

IMU-CET SAMPLE QUESTIONS

Chemistry 05

1. The nucleus of tritium contains

- (a) 1 proton + 1 neutron
- (b) 1 proton + 3 neutron
- (c) 1 proton + 0 neutron
- (d) 1 proton + 2 neutron

2. Which of the following are isoelectronic and is structural $\text{NO}_3^{2-}, \text{CO}_3^{2-}, \text{ClO}_3^-, \text{SO}_3$

- (a) $\text{NO}_3^-, \text{CO}_3^{2-}$
- (b) $\text{SO}_3, \text{NO}_3^-$
- (c) $\text{ClO}_3^-, \text{CO}_3^{2-}$
- (d) $\text{CO}_3^{2-}, \text{SO}_3$

3. Six protons are found in the nucleus of

- (a) Boron
- (b) Lithium
- (c) Carbon
- (d) Helium

4. The atomic number of an element is 35. What is the total number of electrons present in all the p-orbitals of the ground state atom of that element?

- (a) 6 (b) 11 (c) 17 (d) 23

5. For electron affinity of halogens which of the following is correct?

- a. $\text{Br} > \text{F}$
- b. $\text{F} > \text{Cl}$
- c. $\text{Br} > \text{Cl}$
- d. $\text{F} > \text{I}$

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6. Which of the following represents the increasing order of the polarizing power of the cationic species, K^+ , Ca^{2+} , Mg^{2+} and Be^{2+} ?

- a. $Mg^{2+} < Be^{2+} < K^+ < Ca^{2+}$
- b. $Be^{2+} < Ca^{2+} < Mg^{2+}$
- c. $K^+ < Ca^{2+} < Mg^{2+} < Be^{2+}$
- d. $Ca^{2+} < Mg^{2+} < Be^{2+} < K^+$

7. The ions O^{2-} , F^- , Na^+ , Mg^{2+} and Al^{3+} are isoelectronic, their ionic radii show :

- a. A significant decrease from O^{2-} to Al^{3+}
- b. An increase from O^{2-} to F^- and then decrease from Na^+ to Al^{3+}
- c. A decrease from O^{2-} to F^- then increase from Na^+ to Al^{3+}
- d. A significant increase from O^{2-} to Al^{3+}

8. The correct order of first ionization potential among the elements Be, B, C, N, O is

- a. $Be < B < C < O < N$
- b. $B < Be < C < N < O$
- c. $Be < B < C < N < O$
- d. $B < Be < C < O < N$

9. The states of hybridization of boron and oxygen atoms in boric acid (H_3BO_3) are respectively

- (a) sp^2 and sp^2
- (b) sp^2 and sp^3
- (c) sp^3 and sp^2
- (d) sp^3 and sp^3

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10. Which one of the following species is diamagnetic in the nature?

- (a) He_2^+
- (b) H_2
- (c) H_2^+
- (d) H_2^-

11. In which of the following molecules/ions are all the bonds not equal?

- (a) SiF_4
- (b) XeF_4
- (c) BF_4^-
- (d) SF_4

12. Which one of the following sequences represents the increasing order of the polarizing power of the cationic species, K^+ , Ca^{2+} , Mg^{2+} , Be^{2+} ?

- (a) $Ca^{2+} > Mg^{2+} > Be^{2+} < K^+$
- (b) $Mg^{2+} < Be^{2+} < K^+ < Ca^{2+}$
- (c) $Be^{2+} < K^+ < Ca^{2+} < Mg^{2+}$
- (d) $K^+ < Ca^{2+} < Mg^{2+} < Be^{2+}$

13. For an adiabatic expansion

- (a) $\Delta U = -ve$
- (b) $W = +ve$
- (c) $\Delta U = 0$
- (d) $\Delta T = 0$

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14. A gas does 2 kJ of work on the surroundings by absorbing 2500 J of energy. If its final internal energy is U, its initial internal energy in J would be

- (a) $U + 150$
- (b) U
- (c) $U - 500$
- (d) $U - 300$

15. For an exothermic reaction the correct statement(s) is/are

- (a) $H_{\text{Reactant}} > H_{\text{Products}}$
- (b) Products are generally more stable than reactants
- (c) Both these
- (d) None

16. Which one of the following is an endothermic reaction?

- (a) Neutralisation of a weak acid by a strong base
- (b) Ionization of a weak acid
- (c) Dilution of conc. H_2SO_4 with water

17. Graphite is an example of

- (a) Ionic crystal
- (b) Covalent crystal
- (c) Molecular crystal
- (d) Metallic crystal

18. Solid CO_2 is an example of

- (a) Ionic crystal
- (b) Covalent crystal
- (c) Molecular crystal
- (d) Metallic crystal

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19. Wax is an example of
- (a) Ionic crystal
 - (b) Covalent crystal
 - (c) Molecular crystal
 - (d) Metallic crystal
20. Which of the following is an example of covalent crystalline solid?
- (a) Si
 - (b) Al
 - (c) Ar
 - (d) NaF
21. Vapour pressure of pure liquid is directly proportional to its
- (a) Temperature
 - (b) Mole fraction
 - (c) Both these
 - (d) None of these
22. Ebullioscopy is concerned with
- (a) Osmotic pressure
 - (b) Lowering of vapour pressure
 - (c) Elevation of B.pt.
 - (d) Depression of F.pt.
23. Cryoscopy is concerned with
- (a) Osmotic pressure
 - (b) Lowering of vapour pressure
 - (c) Elevation of B.pt.
 - (d) Depression of F.pt.

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24. The value of the colligative property depends on the no. of
- (a) Molecules of solute
 - (b) Ions of solute
 - (c) Molecules and ions of the solute together
 - (d) Molecules and ions of the solute and solvent together
25. The density of a gas is equal to
(P = pressure, V = volume,
T = temperature, R = gas constant,
n = number of mole and
M = molecular weight):
- (a) nP
 - (b) PM/RT
 - (c) P/RT
 - (d) M/V
26. The value of R is SI unit is:
- (a) $8.315 \times 10^7 \text{ erg K}^{-1} \text{ mol}^{-1}$
 - (b) $8.315 \text{ JK}^{-1} \text{ mol}^{-1}$
 - (c) $0.0823 \text{ litre atm K}^{-1} \text{ mol}^{-1}$
 - (d) $2 \text{ cal K}^{-1} \text{ mol}^{-1}$
27. The pressure of a gas is due to:
- (a) The collision of gas molecules against each other.
 - (b) The random movement of gas molecules
 - (c) The inter molecular forces of attraction between the gas molecules.
 - (d) The collision of gas molecules against the walls of the container.

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28. If a gas expands at constant temperature it indicates that :
- (a) Kinetic energy of the molecules decreases
 - (b) Pressure of the gas increases
 - (c) Kinetic energy of the molecules remaining the same
 - (d) Forces operating between its molecules are negligible.
29. When KI is added to acidified solution of sodium nitrite
- (a) NO gas is liberated & I_2 is set free
 - (b) N_2 gas is liberated & HI is produced
 - (c) N_2O gas is liberated & I_2 is set free
 - (d) N_2 gas is liberated & HOI is produced
30. When potassium ferrocyanide crystals are heated with concentrated sulphuric acid, the gas evolved is
- (a) Ammonia
 - (b) Sulphur dioxide
 - (c) Carbon dioxide
 - (d) Carbon monoxide
31. Which of the following metal has stable carbonates
- (a) Na
 - (b) Mg
 - (c) Al
 - (d) Si
32. Photoelectric effect is maximum in
- (a) Cs
 - (b) Na
 - (c) K
 - (d) Li

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33. Which one of the following statements is not correct
- (a) Zinc dissolves in sodium hydroxide solution
 - (b) Carbon monoxide reduces iron (III) oxide to iron
 - (c) Mercury (II) iodide dissolves in excess of potassium iodide solution
 - (d) Tin (IV) chloride is made by dissolving tin solution in concentrated hydrochloric acid
34. Which of the following glass is used in making wind screen of automobiles
- (a) Crook's
 - (b) Jena
 - (c) Safety
 - (d) Pyrex
35. Extraction of lead by reduction methods is done by
- (a) Adding more galena into reverberatory furnace
 - (b) Adding more lead sulphate into reverberatory furnace
 - (c) Adding more galena and coke into the reverberatory furnace
 - (d) Self reduction of oxide from sulphide present in the furnace
36. Carborundum is
- (a) SiC
 - (b) AlCl₃
 - (c) Al₂(SO₄)₃
 - (d) Al₂O₃.2H₂O
37. The element having general electronic configuration $3d^4 4s^1$ is
- (a) Noble gas
 - (b) Non - metal

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- (c) Metalloid
- (d) Transition metal

38. The higher number of unpaired electrons are in

- (a) Fe
- (b) Fe^+
- (c) Fe^{+2}
- (d) Fe^{+3}

39. Complex ion is shown by

- (a) Ag
- (b) Au
- (c) Cu
- (d) All of these

40. In which of the following metallic bond is strongest

- (a) Fe
- (b) Sc
- (c) V
- (d) Cr

41. Which of the following gas is insoluble in water

- (a) SO_2
- (b) NH_3
- (c) H_2
- (d) CO_2

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42. The ratio C_p / C_v for H_2 is

- (a) 1.40
- (b) 1.67
- (c) 1.33
- (d) none of these

43. Hydrogen directly combines with

- (a) Au
- (b) Cu
- (c) Ni
- (d) Ca

44. Chemical A is used for water softening to remove temporary hardness. A reacts with sodium carbonate to generate caustic soda. When CO_2 is bubbled through a solution of A, it turns cloudy. What is the chemical formula of A

- (a) $CaCO_3$
- (b) CaO
- (c) $Ca(OH)_2$
- (d) $Ca(HCO_3)_2$

45. The isomer of diethyl ether is

- (a) $(CH_3)_2CHOH$
- (b) $(CH_3)_3C-OH$
- (c) C_3H_7OH
- (d) $(C_2H_5)_2CHOH$

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46. Which is not found in alkenes

- (a) Chain isomerism
- (b) Geometrical isomerism
- (c) Metamerism
- (d) Position isomerism

47. The total number of possible isomeric trimethyl benzene is

- (a) 2
- (b) 3
- (c) 4
- (d) 6

48. An IUPAC name of $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3 - \text{CH} - \text{C} \equiv \text{CH} \end{array}$

- (a) 2-Chlorobuta-1, 3-diene
- (b) 3-Methylbut-1-ene
- (c) NONE
- (d) 3-Chloro-1-phenylprop-1-ene

49. When copper turnings are added to silver nitrate solution, a blue coloured solution is formed after some time. It is because, copper

- (a) Displaces silver from the solution
- (b) Forms a blue coloured complex with AgNO_3
- (c) Is oxidized to Cu^{2+}
- (d) Is reduced to Cu^{2+}

50. In the following reaction, $3\text{Br}_2 + 6\text{CO}_3^{2-} + 3\text{H}_2\text{O} \rightleftharpoons 5\text{Br}^- + \text{BrO}_3^- + 6\text{HCO}_3^-$

- (a) Bromine is oxidized and carbonate is reduced
- (b) Bromine is reduced and water is oxidised

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(c) Bromine is neither reduced nor oxidised

(d) Bromine is both reduced and oxidised

1.D	11. D	21.A	31.A	41.C
2.A	12. D	22.C	32.A	42.A
3.C	13.A	23.C	33.D	43.D
4.C	14.C	24.C	34.C	44.C
5.D	15.C	25.B	35.A	45. B
6.C	16.B	26.B	36. A	46.C
7.A	17.B	27.D	37.D	47.B
8.D	18.C	28.C	38.D	48.B
9. B	19.C	29.A	39.D	49.AC
10. A	20. A	30.D	40.D	50.D



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