



Sample Paper-03

Class 11<sup>th</sup> NEET (2024)

**CHEMISTRY**

**ANSWER KEY**

1. (4)
2. (3)
3. (3)
4. (1)
5. (1)
6. (2)
7. (2)
8. (2)
9. (3)
10. (2)
11. (1)
12. (4)
13. (2)
14. (4)
15. (3)
16. (4)
17. (1)
18. (2)
19. (2)
20. (4)
21. (2)
22. (2)
23. (2)
24. (2)
25. (4)

26. (3)
27. (1)
28. (2)
29. (2)
30. (1)
31. (2)
32. (1)
33. (3)
34. (2)
35. (2)
36. (4)
37. (1)
38. (2)
39. (4)
40. (3)
41. (4)
42. (1)
43. (2)
44. (1)
45. (3)
46. (1)
47. (2)
48. (4)
49. (1)
50. (1)



## HINTS AND SOLUTION

1. (4)  
Addition of reactant will disturb the equilibrium and increase the product formation.

2. (3)

Molecules	Hybridization	Shape
PCl <sub>5</sub>	sp <sup>3</sup> d	Trigonal bipyramidal
SF <sub>4</sub>	sp <sup>3</sup> d	Seesaw
XeF <sub>4</sub>	sp <sup>3</sup> d <sup>2</sup>	Square planar
BF <sub>3</sub>	sp <sup>2</sup>	Trigonal planar

3. (3)

Molecules	Hybridization
PCl <sub>5</sub>	sp <sup>3</sup> d
SF <sub>6</sub>	sp <sup>3</sup> d <sup>2</sup>
NO <sub>2</sub> <sup>+</sup>	sp
NH <sub>4</sub> <sup>+</sup>	sp <sup>3</sup>

4. (1)  
XeF<sub>2</sub>, XeF<sub>4</sub>, XeF<sub>6</sub> have linear, square planar and distorted octahedral shape respectively. XeF<sub>2</sub> has 3 lone pairs of electrons. XeF<sub>4</sub> has 2 lone pairs of electrons. XeF<sub>6</sub> has 1 lone pair of electrons.

5. (1)  
Common ion Cl<sup>-</sup> will suppress the ionization of AgCl.

6. (2)  
Statement I is correct, but Statement II is incorrect. Carbon dioxide reacts with lime water (calcium hydroxide) to form milky precipitate of calcium carbonate.

7. (2)  
SO<sub>2</sub> is a bent molecule that has net dipole moment.

8. (2)  
Let total number of NiO molecules is 100.  
So, total negative charge on 100 NiO molecules as oxygen exist in O<sup>2-</sup> = -200  
To maintain electrical neutrality, 98 Ni ions should have total charge of +200.  
Let number of Ni<sup>3+</sup> = x  
∴ Number of Ni<sup>2+</sup> = (98 - x)  
Now, 3x + 2(98 - x) = 200  
x = 94  
% of Ni<sup>2+</sup> =  $\frac{94}{98} \times 100 = 96\%$   
% of Ni<sup>3+</sup> = 100 - 96 = 4%

9. (3)  
If Δng = +ve, at constant volume, the addition of inert gases does not affect the equilibrium.

10. (2)  
Due to two lone pairs of oxygen atom and 2 hydrogen atoms.

11. (1)  
CO<sub>2</sub> have regular geometry.

12. (4)  
CO<sub>2</sub> is a symmetrical molecule. So its dipole moment become zero.

13. (2)  
F has 7 electrons in valence shell. Thus, to attain stability it should have lost one electron.

14. (4)  
Number of radial nodes = n - l - 1  
For 3s orbital, number of radial nodes = 3 - 0 - 1 = 2  
For 4p orbital, number of radial nodes = 4 - 1 - 1 = 2

15. (3)  
In Cl<sub>2</sub> & Br<sub>2</sub> bond formed by overlapping of p-p orbital

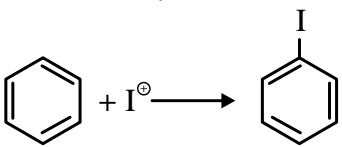
16. (4)  
n = 3, l = 0 means last shell is 3s  
Electronic configuration will be 1s<sup>2</sup>2s<sup>2</sup>2p<sup>6</sup>3s<sup>1 or 2</sup>  
So, Atomic no. is 11 or 12

17. (1)  
ΔH value is positive and ΔS value is negative

18. (2)  
4B + 3O<sub>2</sub> → 2B<sub>2</sub>O<sub>3</sub>  
$$B + \frac{3}{4}O_2 \longrightarrow \frac{2}{4}B_2O_3$$
$$B + \frac{3}{4}O_2 \longrightarrow \frac{1}{2}B_2O_3$$
$$\Delta H_{\text{combustion}} B = \frac{\Delta H_f B_2O_3}{2}$$



19. (2)  
Use  $\Delta U = q + w = 500 \text{ kJ} - 250 \text{ kJ} = 250 \text{ kJ}$
20. (4)  
It can take up as well as release one proton behaving as conjugate acid or conjugate base.
21. (2)  

$$\overset{\delta+}{\text{I}} - \overset{\delta-}{\text{Cl}} \xrightarrow[\text{Anhyd.}]{\text{AlCl}_3} \text{I}^+ + [\text{AlCl}_4]^-$$
  

22. (2)  
The degree of ionisation of a solute depends upon its nature, concentration, and temperature.
23. (2)  
When the concentration of any reactant is added to the reactant side, it favours the reaction to proceed in a forward direction i.e. the equilibrium is shifted to the right.
24. (2)  

$$\text{CH}_3\text{OH}(\text{g}) + \frac{3}{2} \text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$$
  
Heat evolved when 1.5 mole of oxygen used = 900 kJ/mol  
Therefore, heat evolved when 0.5 mole of oxygen used = 300 kJ/mol.
25. (4)  
If bond is weaker, less energy is required to break it. So it can release  $\text{H}^+$ .
26. (3)  

$$\text{B}_2\text{H}_6 + 6\text{H}_2\text{O} \rightarrow 2\text{H}_3\text{BO}_3 + 6\text{H}_2$$

$$2\text{NaH} + \text{B}_2\text{H}_6 \rightarrow \text{NaBH}_4$$
 From  $\text{B}_2\text{H}_6$ , all can be prepared except  $\text{B}_2(\text{CH}_3)_6$ .
27. (1)  
Inert pair effect increases from Si to Pb and thus stability of  $\text{M}^{4+}$  ions decreases from Si to Pb.
28. (2)  
 $\text{CO}_2$  is acidic oxide, which on dissolution in water develops acidic nature.
29. (2)  
110 name as Ununnilium  
for 1 = un  
0 = nil
30. (1)  
Hydrogen peroxide has a bleaching action due to its oxidising nature.
31. (2)  
Covalent character  $\propto$  charge on cation  

$$\propto \frac{1}{\text{melting point}}$$
 order of covalent character  $\text{Sn}^{2+} < \text{Sn}^{4+}$  and  $\text{Pb}^{2+} < \text{Pb}^{4+}$
32. (1)  

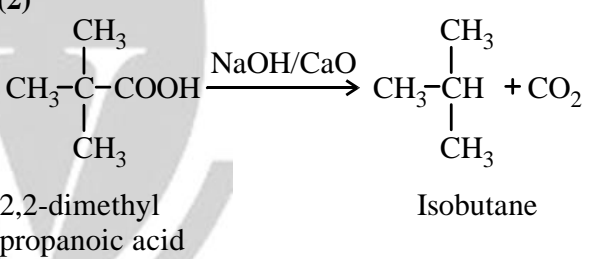
$$\text{N}_2 + \text{O}_2 \rightleftharpoons 2\text{NO}$$

$$K_p = \frac{P_{\text{NO}}^2}{P_{\text{N}_2} \cdot P_{\text{O}_2}} \quad \dots(\text{i})$$

$$2\text{NO} \rightleftharpoons \text{N}_2 + \text{O}_2$$

$$K'_p = \frac{P_{\text{N}_2} \cdot P_{\text{O}_2}}{P_{\text{NO}}^2} \quad \dots(\text{ii})$$
 From equation (i) and (ii), we have  

$$K'_p = \frac{1}{K_p} = \frac{1}{100} = 0.01$$
33. (3)  

$$\text{B}_2\text{H}_6 + 6\text{H}_2\text{O} \rightarrow 2\text{H}_3\text{BO}_3 + 6\text{H}_2$$
34. (2)  

  
2,2-dimethylpropanoic acid  $\xrightarrow{\text{NaOH/CaO}}$  Isobutane +  $\text{CO}_2$
35. (2)  

$$\Delta G^\circ = \Delta H^\circ - T\Delta S^\circ$$

$$= (-54.07) - (298 \times 10 \times 10^{-3})$$

$$\Delta G^\circ = -57.05 \text{ kJ mol}^{-1}$$
 At eq,  $\Delta G^\circ = -2.303 RT \log K$   

$$\log K = -\frac{\Delta G^\circ}{2.303 RT}$$

$$= \frac{-(-57.05)}{2.303 \times 8.314 \times 10^{-3} \times 298}$$

$$\log \approx 10$$
36. (4)  
 $K_p$  only depends on temperature. As pressure is increased, the equilibrium will shift in backward direction (with decrease in the number of moles of gaseous species) to nullify the effect of increased pressure. This decreases the degree of dissociation  $\alpha$ .

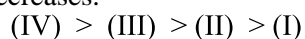


37. (1)

It is the glassy bead that is formed on heating borax. On heating borax first gives sodium tetra borate and finally gives a mixture of sodium metaborate and  $B_2O_3$  called borax glass.

38. (2)

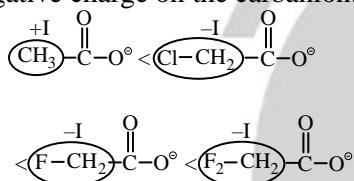
Phenyl group in (IV) increases the stability of carbanion by resonance and + I effect of methyl group decrease the stability of carbonanion in (I), (II) & (III). As number of methyl group in carbanion increases the stability of carbanion decreases.



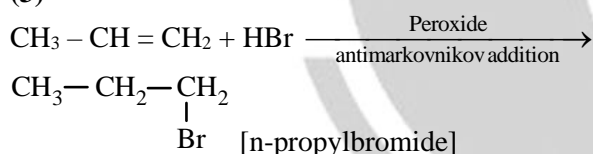
+ I Power ↑  
Resonance Stability      Stability of C arbanion ↓

39. (4)

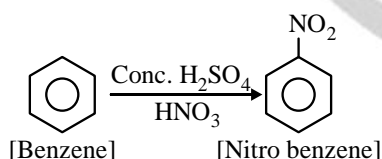
As -I effect of fluorine is more than -I effect of chlorine and with increase in number of fluorine atom in molecule -I effect also increases which increase the stability of carbanion by decreasing the negative charge on the carbanion.



40. (3)



41. (4)



$\text{HNO}_3 + 2\text{H}_2\text{SO}_4 \rightleftharpoons 2\text{HSO}_4^- + \text{H}_3\text{O}^+ + \text{NO}_2^\oplus$   
HNO<sub>3</sub> acts as base it reacts with H<sub>2</sub>SO<sub>4</sub> to form the electrophile NO<sub>2</sub><sup>⊕</sup> ion.

42. (1)

For Cr<sub>2</sub>O<sub>3</sub>  
 $2x + 3(-2) = 0$   
 $2x - 6 = 0$   
 $x = +3$



PW Web/App - <https://smart.link/7wwosivoicgd4>

Library- <https://smart.link/sdfez8ejd80if>

43. (2)

Borazine (B<sub>3</sub>N<sub>3</sub>H<sub>6</sub>) is also known as inorganic benzene.

44. (1)

The stability of resonance structures is given by:

1. Neutral species are more stable than charged ones.
2. Structures in which the octet of all the elements are complete are more stable rather than incomplete ones.
3. In case of charged species, negative charge on more E.N. element is stable than positive charge.

In the given structures, I is neutral; in II, all the elements have their octet complete; & III is least stable.

∴ The stability order is: I > II > III

45. (3)

The electron is in the second orbit (n = 2)

$$\text{Hence } L = \frac{nh}{2\pi} = \frac{2h}{2\pi} = \frac{h}{\pi}$$

46. (1)

Due to inert effect the stability of lower oxidation state gradually increases while stability of higher oxidation state gradually decreases down the group in elements of group 13th to 15th.

47. (2)

Mendeleev's Periodic Law is based on atomic weight.

48. (4)

Inert pair effect increases from Si to Pb and thus stability of M<sup>4+</sup> ions decreases from Si to Pb.

49. (1)

Neon has 10 electrons while oxygen has 8 electrons, so it gains two electrons forming an anion O<sup>2-</sup> with 10 electrons and having the same number as neon.

50. (1)

In C-60, all carbons are identical and have sp<sup>2</sup> hybridization.