

7. Excess of PCl_5 reacts with concentrated H_2SO_4 giving

- a. Chlorosulphuric acid b. Sulphurous acid
c. Sulphuryl chloride d. Thionyl chloride.

8. Hybridised states of C in graphite and diamond are respectively,

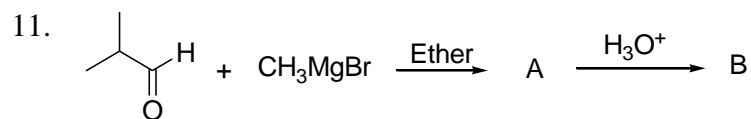
- a. sp^3 , sp^3 c. sp^2 , sp^2
b. sp^3 , sp^2 d. sp^2 , sp^3

9. Oils are liquids at room temperature since they contain higher percentage of

- a. Oleates c. Stearates
b. Palmitates d. Myristates

10. Adsorption theory is applicable for

- a. Homogenous catalysis b. Heterogenous catalysis
c. Auto- catalysis d. Induced Catalysis



The IUPAC name of B is

- a. 3-methylbutan-2-ol c. 2-methylbutan-2-ol
b. 2-methylbutan-3-ol d. Pentan-2-ol

12. A plot of $1/T$ v/s K for a reaction gives the slope $-1 \times 10^4 \text{ K}$. The energy of activation for the reaction is:

- a. 8314 J mol^{-1} c. 12.02 J mol^{-1}
b. $1.202 \text{ kJ mol}^{-1}$ d. $83.14 \text{ kJ mol}^{-1}$

18. Which of the following colloids cannot be easily coagulated?

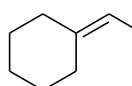
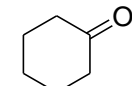
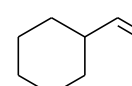
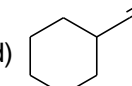
- a. Multi molecular colloids
- b. Irreversible colloids
- c. lyophobic colloids
- d. Macromolecular colloids

19. Which of the following compound of xenon has pyramidal geometry?

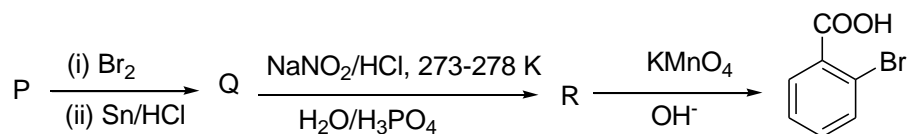
- a. XeF₂
- b. XeF₄
- c. XeOF₄
- d. XeO₃

20. Identify 'Q' in the following sequence of reactions:



- a) 
- b) 
- c) 
- d) 

21. In the sequence of following reactions:



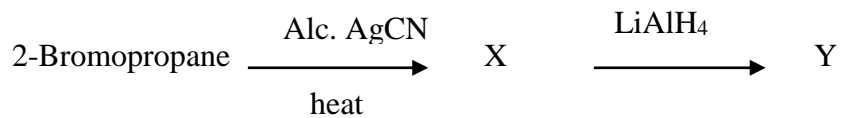
The starting compound 'P' is:

- a. m-Nitrotoluene
- b. p-Nitrotoluene
- c. o-nitrotoluene
- d. o-bromotoluene

22. In presence of HCl, H₂S results the precipitation of group-2 elements but not group-4 elements during qualitative analysis. It is due to

- a. Higher concentration of H⁺
- b. Lower concentration of H⁺
- c. Higher concentration of S²⁻
- d. Lower concentration of S²⁻

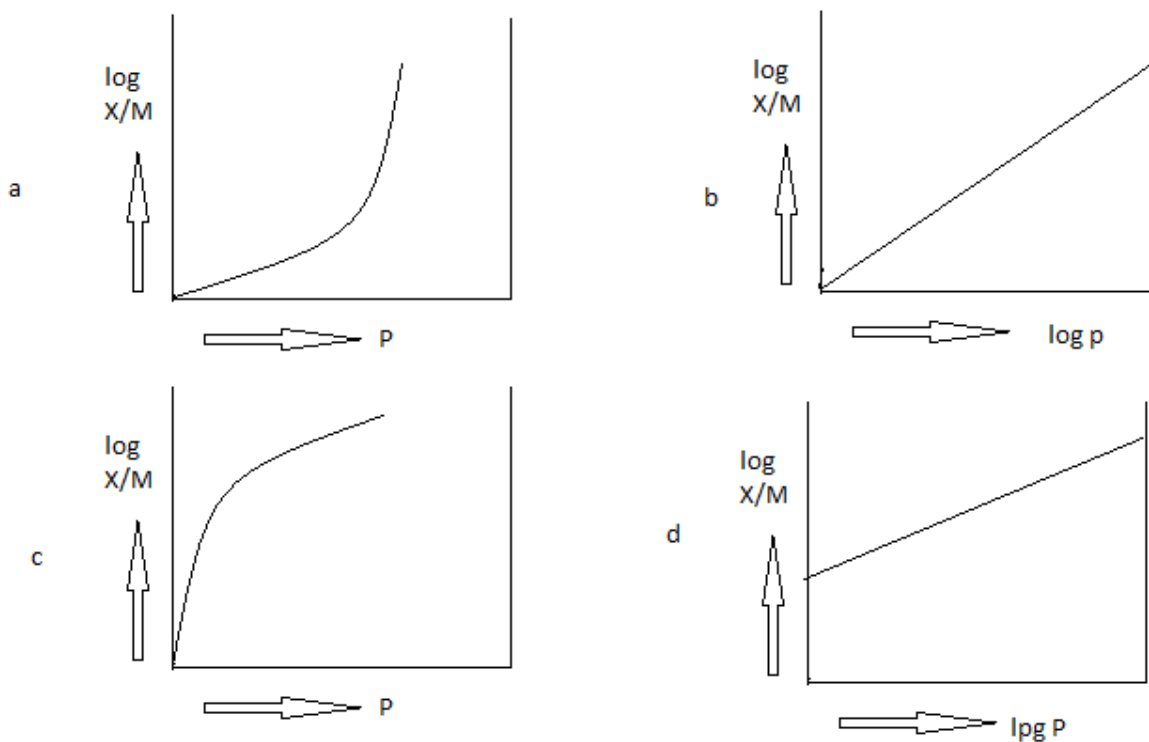
23. In the given set of reactions,



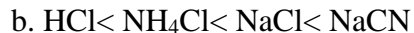
The IUPAC name of product Y is

- a. N-isopropyl methanamine
- b. N-methyl propan-2-amine
- c. N-methyl propanamine
- d. Butan-2-amine

24. Which of the following curves is in accordance with Freundlich adsorption isotherm?



37. The pH of 0.1M solution of the following salts increases in the order:



38. In the dichromate dianion

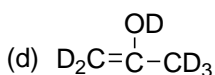
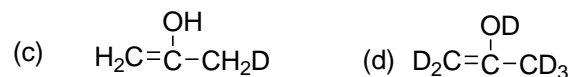
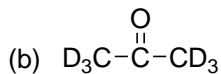
a. 4 Cr-O bonds are equivalent

b. 6 Cr-O bonds are equivalent

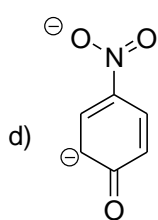
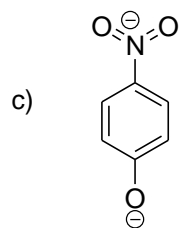
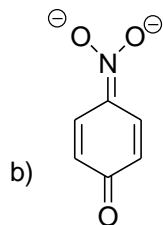
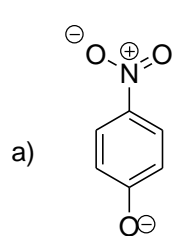
c. all Cr-O bonds are equivalent

d. all Cr-O bonds are non-equivalent

39. The enol form of acetone, after treatment with D_2O , gives



40. The most unlikely representation of resonance structure of p-nitrophenoxide ion is:



41. The electronic configuration of an element is $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$. This represents its

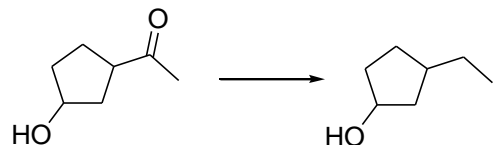
a. Excited state

c. cationic form

b. ground state

d. anionic form

42. The appropriate reagent for the following transformation

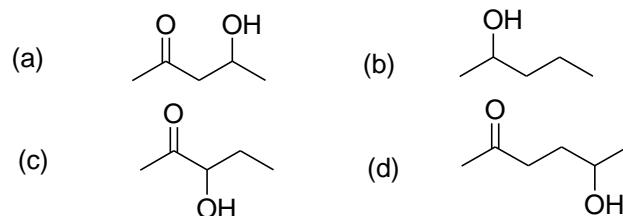


- a. Zn(Hg), HCl
 b. NH_2NH_2 , OH^-
 c. H_2/Ni
 d. NaBH_4

43. Ammonia can be dried by:

- a. conc. H_2SO_4
 b. P_4O_{10}
 c. CaO
 d. Anhydrous CaCl_2

44. Which one of the following will not readily be dehydrated in acidic condition?



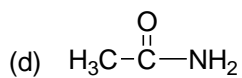
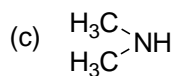
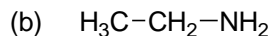
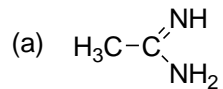
45. The rate constant for the reaction $2\text{N}_2\text{O}_5 \longrightarrow 4\text{NO}_2 + \text{O}_2$ is $3.0 \times 10^{-5} \text{ s}^{-1}$. If the rate is $2.40 \times 10^{-5} \text{ mol L}^{-1}\text{S}^{-1}$, then the concentration of N_2O_5 (in mol L^{-1}) is:

- a. 1.4
 b. 1.2
 c. 0.04
 d. 0.8

46. The wavelength associated with a golf ball weighing 200g and moving at a speed of 5m/h is of the order

- a. 10^{-10} m
 b. 10^{-20} m
 c. 10^{-30} m
 d. 10^{-40} m

47. The correct order of basicities of the following compounds is:



48. At constant temperature, the equilibrium constant (K_p) for the decomposition reaction $\text{N}_2\text{O}_4 \rightleftharpoons 2\text{NO}_2$ is expressed by $K_p = (4x^2P)/(1-x^2)$, where P = pressure, x = extent of decomposition. Which one of the following statements is true?

- a. K_p increases with increase of P .
- b. K_p increases with increase of x .
- c. K_p increases with decrease of x .
- d. K_p remains constant with change in P & x .

49. The set with correct order of acidity is:

- a. $\text{HClO} < \text{HClO}_2 < \text{HClO}_3 < \text{HClO}_4$
- b. $\text{HClO}_4 < \text{HClO}_3 < \text{HClO}_2 < \text{HClO}$
- c. $\text{HClO} < \text{HClO}_4 < \text{HClO}_3 < \text{HClO}_2$
- d. $\text{HClO}_4 < \text{HClO}_2 < \text{HClO}_3 < \text{HClO}$

50. The chemical composition of 'slag' formed during the smelting process in the extraction of copper is:

- a. $\text{Cu}_2\text{O} + \text{FeS}$
- b. FeSiO_3
- c. CuFeS_2
- d. $\text{Cu}_2\text{S} + \text{FeO}$

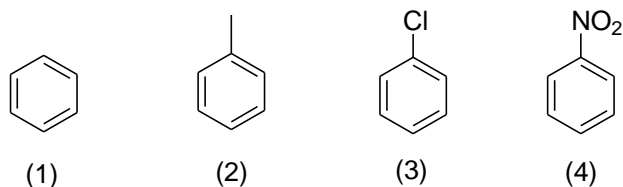
51. When the temperature is increased, surface tension of water

- a. increases
- b. decreases
- c. remains constant
- d. shows irregular behavior

52. Specify the coordination geometry around and hybridization of N and B atoms in a 1:1 complex of BF_3 and NH_3 .

- a. N: tetrahedral, sp^3 ; B: tetrahedral, sp^3
- b. N: pyramidal, sp^3 ; B: pyramidal, sp^3
- c. N: pyramidal, sp^3 ; B: planar, sp^2
- d. N: pyramidal, sp^3 ; B: tetrahedral, sp^3

53. Identify the correct order of reactivity in electrophilic substitution reactions of the following compounds:



- | | |
|--------------------|--------------------|
| a. $1 > 2 > 3 > 4$ | c. $2 > 1 > 3 > 4$ |
| b. $4 > 3 > 2 > 1$ | d. $2 > 3 > 1 > 4$ |

54. Which of the following acids has the smallest dissociation constant?

- | | |
|---|--|
| a. $\text{CH}_3\text{CHF}\text{COOH}$ | c. $\text{BrCH}_2\text{CH}_2\text{COOH}$ |
| b. $\text{FCH}_2\text{CH}_2\text{COOH}$ | d. $\text{CH}_3\text{CHBr}\text{COOH}$ |

55. Polyphosphates are used as water softening agents because they

- a. form soluble complexes with anionic species
- b. precipitate anionic species
- c. form soluble complexes with cationic species
- d. precipitate cationic species

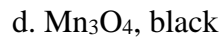
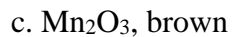
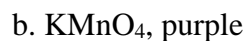
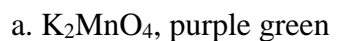
56. Identify the correct order of solubility of Na_2S , CuS and ZnS in aqueous medium.

- a. $\text{CuS} > \text{ZnS} > \text{Na}_2\text{S}$ b. $\text{ZnS} > \text{Na}_2\text{S} > \text{CuS}$ c. $\text{Na}_2\text{S} > \text{CuS} > \text{ZnS}$ d. $\text{Na}_2\text{S} > \text{ZnS} > \text{CuS}$

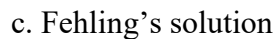
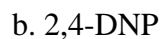
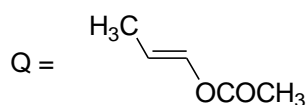
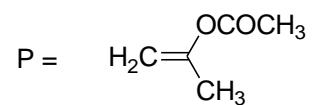
57. Among the following the molecule with the highest dipole moment is:



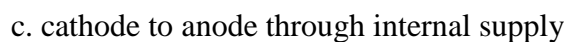
58. When MnO_2 is fused with KOH , a colored compound is formed. The product and its color is:



59. The product of acid hydrolysis of P and Q can be distinguished by:



60. In the electrolyte cell, flow of electrons is from



RED Answers

1	c	31	c
2	a	32	b
3	a	33	d
4	c	34	(a) (b)
5	d	35	b
6	d	36	b
7	c	37	b
8	d	38	b
9	a	39	b
10	b	40	c
11	a	41	b
12	None	42	b
13	d	43	c
14	c	44	a
15	b	45	d
16	d	46	c
17	a	47	b
18	d	48	d
19	d	49	a
20	d	50	b
21	b	51	b
22	d	52	a
23	b	53	c
24	d	54	c
25	d	55	c
26	d	56	d
27	a	57	a
28	d	58	a
29	d	59	c
30	d	60	c