

1. The pH value of 1×10^{-4} M NaOH solution is

- (a) 4 (b) 10
(c) 6 (d) between 6-7

2. The C—H bond distance is the longest in

- (a) C_2H_2 (b) C_2H_4
(c) $C_2H_4Br_2$ (d) C_6H_6

3. Which represents the correct order of first ionisation potential of third period elements ?

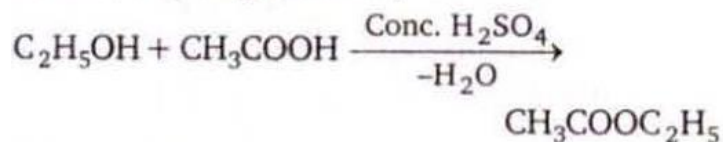
- (a) $Na > Mg > Al > Si$
(b) $Na < Mg < Al < Si$
(c) $Na < Si < Al < Mg$
(d) $Na < Al < Mg < Si$

4. By which of the following processes, pure nitrogen gas is prepared ?

- (a) $(NH_4)_2Cr_2O_7 \xrightarrow{\Delta}$
(b) $NH_4Cl + NaNO_2 \xrightarrow{\Delta}$
(c) $NH_3 + NaNO_2 \xrightarrow{\Delta}$
(d) $N_2O + Cu \xrightarrow{\Delta}$

5.

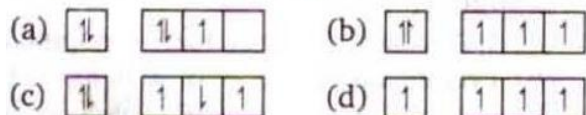
In the following reaction,



C_2H_5OH acts as

- (a) electrophile
(b) nucleophile
(c) dehydrating agent
(d) All of the above

6. Which of the following orbital diagram violates Pauli's exclusion principle ?



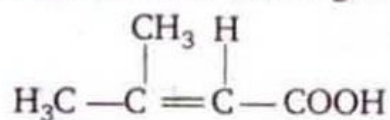
7. The geometry of sulphate ion is

- (a) square planar
 (b) tetrahedral
 (c) square pyramidal
 (d) octahedral

8. The difference between heat capacity at constant pressure and heat capacity at constant volume for the combustion of carbon monoxide at 27°C will be

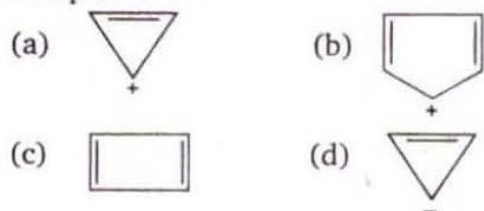
- (a) - 124.71 kJ (b) - 1.247 J
 (c) - 1.247 kJ (d) - 124.71 J

9. IUPAC name of the given compound is



- (a) 2-methylbut-2-enoic acid
 (b) 3-methylbut-2-enoic acid
 (c) 3-methylbut-3-enoic acid
 (d) 2-methylbut-3-enoic acid

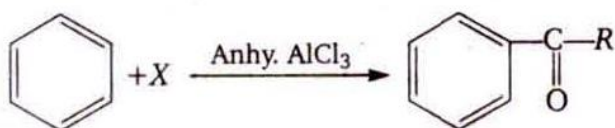
10. Which of the following is an aromatic compound ?



11. Thermodynamically, most stable form of phosphorus is
(a) red (b) black
(c) white (d) yellow
12. The substance with the highest calorific value is
(a) milk (b) rice
(c) ghee (d) egg
13. Gamma rays are
(a) high energy electrons
(b) low energy electrons
(c) high energy electro-magnetic waves
(d) high energy positrons
14. What volume of CO_2 will be liberated at NTP if 12 g of carbon is burnt in excess of oxygen ?
(a) 11.2 L (b) 22.4 L
(c) 2.24 L (d) 1.12 L
15. Which of the following is man-made element ?
(a) Ra (b) U
(c) Np (d) C
16. Four different colloids have the following Gold number. Which one has its most effective action ?
(a) 10 (b) 30
(c) 20 (d) 40
17. The number of unpaired electrons in ferrous ion is
(a) 3 (b) 2
(c) 4 (d) 5

25. Which is an example of thermosetting polymer ?
(a) Polythene (b) PVC
(c) Neoprene (d) Bakelite
26. The first Noble Prize in chemistry was given to
(a) J.H. van't Hoff (b) Cannizaro
(c) Mendeleef (d) Moseley
27. Strongest reducing agent is
(a) K (b) Mg
(c) Al (d) Ba
28. The base found only in the nucleotides of RNA, is
(a) adenine (b) uracil
(c) guanine (d) cytosine
29. Which of the following compounds does not give a precipitate with excess of NaOH ?
(a) $ZnSO_4$ (b) $FeSO_4$
(c) $AgNO_3$ (d) $HgCl_2$
30. Among the following, the correct statement is
(a) aniline is a weaker base than ammonia
(b) in water, solubility of $CH_3OH > C_2H_5OH > C_6H_5OH$
(c) b.p. of alkylhalide is greater than its corresponding alkane
(d) All of the given statements are correct
31. Three products are obtained by the ozonolysis of penta-1, 3-diene. Out of these if two products are formaldehyde and acetaldehyde, the name of the third one is
(a) formaldehyde (b) ethanal
(c) glyoxal (d) propanaldehyde

38. HCl molecule contains
 (a) ionic bond
 (b) covalent bond
 (c) hydrogen bond
 (d) coordinate bond
39. Transition metals show paramagnetic behaviour. This is because of their
 (a) high lattice energy
 (b) variable oxidation state
 (c) characteristic configuration
 (d) unpaired electrons
40. Which reaction is not affected by change in pressure ?
 (a) $\text{H}_2 + \text{I}_2 \rightleftharpoons 2\text{HI}$
 (b) $2\text{C} + \text{O}_2 \rightleftharpoons 2\text{CO}$
 (c) $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3$
 (d) $\text{PCl}_5 \rightleftharpoons \text{PCl}_3 + \text{Cl}_2$
41. If the solubility of calcium fluoride in pure water is x mol/L, its solubility product is
 (a) $\sqrt{2}x$ (b) $2x^2$
 (c) $4x^3$ (d) x^2
42. The molarity of a solution containing 5.0 g of NaOH in 250 mL solution is
 (a) 0.1 (b) 0.5
 (c) 1.0 (d) 2.0
43. The following reaction is called Friedel-Craft's reaction.



In this reaction 'X' is

- (a) $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{Cl}$ (b) $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{R}$
 (c) $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$ (d) $\text{R}-\text{O}-\text{R}$

44. Picric acid is
(a) 2, 4, 6-tribromophenol
(b) 2, 4, 6-trinitrotoluene
(c) 2, 4, 6-trinitrophenol
(d) None of the above
45. Gravity separation process is used for the concentration of
(a) calamine (b) haematite
(c) chalcopyrite (d) bauxite
46. Ammonium ion is
(a) a conjugate acid
(b) a conjugate base
(c) neither an acid nor a base
(d) both an acid and a base
47. The equivalent weight of MnSO_4 is half of its molecular weight when it is converted to
(a) Mn_2O_3 (b) MnO_2
(c) MnO_4^- (d) MnO_4^{2-}
48. The reaction by which benzaldehyde is converted in benzyl alcohol, is
(a) Fittig reaction (b) Cannizaro reaction
(c) Wurtz reaction (d) aldol condensation
49. By the ideal gas law, the pressure of 0.60 mole NH_3 gas in a 3.00 L vessel at 25°C is
(a) 48.9 atm (b) 4.89 atm
(c) 0.489 atm (d) 489 atm
50. Brown ring in the test of nitrate ion is obtained due to the formation of
(a) $[\text{Fe}(\text{H}_2\text{O})_5\text{NO}]\text{SO}_4$
(b) $[\text{Fe}(\text{SO}_4)_2\text{NO}]\text{H}_2\text{O}$
(c) $\text{Fe}_2(\text{SO}_4)_3 \cdot \text{NO}$
(d) None of the above

ANSWER KEYS

1. b 2. c 3. d 4. b 5. b 6. b 7. b 8. c 9. b 10. a
11. b 12. e 13. e 14. b 15. e 16. a 17. e 18. e 19. e 20. a
21. c 22. e 23. b 24. b 25. d 26. a 27. a 28. b 29. a 30. d
31. c 32. e 33. b 34. b 35. a 36. e 37. e 38. b 39. D 40. a
41. c 42. b 43. a 44. e 45. b 46. a 47. b 48. b 49. b 50. a