1. Graphite is soft while diamond is hard because :
   (a) Graphite is in powder form
   (b) Diamond has sp^2 hybridization but graphite has sp^3 hybridization.
   (c) Graphite is in planar form while diamond is in tetrahedral form
   (d) Graphite is covalent and diamond is ionic.

2. The pH of a 10^{-10} M–NaOH solution is :
   (a) 10 (b) 7.01
   (c) 6.99 (d) 4

3. $Na_2S_2O_3 + I_2 \longrightarrow$ Product is :
   (a) Na_2S (b) Na_2SO_4
   (c) $Na_2S_4O_6$ (d) S_2

4. Phenol and benzoic acid are distinguished by :
   (a) NaOH (b) $NaHCO_3$
   (c) Na_2CO_3 (d) H_2SO_4

5. H_2O is liquid while H_2S is a gas due to :
   (a) covalent bonding
   (b) molecular attraction
   (c) H–bonding
   (d) both H–bonding and molecular attraction

6. Phenol reacts with chloroform in presence of :
   (a) H_2SO_4
   (b) KOH
   (c) $NaNO_2/HCl$
   (d) G.R

7. Frenkel and Schottky defects are :
(a) nucleus defects
(b) non-crystal defects
(c) crystal defects
(d) nuclear defects

8. $CH_3CH_2C\equiv CH \xrightarrow{R}$ butanone–2. R is :
(a) Hg^{++}/dil. H_2SO_4 (b) $KMnO_4$
(c) $KClO_3$ (d) $K_2Cr_2O_7$

9. Which has minimum solubility ?
(a) Bi_2S_3 (b) Ag_2S
(c) CoS (d) PbS

10. Ratio of molecular weights of A and B is $\frac{4}{25}$ then ratio of rates of diffusion will be :
(a) 5 : 1 (b) 5 : 2
(c) 25 : 3 (d) 25 : 4

11. H-bond is strongest in :
(a) C_2H_5OH (b) H—F
(c) H_2O (d) CH_3COCH_3

12. Strongest nucleophile is :
(a) RNH_2 (b) ROH
(c) $C_6H_5O^-$ (d) CH_3O^-

13. a/V^2 given in van der Waal's equation is for :
(a) internal pressure
(b) inter molecular attraction
(c) both (1) and (2)
(d) temperature correction

14. The hardest substance is :
(a) iron (b) steel
(c) diamond (d) graphite

15. Which of the following is wrong statement ?
(a) $Ni(CO)_4$ has oxidation number +4 for Ni
(b) $Ni(CO)_4$ has zero oxidation number for Ni
(c) Ni is metal
(d) CO is gas

16. Hybridization of 1 and 2 carbon atom in $\overset{1}{C}H_2=\overset{2}{C}=CH_2$ are :
(a) sp, sp (b) sp^2, sp^2
(c) sp^2, sp (d) sp^3, sp^2

17. In $[NiCl_4]^{2-}$, the number of unpaired electrons, are :
(a) 4 (b) 2
(c) 3 (d) 5

18. Which carbocation is most stable ?
(a) $CH_3\overset{+}{C}H_2$ (b) $\overset{+}{C}H_3$
(c) $C_6H_5\overset{+}{C}H_2$ (d) $CH_3CH_2\overset{+}{C}H_2$

19. $CH_3-\underset{\displaystyle CH_2CH_3}{\underset{|}{C}}=CH-\underset{\displaystyle CH_3}{\underset{|}{}} \xrightarrow[H_2]{\text{catalyst}}$ x. No. of optical isomer possible will be :
(a) 2 (b) 4
(c) 0 (d) 3

20. $C_{(dia)} + O_2 \longrightarrow CO_2$, $\Delta H = -395.4$ kJ/mole
$C_{(gr)} + O_2 \longrightarrow CO_2$ $\Delta H = -393.5$ kJ/mole
$C_{(gr)} \longrightarrow C_{(dia)}$; $\Delta H = ?$:
(a) –3.8 (b) –1.9
(c) +3.8 (d) +1.9

21. The internal energy of a substance :
(a) decrease with increase in temperature
(b) increase with increase in temperature
(c) remains unaffected with change in temperature
(d) calculated by $E = mc^2$

22. The rate constant of a reaction depends on :
(a) the temperature of a reaction
(b) the time of a reaction
(c) the extent of reaction
(d) the initial conc. of the reactant

23. The half life of a radioactive element is 40 days. Calculate the average life :
(a) 5.76 days (b) 57.6 days
(c) 646 days (d) 4.56 days

24. In an isothermal process :
(a) $\Delta H = \Delta E + P\Delta V$ (b) $\Delta H = W$
(c) $\Delta H = \Delta E$ (d) $\Delta H = S\Delta T$

25. Number of orbitals in L energy level :
(a) 1 (b) 2
(c) 3 (d) 4

26. How much chlorine will be liberated on passing one ampere current for 30 min. through NaCl solution ?
(a) 0.66 mole (b) 0.33 mole
(c) 0.66 g (d) 0.33 g

27. $H_2C_2O_4 + KMnO_4$ in acidic medium reacts to have change in oxidation number of Mn from :
(a) 7 to 5 (b) 2 to 7
(c) 5 to 7 (d) 7 to 2

28. When the temperature of an ideal gas is increased from 27°C to 927°C, the kinetic energy will be :
(a) same (b) eight times
(c) four times (d) twice

29. Ratio of radii of second and first Bohr orbits of H atom is :
(a) 2 (b) 4
(c) 3 (d) 5

30. India conducted an underground nuclear test at :
(a) Narora (b) Tarapur
(c) Pushkar (d) Pokharan

31. Which is used as medicine?
(a) PVC (b) Terylene
(c) Glyptal (d) Urotropine

32. $NaOH/H^+$ reacts with :
(a) $C_6H_5OCH_3$ (b) CH_3OH
(c) $CH_3-\overset{\overset{O}{\|}}{C}-CH_3$ (d) C_2H_5OH

33. Butyne-1 and butyne-2 can be distinguished by :
(a) H_2SO_4
(b) $AgNO_3 + NH_4OH$
(c) $K_2Cr_2O_7$
(d) NH_4OH

34. The incorrect configuration is :
(a) $K = [Ar]\ 4s^1$
(b) $Cr = [Ar]\ 3d^5, 4s^1$
(c) $Cr = [Ar]\ 3d^4, 4s^2$
(d) $Cu = [Ar]\ 3d^{10}, 4s^1$

35. Which of the following compound gives iodoform test ?
(a) CH_3CN (b) CH_3OH
(c) CH_3COCH_3 (d) C_6H_5OH

36. Dual nature of particle was given by :
(a) Bohr theory
(b) Thomson model
(c) Heisenberg principle
(d) de-Broglie equation

37. $NaOH(aq)$, $HCl(aq)$, and $NaCl(aq)$ concentration of each is 10^{-3}M. Their pH will be respectively :
(a) 10, 6, 2 (b) 11, 3, 7
(c) 10, 3, 7 (d) 10, 4, 7

38. Most acidic is :
(a) CH_3COOH
(b) $C_6H_5CH_2COOH$
(c) HCOOH
(d) CH_3CH_2COOH

39. Substance having ester linkage is :
(a) bakelite (b) polythene
(c) PVC (d) terylene

40. Carborandum is :
(a) Al_2O_3 (b) $AlCl_3$
(c) $CuCO_3$ (d) SiC

Answer – Key

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