ANSWERS

1. More the number of ions in a solution, greater is the conductivity of the solution.
   Answer is option 2.
2. BF_3 can receive pair of electrons where as the others can donate
   Answer is option 2.
3. Rate equation of the reaction becomes
   $r = k[A]^2[B]$
   So, order = 2+1 = 3
   Answer is option 1.
4. 10 mol of HI is formed when 5 mol of H_2 is reacted.
   i.e 5 mol H_2 + 5mol I_2 = 10 mol HI
   but 0.2 mol of I_2 remains at equilibrium.
   Amount of I_2 taken = 5mol + 0.2 mol = 5.2 mol
   Answer is option 1.
5. $\Delta U = q + w$ is the only state function.
   Answer is option 4.
6. Let the metal be M. It is trivalent.
   Formula of chloride = MCl_3
   At. Mass of M = 17 X3 = 51
   Molecular mass of MCl_3 = 51+ (35.5 X 3)=157.5
   Answer is option 2.
7. $\ln k = \ln A - \frac{E_a}{RT}$
   When Ea = 0, lnk = lnA
   So k = A
   Answer is option 3.
8. $\Delta G^0 = - 2.303\ RT \log Kp$
   $\Delta G^0 = 0$
   log Kp = 0
   So Kp = 1
   Answer is option 2.
9. Lyophillic sol are reversible in nature. Starch sol is lyophillic sol and is reversible colloid.
   Answer is option 4.

10. $\pi_{\text{cane sugar}} = \pi_X$

$\frac{5}{342} = \frac{1}{M}$

Or, $MX = \frac{1}{5} \times 342 = 68.4$ Answer is option 2.

11. Potassium sulphate gives maximum number of particles (ions). Depression in freezing point depends on number of particles.
Answer is option 1.

12. Silicon is the covelent crystal.
Answer is option 3.

13. Each carbon of C=C in 4- phenyl pent-2-ene attached to 2 different groups.
Answer is option 2.

14. Aldol is formed during the reaction, its IUPAC name is 3 – hydroxybutanal.
Answer is option 3.

15. Iodines are more active than chlorides
2^0 – halide > 1^0 – halide
Answer is option 2.

16. In C2H2 there is C ≡ C. In C2H4 and C2H2Br2 there is C = C.
In C2H6 there is C – C.
C — C bond distance is longest.
Answer is option 3.

17. compound containing – $COCH_3$ or –CH_2CHO group answers iodoform test.
Answer is option 3.

18. An activating group activates ortho - and para - positions. Hence substitution takes place at ortho - and para - positions. A deactvating group deactivates ortho - and para - positions than meta positin. Hence m - substitution takes place.
Answer is option 3.

19. $CH_3I + 2[H] \xrightarrow{\text{Zn-Cu/ alc.}} CH_4 + HI$

$2\,CH_3I + 2\,Na \xrightarrow{\text{ether}} C_2H_6 + 2NaI$

Answer is option 2.

20. $CH_3 – CH_2 – COONa + NaOH \xrightarrow{CaO} CH_3\text{-}CH_3 + Na_2CO_3$
Answer is option 2.

21. Rootword is pent. Suffix is -ane and diol (at C_2 and C_3)
Preffix is 2-methyl
Answer is option 2.

22. There is intramolecular hydrogen bonding in o- nitrophenol where as intermolecular hydrogen bonding is in other three options.
Answer is option 2.

23. Galactose is a carbohydrate, a hexose and an aldose but it is not a ketose.
Answer is option 3.

24. Biuret test is the general test for proteins which are made of peptide linkages.
Answer is option 3.

25. Vitamins A and D are water insoluble and hence they can be absorbed only with the help of oils and fats.
Answer is option 4.

26. There are two interchain and one intrachain disulpide linkages are present.
Answer is option 3.

27. Though bond order for H_2^+ and H_2^- is same (B.O = O.5), H_2^- is slightly less stable than H_2^+ because H_2^- has one electron in the antibonding orbital resulting in repulsion (less stable). Thus bond length order is $H_2^- > H_2^+ > H_2$
Answer is option 2.

28. CdS - yellow , CuS – black, ZnS – white, PbS – black.
Answer is option 1.

29. $H_2C_2O_4$ is oxalic acid and is dehydrated.
Answer is option 3.

30. Nessler,s reagent contains HgI_4^- ions.
Answer is option 3.

31. $FeO + SiO_2 \rightarrow FeSiO_3$
Answer is option 2.

32. Concentration of Ag in molten zinc = x/10
Concentration of Ag in molten lead = 1-x/100
At 800^0C , Distribution coefficient = 300.

$$\frac{x/10}{1-x/100} = 300$$

$$\text{Or, } \frac{10x}{1-x} = 300 \quad \text{So, } x = \frac{300}{310}$$

$$\text{Percentage of Ag} = \frac{300}{310} \times 100 = 96.77 = 97$$

Answer is option 1.

33. Higher the atomic mass of the noble gas easier is the liquefaction.
Answer is option 2.

34. Ligands can donate one or more pair of electrons to cenral metal ion.
Answer is option 3.

35. O_2^- is super oxide. The extra electron of O_2^- enters π^*_{2Px} .
Bond Order $= \frac{N_b - N_a}{2} = \frac{10-7}{2} = 1.5$
Answer is option 4.

36. The number unpaired 'd' electrons in
$Fe^{2+} = 4$, $Zn^{2+} = 0$, $Cu^{+} = 0$, $Ni^{3+} = 1$.
Answer is option 1.

37. d^2sp^3 hybridisation results octahedral geometry.
Answer is option 4.

38. In $C_6H_5NH_3^+$, there is no lone pair of electrons on nitrogen atom. Hence it can not show resonance.
Answer is option 1.

39.
$$R-\underset{\underset{OH}{|}}{CH}-R' \xrightarrow{Cu \text{ at } 300^0c} R-\underset{\underset{O}{\|}}{C}-R' + H_2$$
Answer is option 4.

40. Sp^2 hybrid orbitals of carbon atoms in benzene undergoes overlapping along same axis.
Answer is option 4.

41. Alcohols and acids react with sodium metal where as ethers do not react with Sodium metal.
Answer is option 4.

42. The unsaturated hydrocarbons alkenes and alkynes decolourise bromine in carbon tetrachloride.
Answer is option 3.

43. Mass required to prepare 1dm3 of 0.2M oxalic acid = molarity x mol.mass
= 0.2 x 126 = 25.2 g
$\therefore$ mass/ 500ml = 12.6 g
Answer is option 4.

44. $\frac{Tso_2}{Mso_2} = \frac{To_2}{Mo_2}$ So, $\frac{Tso_2}{64} = \frac{298}{32}$
$Tso_2 = 298 \times 2 = 596K$
Answer is option 3.

45. It is the endothermic reaction followed by the increase in the entropy.
Answer is option 4.

46.
$$\Delta S = \frac{\Delta H}{T} \quad \therefore T = \frac{\Delta H}{T} \quad \text{So, } T = \frac{5.968 \times 10^3}{16}$$
$$= 373 \text{ K}$$
Answer is option 2.

47. More the number of electronegative atoms in a molecule of an aliphatic saturated acid, stronger is the acidic character. So pK_a is small.
Answer is option 1.

48. For HCl and NaOH , o.2 M = 0.2 N.
When acid and base are mixed as in option 4, there is more volume of HCl.

$$\therefore [H^+] \text{ left over} = \frac{75 \times 0.2 - 25 \times 0.2}{\text{Total volume}}$$
$$= \frac{50 \times 0.2}{100} = 10^{-1}$$
$$\therefore \text{pH} = 1$$

In other three combinations it can be proved wrong by working as above.
Answer is option 4.

49. Precipitation takes place only when the product of ionic concentrations exceed the solubility product as in option 4.
Answer is option 4.

50. For sulphuric acid,
Normality = 2 x molarity
= 2 x 0.2 = 0.4
Answer is option 2.

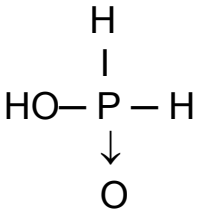
51. +I effect in toluene increases the electron density in the benzene ring.
Hence electron substitution like sulphonation easily takes place in toluene.
Answer is option 1.

52. Li has least reduction potential and is having highet tendency to lose electron among the metals.
Answer is option 1.

53. CH_3Cl and H_2O are covalent in nature.
$AlCl_3$ is ionic in nature.
Answer is option 4.

54. One mol of O_2 = 22.4 dm^3
i.e, 32g of O_2 = 22.4 dm^3
$\therefore$ 16g of O_2 = 11.2 dm^3
Answer is option 3.

55. H_3PO2 contains only one –OH group, which has a replaceable hydrogen atom. Hence it is monobasic.



Answer is option 3.

56. It is d-block elements or transition elements form most efficient catalysts.
Answer is option 3.

57. It is the test for both aliphatic aromatic amines.
Answer is option 4.

58. Anisole is methoxybenzene.
Answer is option 2.

59. Higher the valency , greater is its coagulation action.
$AlCl_3$ which contains Al^{3+} has maximum action than other three.
Answer is option 1.

60. Simple proteins give only amino acids on hydrolysis.
Answer is option 1.