IUPAC name of the compound shown below is



- (a) 3,5-Dimethylcyclohexene
 - (b) 1,5-Dimethyl-3-cyclohexene
 - (c) 1,5-Dimethyl-5-cyclohexene
 - (d) 1,3-Dimethyl-5-cyclohexene
- Answer : (a)

28. Positive inductive effect is shown by

- (a) $-\text{CH}_3$
- (b) $-\text{Br}$
- (c) $-\text{Cl}$
- (d) $-\text{NO}_2$

Answer : (a)

29. Reaction of HBr with propene in the presence of peroxide gives

- (a) iso-propyl bromide
- (b) 3-bromo propane
- (c) allyl bromide
- (d) n-propyl bromide

Answer : (d)

30. Which of the following reagent can distinguish between 1-butyne and 2-butyne?

- (a) Aqueous NaOH
- (b) Bromine water
- (c) Fehling's solution
- (d) Ammoniacal AgNO_3

Answer : (d)

31. The gas that is not considered as a "greenhouse gas" is

- (a) CO_2
- (b) CH_4
- (c) O_2
- (d) O_3

Answer : (c)

32. In a close packed cubic structure, the anions (B) occupy the lattice and the cation (A) fit into alternate

tetrahedral voids. Formula of the compound is

- (a) AB_2
- (b) A_2B
- (c) AB
- (d) AB_4

Answer : (c)

33. Silicon doped with arsenic is an example of

- (a) intrinsic semiconductor
- (b) p-type semiconductor
- (c) n-type semiconductor
- (d) non-conductor

Answer : (c)

34. An aqueous solution freezes at $-0.186^\circ C$ what is the elevation in boiling point?

($k_f=1.86$ $k_b=0.512$)

- (a) 0.186
- (b) 0.152
- (c) 0.0512
- (d) 0.86

Answer : (c)

35. If 3g of glucose (mol.wt.180) is dissolved in 60g of water at $15^\circ C$, the osmotic pressure of the solution will be

- (a) 3.4 atm
- (b) 0.65 atm
- (c) 6.57 atm
- (d) 5.57 atm

Answer : (c)

36. When a silver cup is plated with silver by passing 482.5C of electricity, the amount of silver deposited is

- (a) 5.039g
- (b) 50.39g
- (c) 0.539 g
- (d) 0.05039 g

Answer : (c)

37. Specific conductance of $0.02M$ KCl is 0.0022 Scm^{-1} , its molar conductance is

- (a) 44
- (b) 110
- (c) 0.11
- (d) 9.09

Answer : (b)

38. The rate of reaction between A and B increased by a factor of 100, when the concentration of A is increased 10 folds. The order of the reaction with respect to A is

- (a) 10
- (b) 1
- (c) 4
- (d) 2

Answer : (d)

39. 75% of a first order reaction was completed in 32 minutes, when was 50% of the reaction completed?

- (a) 16 minutes
- (b) 24 minutes
- (c) 8 minutes
- (d) 4 minutes

Answer : (a)

40. Among the electrolytes Na_2SO_4 , CaCl_2 , $\text{Al}_2(\text{SO}_4)_3$ And NH_4Cl the most effective coagulating agent for Sb_2S_3 sol is

- (a) Na_2SO_4
- (b) CaCl_2
- (c) $\text{Al}_2(\text{SO}_4)_3$
- (d) NH_4Cl

Answer : (c)

41. Which of the following is incorrect regarding physisorption?

- (a) It occurs because of van der Waal's forces
- (b) More easily liquefiable gases are adsorbed readily
- (c) Under high pressure, it results into multimolecular layer on adsorbent surface
- (d) Enthalpy of adsorption is low and positive

Answer : (d)

42. Zone refining method has been employed for preparing ultra-pure sample of

- (a) Copper
- (b) Zinc
- (c) Germanium
- (d) Silver

Answer : (c)

43. Extraction of zinc from zinc blende is achieved by:

- (a) electrolyte reduction
- (b) roasting followed by reduction with carbon
- (c) roasting followed by reduction with another metal
- (d) roasting followed by self-reduction

Answer : (b)

44. Acidified potassium dichromate is treated with H_2S . In this reaction the oxidation number of Chromium

- (a) increases from +3 to +6
- (b) decrease from +6 to +3
- (c) decreases from +6 to +4
- (d) increases from +4 to +6

Answer : (b)

45. Which gas is most soluble in water?

- (a) He
- (b) Ne
- (c) Ar
- (d) Xe

Answer : (d)

46. Strongest base among NH_3 , PH_3 , AsH_3 and SbH_3 is

- (a) NH_3
- (b) PH_3
- (c) AsH_3
- (d) SbH_3

Answer : (a)

47. Which of the following bonds is the strongest?

- (a) F-F
- (b) Cl-Cl
- (c) I-I
- (d) Br-Br

Answer : (b)

48. Which of the following oxidation state is common for all lanthanoids?

- (a) +2
- (b) +3
- (c) +4
- (d) +5

Answer : (b)

49. The electronic configuration of gadolinium (Z=64) is:

- (a) $[Xe]4f^8 5d^1 6s^2$
- (b) $[Xe]4f^7 5d^1 6s^2$
- (c) $[Xe]4f^3 5d^5 6s^2$
- (d) $[Xe]4f^6 5d^2 6s^2$

Answer : (b)

50. When 1 mole $CrCl_3 \cdot 6H_2O$ is treated with excess of $AgNO_3$, 3 moles of $AgCl$ are obtained. The formula of the complex is:

- (a) $[CrCl_3(H_2O)_3] \cdot 3H_2O$
- (b) $[CrCl_2(H_2O)_4]Cl \cdot 2H_2O$
- (c) $[CrCl_3(H_2O)_5]Cl \cdot 2H_2O$
- (d) $[Cr(H_2O)_6]Cl_3$

Answer : (d)

51. Which is a bidentate ligand?

- (a) Cyano
- (b) Hydronium
- (c) Oxalato
- (d) EDTA

Answer : (c)

52. The compound of $[PtCl_2(NH_4)]Br_2$ and $[PtBr_2(NH_3)_4]Cl_2$ constitutes a pair of

- (a) Coordination isomers
- (b) Linkage isomers
- (c) Ionisation isomers
- (d) Optical isomers

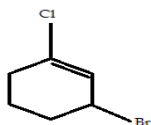
Answer : (c)

53. Compound 'A' reacts with alcoholic KOH to yield compound 'B' which on ozonolysis followed by reaction with Zn / H_2O gives methanal and propanal. Compound 'A' is

- (a) 1-propanol
- (b) 1-butanol
- (c) 1-chlorobutane
- (d) 1-chloropentane

Answer : (c)

54. The IUPAC name of the compound shown below is



- (a) 3-bromo-1-chlorocyclohex-1-ene
- (b) 6-bromo-2-chlorocyclohex-1-ene
- (c) 1-bromo-3-chlorocyclohex
- (d) 1-bromo-5-chlorocyclohex-5-ene

Answer : (a)

55. In Lucas test an alcohol reacts immediately and gives insoluble chloride. The alcohol is

- (a) CH_3OH
- (b) $\text{CH}_3\text{CH}_2\text{OH}$
- (c) $(\text{CH}_3)_2\text{CHOH}$
- (d) $(\text{CH}_3)_3\text{COH}$

Answer : (d)

56. $R\text{CH}_2\text{CH}_2\text{OH}$ can be converted to $R\text{CH}_2\text{CH}_2\text{COOH}$ by the following sequence of steps

- (a) $\text{PBr}_3, \text{KCN}, \text{H}_3\text{O}^+$
- (b) $\text{PBr}_3, \text{KCN}, \text{H}_2 / \text{Pt}$
- (c) $\text{KCN}, \text{H}_3\text{O}^+$
- (d) $\text{HCN}, \text{PBr}_3, \text{H}_3\text{O}^+$

Answer : (a)

57. Which of the following, compounds is the reactant in Rosenmund's reduction?

- a. $\text{CH}_3\text{CO}_2\text{H}$
- b. CH_3CHO
- c. $\text{CH}_3\text{CH}_2\text{Cl}$
- d. CH_3COCl

Answer : (d)

58. The acid which contains the aldehyde group is

- a. acetic acid
- b. formic acid
- c. benzoic acid
- d. propionic acid

Answer : (b)

59. When aqueous solution of benzene diazonium chloride is boiled, the product formed is

- (a) $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$

(b) $C_6H_6+N_2$

(c) C_6H_5COOH

(d) C_6H_5OH

Answer : (d)

60. $\alpha - D(+)$ - glucose and $\beta - D-(+)$ - glucose are

(A) Conformers

(B) Epimers

(C) Anomers

(D) Enantiomers

Answer : (C)

