



Admission No : Class :

- Multiple choice questions.
- Answer all questions.

Universal gas constant = $8.314 \text{ J mol}^{-1} \text{ K}^{-1}$
 Avagadro constant = $6.022 \times 10^{23} \text{ mol}^{-1}$
 Planck constant = $6.25 \times 10^{-34} \text{ JS}$
 Velocity of light = $3 \times 10^8 \text{ ms}^{-1}$

- (01) Which of the following experiment paved the way to discover the charge of an electron?
- 1) Cathode ray experiment by J.J. Thompson.
 - 2) Alpha ray scattering experiment by Geiger & Marsden.
 - 3) Oil drop test by Millikan.
 - 4) Moseley's experiment in X-ray spectroscopy.
 - 5) Becquerel's experiment on spontaneous emission of gases.
- (02) No. of neutrons in 3 atoms A, B, C are 11, 12, 11 respectively, mass no. of A, B & C are 23, 24, 24 respectively. Which of the following statement acceptable regarding A, B & C,
- 1) A & B are isotopes.
 - 2) B & C are isotopes.
 - 3) A, B & C are atoms of different elements.
 - 4) A & C are isotopes.
 - 5) A, B & C all three isotopic.
- (03) Which of the following do not deviate in an electric field
- 1) Alpha rays
 - 2) Beta rays.
 - 3) Gamma rays
 - 4) Cathode rays
 - 5) Canal rays
- (04) Element in which electrons are filled in orbitals according to Aufbau.
- 1) Mo
 - 2) Tc
 - 3) Ru
 - 4) Rh
 - 5) Pd
- (05) High covalent bond among following is,
- 1) Na-Cl
 - 2) Na-Br
 - 3) Na-I
 - 4) K-Cl
 - 5) K-Br
- (06) Among which of the following requires highest amount of energy to remove an electron from an atom in gaseous status.
- 1) N
 - 2) O
 - 3) F
 - 4) Cl
 - 5) Ar
- (07) In a rigid closed container equal moles CO & O₂ react as follows,
- $$\text{CO}_{(g)} + \frac{1}{2} \text{O}_{2(g)} \rightarrow \text{CO}_{2(g)}$$
- How the pressure would change after reaction
1. No change in pressure.
 2. Pressure increase by 25%
 3. pressure decreased by 25%
 4. pressure increase by 50%
 5. pressure decrease by 50%

- (08) An evacuated vessel with volume 4.157 dm^3 contain 4 g of a hydrated salt $M_2\text{CO}_3 \cdot 3\text{H}_2\text{O}$. When it was heated to 127°C , a pressure of $6 \times 10^4 \text{ Pa}$ was created within the container. Relative atoms mass of M can be
1. 46
 2. 37
 3. 32
 4. 24
 5. 23

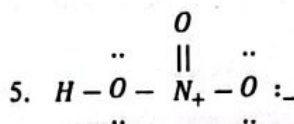
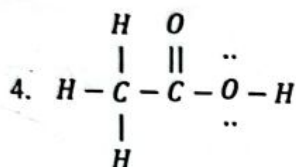
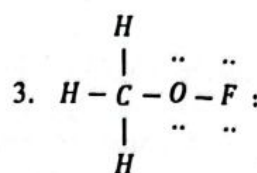
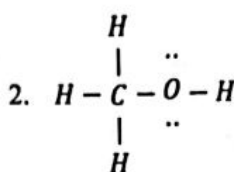
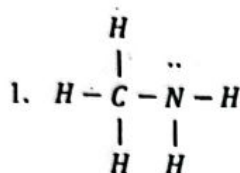
(09) IUPAC name of FeS is,

1. Ferrous Sulfide
2. Ferric sulfide
3. Ferrous sulfate
4. Iron (II) sulfide
5. Iron (II) sulfate

(10) If a central atom in a molecule possess trigonal bipyramidal as it's electronic geometry, which of the following cannot be it's molecular geometry,

1. Linear
2. T-shape
3. see saw shape
4. Bent
5. Trigonal bipyramid

(11) Among the following which would not show H-bonding,



(12) Which of the following thermochemical equation correctly represent, ΔH_f for $\text{NH}_4^+_{(g)}$

1. $\text{N}_{(g)} + 3\text{H}_{(g)} + \text{H}^+_{(g)} \rightarrow \text{NH}_4^+_{(g)}$
2. $\frac{1}{2}\text{N}_{2(g)} + 2\text{H}_{2(g)} \rightarrow \text{NH}_4^+_{(g)} + e$
3. $\text{NH}_{3(g)} + \text{H}^+_{(g)} \rightarrow \text{NH}_4^+_{(g)}$
4. $\frac{1}{2}\text{N}_{2(g)} + \text{H}^+_{(g)} \rightarrow \text{NH}_4^+_{(g)}$
5. $\text{NH}_4^+_{(s)} \rightarrow \text{NH}_4^+_{(g)}$

(13) The reason for increase in boiling points of HX in order $\text{HCl} < \text{HBr} < \text{HI}$ is,

1. strength of H-bond increases
2. dipole-dipole attraction force increases.
3. ion-ion interaction increases.
4. Ion-dipole interaction increases.
5. London dispersion forces increases.

(14) Which of the following turn blue litmus paper red,

1. NH_3
2. CO
3. CO_2
4. N_2O
5. H_2O

(15) What is the amount of energy, in Joules, needed to raise the temperature of 1 mole of water by 15°C ?

The specific heat capacity of water is $4.18 \text{ J g}^{-1} \text{ K}^{-1}$.

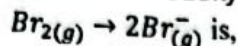
1. 1.1100
2. 2.1129
3. 3.63000
4. 4.2.1
5. 5.2713

(16) Which one of the following solutions produce a white precipitate when SO_3 gas passed through,

1. BeCl_2 2. MgCl_2 3. CaCl_2 4. NaCl

(5) BaCl_2

(17) If standard bond dissociation enthalpy of bromine is 190 kJ mol^{-1} & standard enthalpy of 1st electron gain of Bromine is -325 kJ mol^{-1} , what is the standard enthalpy of reaction.



1. $[2 \times (190) + 2(-325)] \text{ kJ mol}^{-1}$ 2. $[2 \times (-190) + 2 \times (-325)] \text{ kJ mol}^{-1}$
 3. $[2 \times (190) + 2 \times (325)] \text{ kJ mol}^{-1}$ 4. $[(-190) + (325)] \text{ kJ mol}^{-1}$
 5. $190 + 2 \times (-325) \text{ kJ mol}^{-1}$

(18) 2.2g of pure sample of KIO_3 is mixed with 50 cm^3 of 1 mol dm^{-3} KI solution. To react with liberated I_2 , 40 cm^3 of $\text{Na}_2\text{S}_2\text{O}_3$ was spent. Concentration of $\text{Na}_2\text{S}_2\text{O}_3$ solution is, ($K=39$), ($I=127$).

1. 0.15 mol dm^{-3} 3. 1.5 mol dm^{-3} 5. 3 mol dm^{-3}
 2. $0.015 \text{ mol dm}^{-3}$ 4. 0.75 mol dm^{-3}

(19) Oxide with highest basicity,

1. Na_2O 2. SrO 3. BaO 4. Rb_2O 5. Cs_2O

(20) One with highest boiling point among following,

1. CH_4 2. NH_3 3. HCl 4. PH_3 5. HF

(21) The effective nuclear charge felt by the valence electron in B is, ($B, Z = 5, A = 6$),

1. equal to +5 3. higher than +5 5. equal to +6
 2. less than +5 4. less than +6

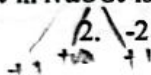
6 B
5

(22) Which of the following would show highest deflection in magnetic field,

1. electron 3. Neutron 5. Gamma ray
 2. Proton 4. X ray

(23) Oxidation no. of Cl in NaOCl is,

1. -1 3. 0 4. +2 5. +1



(24) At what temperature SO_2 will possess same mean square speed like that of CH_4 at 400K,

1. 1600°C 2. 1200°C 3. 1600K 4. 1200K 5. 400°C

(25) One with the highest boiling point is,

1. CO_2 2. CH_4 3. CBr_4 4. CHCl_3 5. CH_2Cl_2

• From question no. 26-33 mark options 1-5 as follow.

1. Only a & b correct. 3. Only c & d correct.
 2. Only b & c correct. 4. Only a & d correct.
 5. None or any other combination is correct.

(26) Outermost electron of element L is denoted by quantum number,

$$n = 4 \quad \ell = 0 \quad m_\ell = 0 \quad m_s = +\frac{1}{2}$$

Correct statement on L is,

- a- Belongs to S block
 b- Belong to S or d-block
 c- Atomic number is less than 30.
 d- Attains noble gas configuration by losing one electron.

(27) Out of the following which is/are correct on covalent bond formation.

- S orbital with an unpaired electron & p orbital with an unpaired electron may overlap.
- Two p orbitals with unpaired electrons may laterally overlap.
- Empty s orbital may overlap with p orbital with pair of electrons.
- An empty s orbital may overlap with p orbital with only one electrons.

(28) out of chlorides given below which would give a precipitate with *dil NaOH*,

- NaCl
- BeCl_2
- MgCl_2
- CaCl_2

(29) In an experiment to find molar volume of O_2 , KMnO_4 can be used to obtain O_2 . Which of the following can be used in place of KMnO_4 ,

- LiNO_3
- NaNO_3
- KNO_3
- $\text{Ca(NO}_3)_2$

(30) Which of the following is not a unit of R (universal gas constant)

- $\text{NmK}^{-1}\text{mol}^{-1}$
- $\text{N.Kg.m}^3/\text{K.mole}$
- Atm.liter/K.mole
- NmKmol^{-1}

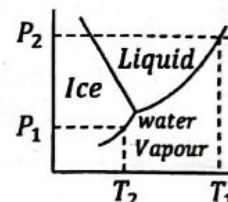
JK mol⁻¹
Later K⁻¹ mol⁻¹

(31) Which of the below would not be decolourize acidic KMnO_4 ,

- Fe(OH)_3
- Na_2SO_4
- Na_2SO_3
- Fe(OH)_2

(32) Phase diagram of water is given. Select correct answer based on diagram,

- At P_1 pressure boiling point of water is T_2 .
- With increase in pressure melting point decreases.
- T_1 is critical temperature maximum pressure that should be given for condensation is P_2 .
- At T_1 water vapour cannot be condensed.



(33) Which of the following would have same H^+ concentration when mixed in equal volumes.

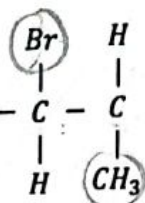
- $0.1\text{M NaOH} + 0.1\text{M H}_2\text{SO}_4$
- $0.1\text{M NaOH} + 0.1\text{M HNO}_3$
- $0.1\text{M KOH} + 0.2\text{M H}_2\text{SO}_4$
- $0.05\text{M HCl} + 0.05\text{M HNO}_3$

From question no 34 to 50, two statements are given. Among the options given below select the most related to two sentences.

- Both statements I and II are correct, I explain II.
- Both statements I and II are correct, I don't explain II.
- Statement I is true II is false.
- Statement II is true I is false.
- Both statements I and II are false.

Statements I	Statements II
(34) Boiling point of I_2 is less than boiling point of NH_3 .	London dispersion forces prevail among I_2 molecules & H-bonding prevails among NH_3 molecule.
(35) Fused KCl conducts electricity well.	Free electrons are found in K metal.
(36) CO_2 gas deviates more than H_2 gas from Ideal behaviour.	Among H_2 atoms London dispersion forces prevail & among CO_2 molecule permanent dipole-dipole interaction prevail
(37) F_2 gas release O_2 gas from H_2O .	F has higher electronegativity than O.
(38) $\text{SO}_2(\text{g})$ dissolve in water & produce nascent H atoms	When SO_2 gas come in contact with wet coloured substance is causes temporary bleaching effort on them.
(39) Among allotropes of C diamond has the highest melting point.	As C-C bond length in diamond is shorter than C-C bond length graphite, diamond possess high bond energy
(40) NO_2 , AlCl_3 are structures with unpaired electrons.	NO_2 and AlCl_3 usually found in dimerised forms N_2O_4 and Al_2Cl_6

(41) The IUPAC name of following compound is, $\text{CH}_3 - \text{C} - \text{C} - \text{CH}_2\text{CH} = \text{CH}_2$



1. 2-bromo-3-methylhex-5-ene

2. 3-methyl-2-bromohex-5-ene

3. 2-bromo-3-methyl-hex-5-ene

4. 5-bromo-4-methylhex-1-ene

5. 5-bromo-4-methyl-hex-1-ene

(42) $\text{C}_{13}\text{H}_{26}$ Compound can be an,

1. Alkane

2. Alkene

3. Alkyne

4. Alkene or Alkyne

5. Alkane or Alkene

(43) Which of the following cannot be a product of chlorination of CH_3CH_3

1. CH_3CHCl_2

2. $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$

3. $\text{CH}_3\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$

4. CH_3CCl_3

5. CCl_3CCl_3 \times
 CH_3CHCl_2
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$

(44) Major product of HBr reaction with $\text{CH}_3\text{CH}_2\text{CH} = \text{CH}_2$ $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$

1. $\text{CH}_3\text{CH}_2\text{CHCH}_2\text{Br}$

Br

2. $\text{CH}_3\text{CH}_2\text{CHCH}_3$

Br

3. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$

4. $\text{CH}_3\text{CH}_2\text{C} \equiv \text{C} - \text{H}$

5. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHBr}_2$

(45) During conversion of $\text{CH}_2 = \text{CH}_2$ to $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$, which of the following reagent cannot be used,

1. CH_3Cl

2. KOH

3. Br_2

4. NaNH_2

5. H_2

(46) For the molecular formula $\text{C}_5\text{H}_8\text{Br}_2$ which of the following isomer type cannot be possible,

1. Chain

2. Optical

3. Functional group

4. Position

5. Geometric

(47) Total no. of isomers that can be drawn for chemical formula $\text{C}_4\text{H}_9\text{Br}$ is,

1. 5

2. 4

3. 3

4. 2

5. 6

(48) Solution A contains only a salt of sodium. The precipitate formed on addition of $\text{AgNO}_3(\text{aq})$ to A is insoluble in both dil HNO_3 & conc. $\text{NH}_3(\text{aq})$,

The anion can be,

1. CO_3^{2-}

2. SO_3^{2-}

3. Cl^-

4. Br^-

5. I^-

(49) To a solution labeled x, dil H_2SO_4 is added. Then a brown colour gas was evolved. The gas can be,

a. NO_2

b. Br_2

c. I_2

1. Only a

2. Only b

3. Only c

4. a or b

5. a or c

(50) To a particular cation mixture when dil HCl is added no precipitate was obtained. To the same solution when H_2S is bubbled through, a black precipitate was obtained. The filtrate was boiled and then NH_4Cl & NH_4OH was added which gave a white precipitate. The cations in the solution can be,

1. Pb^{2+} & Al^{3+}

3. Cu^{2+} & Al^{3+}

5. Ag^+ & Al^{3+}

2. Pb^{2+} & Zn^{2+}

4. Cu^{2+} & Zn^{2+}