Sample Paper-03

Class 11th NEET (2024)

CHEMISTRY

SECTION-A

1. For the reaction,
$CO(g) + H_2O(g) \rightleftharpoons CO_2(g) + H_2(g)$
at a given temperature, the equilibrium amount of CO_2 can be increased by;
(1) Adding a suitable catalyst.
(2) Increasing the pressure.
(3) Decreasing the volume of container.
(4) Increasing the amount of CO.

2. Match **List-I** with **List-II** to find out the **correct** option.

List I		**List II**	
(A)	PCl_5	(I)	Square planar
(B)	SF_4	(II)	Trigonal planar
(C)	XeF_4	(III)	See saw
(D)	BF_3	(IV)	Trigonal bipyramidal

(1) (A) – (IV), (B) – (I), (C) – (III), (D) – (II)
(2) (A) – (IV), (B) – (III), (C) – (II), (D) – (I)
(3) (A) – (III), (B) – (IV), (C) – (I), (D) – (II)
(4) (A) – (II), (B) – (IV), (C) – (III), (D) – (I)

3. Match **List-I** with **List-II** to find out the **correct** option.

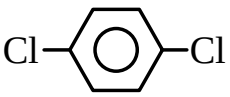
List I		**List II**	
(A)	PCl_5	(I)	sp
(B)	SF_6	(II)	sp^3
(C)	NO_2^+	(III)	sp^3d^2
(D)	NH_4^+	(IV)	sp^3d

(1) (A) – (III), (B) – (I), (C) – (IV), (D) – (II)
(2) (A) – (IV), (B) – (III), (C) – (II), (D) – (I)
(3) (A) – (IV), (B) – (III), (C) – (I), (D) – (II)
(4) (A) – (II), (B) – (III), (C) – (IV), (D) – (I)

4. **Statement I:** Xenon compounds XeF_2, XeF_4, XeF_6 have linear, square planar and distorted octahedral shape respectively.
Statement II: Xenon compounds XeF_2, XeF_4, XeF_6 have 6, 4 and 2 number of electrons respectively.
(1) Statement I and Statement II both are correct.
(2) Statement I is correct, but Statement II is incorrect.
(3) Statement I is incorrect, but Statement II is correct.
(4) Statement I and Statement II both are incorrect.

5. **Statement I:** The solubility of AgCl will be minimum in $CaCl_2$ aqueous solution.
Statement II: It is due to the common ion effect of chloride.
(1) Statement I and Statement II both are correct.
(2) Statement I is correct, but Statement II is incorrect.
(3) Statement I is incorrect, but Statement II is correct.
(4) Statement I and Statement II both are incorrect.

6. **Statement I:** Carbon dioxide turns lime water milky.
Statement II: Carbon dioxide dissolved in lime water.
(1) Statement I and Statement II both are correct.
(2) Statement I is correct, but Statement II is incorrect.
(3) Statement I is incorrect, but Statement II is correct.
(4) Statement I and Statement II both are incorrect.

7. Among the following which is polar:
(1) CO_2 (2) SO_2
(3) $BeCl_2$ (4) 

8. If nickel oxide has the formula $Ni_{0.98}O$, then what fraction of nickel exists as Ni^{3+}?
(1) 96% (2) 4%
(3) 98% (4) 2%

9. In a chemical reaction,
$PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$
Xenon gas is added at constant volume.
The equilibrium;
(1) will shifts in the reverse direction.
(2) will shifts in the forward direction.
(3) will not change.
(4) will change in the increment of product.

10. Maximum number of hydrogen bonds per H_2O molecule is:
(1) 2 (2) 4
(3) 3 (4) 1

11. Which of the following is not the right match?
(1) CO_2, irregular geometry.
(2) BF_3, regular geometry.
(3) NH_3, irregular geometry.
(4) SO_2, irregular geometry.

12. The molecule with the least dipole moment is:
(1) $CHCl_3$ (2) H_2O
(3) NH_3 (4) CO_2

13. It is thought that atoms combine with each other such that the outermost orbit acquires a stable configuration of 8 electrons. If stability were attained with 6 electrons rather than with 8, what would be the formula of the stable fluoride ions?
(1) F^{3+} (2) F^{+}
(3) F^{-} (4) F^{2-}

14. **Assertion**: The number of radial nodes in 3s and 4p orbitals are not equal.
Reason: The number of radial nodes in any orbital depends upon the values of 'n' & 'l' which are different for 3s and 4p orbitals.
(1) Both **Assertion (A)** and **Reason (R)** are the true, and **Reason (R)** is a correct explanation of **Assertion (A)**.
(2) Both **Assertion (A)** and **Reason (R)** are the true, but **Reason (R)** is not a correct explanation of **Assertion (A)**.
(3) **Assertion (A)** is true, and **Reason (R)** is false.
(4) **Assertion (A)** is false, and **Reason (R)** is true.

15. **Assertion:** In Cl_2 & Br_2 bond formed by overlapping of p-p orbital.
Reason: In Cl_2 & Br_2 bond formed by overlapping of hybrid orbitals.
(1) Both **Assertion (A)** and **Reason (R)** are the true, and **Reason (R)** is a correct explanation of **Assertion (A)**.
(2) Both **Assertion (A)** and **Reason (R)** are the true, but **Reason (R)** is not a correct explanation of **Assertion (A)**.
(3) **Assertion (A)** is true, and **Reason (R)** is false.
(4) **Assertion (A)** is false, and **Reason (R)** is true.

16. If n = 3, l = 0, m = 0, then atomic number is
(1) 12, 13 (2) 13, 14
(3) 10, 11 (4) 11, 12

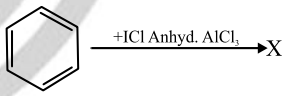
17. A chemical reaction cannot occur at all if its;
(1) ΔH value is positive and ΔS value is negative.
(2) ΔH value is negative and ΔS value is positive.
(3) ΔH and ΔS value are negative but $\Delta H > T\Delta S$.
(4) ΔH and ΔS value are positive but $\Delta H > T\Delta S$.

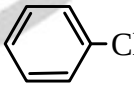
18. The standard heat of combustion of solid boron is equal to
(1) $\Delta H_f^0(B_2O_3)$ (2) $\frac{1}{2}\Delta H_f^0(B_2O_3)$
(3) $2\Delta H_f^0(B_2O_3)$ (4) $-\frac{1}{2}\Delta H_f^0(B_2O_3)$

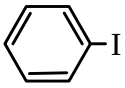
19. A system absorbs 500 kJ heat and performs 250 kJ work on the surroundings. The increase in internal energy of the system is;
(1) 750 kJ (2) 250 kJ
(3) 500 kJ (4) 1000 kJ

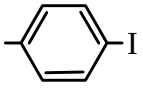
20. Which of the following is an amphiprotic species?
(1) F^- (2) Cl^-
(3) ClO_4^- (4) HCO_3^-

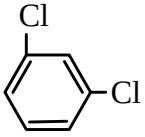
21. The compound X in the reaction:



(1) 

(2) 

(3) 

(4) 

22. The degree of ionisation of compound depends on;
(1) size of solute.
(2) nature of solute.
(3) nature of vessel.
(4) quantity of electricity passed.

23. In the reaction $H_2 + I_2 \rightleftharpoons 2HI$ at equilibrium, some H_2 is added. What happens to the equilibrium?
(1) It gets shifted to left
(2) It gets shifted to right
(3) It remains unchanged
(4) Can't be predicted

24. One mole of methanol when burnt in O_2 gives out 900 kJ/mol heat. If 0.5 mole of O_2 is used, what will be the amount of heat evolved?
(1) 150 kJ (2) 300 kJ
(3) 450 kJ (4) 900 kJ

25. Choose the **incorrect** statement.
(1) The extent of dissociation of an acid depends on the strength and polarity of the H – A bond.
(2) The weaker the H – A bond, the stronger is the acid.
(3) The higher the charge separation in H – A bond, the higher is the acidity.
(4) The weaker the H – A bond, the more energy is required to break the bond and acidity decreases.

26. From the B_2H_6 all the following can be prepared except:
(1) H_3BO_3
(2) $[BH_2(NH_3)_2]^+ [BH_4]^-$
(3) $B_2(CH_3)_6$
(4) $NaBH_4$

27. The stability of tetrahalides of Si, Ge, Sn and Pb increases in the order:
(1) $Pb^{4+} < Sn^{4+} < Ge^{4+} < Si^{4+}$
(2) $Si^{4+} < Ge^{4+} < Sn^{4+} < Pb^{4+}$
(3) $Pb^{4+} < Ge^{4+} < Si^{4+} < Sn^{4+}$
(4) $Sn^{4+} < Ge^{4+} < Pb^{4+} < Si^{4+}$

28. Pure water is kept in a vessel and it remains exposed to atmospheric CO_2 which is absorbed. Then its pH will be:
(1) greater than 7.
(2) less than 7.
(3) 7.
(4) depends on ionic product of water.

29. Atomic number of element Ununnilium is;
(1) 101
(2) 110
(3) 111
(4) 100

30. Bleaching action of H_2O_2 is due to its:
(1) oxidising nature.
(2) reducing nature.
(3) acidic nature.
(4) thermal instability.

31. Among the following pairs which has highest melting point;
Sn^{2+}, Sn^{4+} and Pb^{2+}, Pb^{4+}
(1) Sn^{4+} and Pb^{2+}
(2) Sn^{2+} and Pb^{2+}
(3) Sn^{4+} and Pb^{4+}
(4) Sn^{4+} and Pb^{2+}

32. $N_2 + O_2 \rightleftharpoons 2NO$. For this reaction $K_p = 100$, then K_p for reaction, $2NO \rightleftharpoons N_2 + O_2$ will be:
(1) 0.01
(2) 0.1
(3) 10
(4) 100

33. Diborane reacts with water to form:
(1) HBO_2
(2) H_3BO_3
(3) $H_3BO_3 + H_2$
(4) H_2

34. Which of the following acids on decarboxylation gives isobutane _____.
(1) 2,2-dimethyl butanoic acid.
(2) 2,2-dimethyl propanoic acid.
(3) 3-Methyl pentanoic acid.
(4) 2-Methyl Hexanoic acid.

35. The value of $\log_{10} K$ for a reaction $A \rightleftharpoons B$ is (Given: $\Delta r H°298\ K = -54.07\ kJ\ mol^{-1}$, $\Delta r S°298\ K = 10\ J\ K^{-1}\ mol^{-1}$ and $R = 8.314\ J\ K^{-1}\ mol^{-1}$; $2.303 \times 8.314 \times 298 = 5705$)
(1) 5 (2) 10
(3) 95 (4) 100

SECTION-B

36. Consider the following equilibrium in a closed container: $N_2O_{4(g)} \rightleftharpoons 2NO_{2(g)}$.

At a fixed temperature, the volume of the reaction container is halved. For this change, which of the following statements, holds true regarding the equilibrium constant (K_p) and degree of dissociation (α)?

(1) neither K_p nor α changes
(2) both K_p and α changes
(3) K_p changes but α does not change
(4) K_p does not change but α changes

37. Borax glass is a mixture of:

(1) $NaBO_2 + B_3O_3$
(2) $Na_2B_4O_7 + B_2O_3$
(3) $H_2B_4O_7 + B_2O_3$
(4) $Na_2B_4O_7 \cdot 10H_2O + B_2O$

38. The order of decreasing stability of the anions

(I) $(CH_3)_3CH^-$ (II) $(CH_3)_2CH^-$
(III) $CH_3CH_2^-$ (IV) $C_6H_5CH_2^-$

(1) I > II > III > IV
(2) IV > III > II > I
(3) IV > I > II > III
(4) I > II > IV > III

39. The most stable carboxylate ion among the following is:

(1) $H_3C-\overset{\overset{O}{\|}}{C}-O^-$

(2) $Cl-CH_2-\overset{\overset{O}{\|}}{C}-O^-$

(3) $F-CH_2-\overset{\overset{O}{\|}}{C}-O^-$

(4) $(F)_2-CH-\overset{\overset{O}{\|}}{C}-O^-$

40. Reaction of HBr with propene in the presence of peroxide gives:

(1) 3-bromo propane.
(2) allyl bromide.
(3) n-propyl bromide.
(4) isopropyl bromide.

41. Nitrobenzene can be prepared from benzene by using a mixture of conc. HNO_3 and conc. H_2SO_4. In the mixture, nitric acid acts as a/an:

(1) catalyst. (2) reducing agent.
(3) acid. (4) base.

42. The oxidation state of Cr in Cr_2O_3 is

(1) +3 (2) +7
(3) –7 (4) +5

43. Inorganic benzene is

(1) $B_3N_3H_{12}$ (2) $B_3N_3H_6$
(3) $(BN)_6$ (4) $C_6H_6Cl_6$

44. Arrange the following resonating structures of vinyl chloride in order of decreasing stability.

$$\underset{(I)}{H_2C=CH-Cl} \leftrightarrow \underset{(II)}{\overset{\ominus}{C}H_2-\overset{\oplus}{Cl}=CH} \leftrightarrow \underset{(III)}{\overset{\ominus}{C}H_2-\overset{\oplus}{C}H=Cl}$$

(1) (I) > (II) > (III)
(2) (III) > (II) > (I)
(3) (II) > (I) > (III)
(4) (I) > (II) = (III)

45. The energy of an exited H-atom is –3.4 eV, angular momentum of e^- in the given orbit is:

(1) $\frac{h}{2\pi}$ (2) $\frac{2h}{\pi}$
(3) $\frac{h}{\pi}$ (4) 1

46. Select the correct order of stability of ions:

(1) $Pb^{+2} > Pb^{4+}$ (2) $Sn^{+2} > Sn^{4+}$
(3) $Tl^{+3} > Tl^{+}$ (3) $Bi^{+5} > Bi^{+3}$

47. Mendeleev's Periodic Law is based on:

(1) atomic number.
(2) atomic weight.
(3) number of neutrons.
(4) all of these.

48. Which of the following is more stable?

(1) Pb^{4+} (2) Sn^{4+}
(3) Ge^{4+} (4) Si^{4+}

49. Which of the following is isoelectronic with neon?

(1) O^{2-}

(2) F

(3) Mg

(4) Na

50. In C-60 all carbon atoms are:

(1) sp^2–hybridised with a soccer ball shape.

(2) sp^3–hybridised with a square antiprism shape.

(3) sp^2–hybridised with a diamond shape.

(4) sp^2–hybridised with a graphite like shape.

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

Library- https://smart.link/sdfez8ejd80if