



# ST. LAWRENCE HIGH SCHOOL

27, BALLYGUNGE CIRCULAR ROAD

**Class : 11****Subject : CHEMISTRY****Term : 2nd Term****Max Marks : 80**

**Q 1 :** Ammonia contains 82.65 % N<sub>2</sub> and 17.65% H<sub>2</sub>. If the law of constant proportions is true, then the mass of zinc required to give 10 g Ammonia will be:

**Marks : 1**

- 1 . 8.265 g
- 2 . 0.826 g
- 3 . 82.65 g
- 4 . 826.5 g

 ( This Answer is Correct )

**Q 2 :** Irrespective of the source, pure sample of water always yields 88.89% mass of oxygen and 11.11% mass of hydrogen. This is explained by the law of:

**Marks : 1**

- 1 . Law of conservation of mass
- 2 . Law of constant composition
- 3 . Law of multiple proportion
- 4 . Law of constant volume

 ( This Answer is Correct )

**Q 3 :** 6.488 g of lead combine directly with 1.002 g of oxygen to form lead peroxide. Lead peroxide is also produced by heating lead nitrate and it was found that the percentage of oxygen present in lead peroxide is 13.38 percent. This is explained by the-

**Marks : 1**

- 1 . Law of conservation of mass
- 2 . Law of constant composition
- 3 . Law of multiple proportion
- 4 . Law of constant volume

 ( This Answer is Correct )

**Q 4 :** Volumes of N<sub>2</sub> and O<sub>2</sub> in any gas mixture are 80% and 20% respectively. Determine the average vapour density of the gas mixture-

**Marks : 1**

- 1 . 10.26
- 2 . 24.2
- 3 . 41.4
- 4 . 14.4

 ( This Answer is Correct )

**Q 5 :** The percentage of Carbon is Ca (HCO<sub>3</sub>)<sub>2</sub> is-

**Marks : 1**

- 1 . 15%
- 2 . 1.80%

3 . 14.80%

( This Answer is Correct )

4 . 15.20%

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**Q 6 :** Which of the following acid has the maximum basicity-

**Marks :** 1

1 . H<sub>3</sub>BO<sub>3</sub>

2 . H<sub>3</sub>PO<sub>4</sub>

( This Answer is Correct )

3 . H<sub>2</sub>SO<sub>3</sub>

4 . HClO<sub>2</sub>

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**Q 7 :** Which of the following represents a redox reaction?

**Marks :** 1

1 . NaOH + HCl → NaCl + H<sub>2</sub>O

2 . BaCl<sub>2</sub> + H<sub>2</sub>SO<sub>4</sub> → BaSO<sub>4</sub> + 2HCl

3 . CuSO<sub>4</sub> + 2H<sub>2</sub>O → Cu (OH)<sub>2</sub> + H<sub>2</sub>SO<sub>3</sub>

4 . Zn + 2HCl → ZnCl<sub>2</sub> + H<sub>2</sub>

( This Answer is Correct )

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**Q 8 :** Which reaction involves neither oxidation nor reduction?

**Marks :** 1

1 . CrO<sub>4</sub><sup>2-</sup> → Cr<sub>2</sub>O<sub>7</sub><sup>2-</sup>

2 . Cr → CrCl<sub>3</sub>

3 . Na → Na<sup>+</sup>

4 . 2S<sub>2</sub>O<sub>3</sub><sup>2-</sup> → S<sub>4</sub>O<sub>6</sub><sup>2-</sup>

( This Answer is Correct )

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**Q 9 :** Find the oxidation state of Osmium in OsO<sub>4</sub>:

**Marks :** 1

1 . -1

2 . 8

3 . 0

4 . -2

( This Answer is Correct )

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**Q 10 :** Oxygen shows positive oxidation number in which of the following compounds?

**Marks :** 1

1 . K<sub>2</sub>O

2 . CO<sub>2</sub>

3 . H<sub>2</sub>O<sub>2</sub>

4 . OF<sub>2</sub>

( This Answer is Correct )

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**Q 11 :** Which among the following has the maximum equivalent mass?

**Marks :** 1

1 . K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>

2.  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$

( This Answer is Correct )

3.  $\text{FeSO}_4 \cdot (\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$

4.  $\text{H}_2\text{S}$

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**Q 12 :** The oxidation number(s) of N in  $(\text{NH}_4) \text{NO}_3$  is/are-

**Marks :** 1

1. -3, +5

( This Answer is Correct )

2. -3, -5

3. +3, +5

4. +3, -5

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**Q 13 :** Among the oxides of Cr, i.e.  $\text{CrO}$ ,  $\text{Cr}_2\text{O}_3$  and  $\text{CrO}_2$  which one acts as an acidic oxide?

**Marks :** 1

1.  $\text{CrO}$

2. Both a and d

3.  $\text{Cr}_2\text{O}_3$

( This Answer is Correct )

4.  $\text{CrO}_2$

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**Q 14 :** In which of the following compounds, Phosphorus exhibits the minimum oxidation state-

**Marks :** 1

1.  $\text{PH}_3$

( This Answer is Correct )

2.  $\text{H}_3\text{PO}_3$

3.  $\text{H}_3\text{PO}_4$

4.  $\text{H}_3\text{PO}_2$

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**Q 15 :** Which among the following is not an inherent property of an element?

**Marks :** 1

1. Ionisation energy

2. Electron affinity

3. Electronegativity

( This Answer is Correct )

4. Valency

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**Q 16 :** The correct order of electron affinity is-

**Marks :** 1

1.  $\text{Cl} > \text{F} > \text{O} > \text{Br}$

( This Answer is Correct )

2.  $\text{F} > \text{O} > \text{Cl} > \text{Br}$

3.  $\text{F} > \text{Cl} > \text{Br} > \text{O}$

4.  $\text{O} > \text{F} > \text{Cl} > \text{Br}$

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**Q 17 :** According to Lothar Meyer, the \_\_\_\_\_ is the periodic function of physical properties of an element-

**Marks :** 1

1. Ionisation energy
2. Atomic number
3. Atomic weight
4. Atomic radius

( This Answer is Correct )

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**Q 18 :** Which among the following is not a periodic property of an element?

**Marks :** 1

1. Ionisation energy
2. Electron affinity
3. Electronegativity
4. Radioactivity

( This Answer is Correct )

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**Q 19 :** Which of the following atoms has a non-spherical outermost orbital?

**Marks :** 1

1. H
2. Li
3. Be
4. B

( This Answer is Correct )

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**Q 20 :** The wavelength of a moving electron-

**Marks :** 1

1. is equal to that of light
2. remains constant with velocity
3. decreases with an increasing velocity
4. increases with an decreasing velocity

( This Answer is Correct )

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**Q 21 :** In the case of atomic spectrum of hydrogen which series of lines lie in the visible region?

**Marks :** 1

1. Balmer
2. Paschen
3. Pfund
4. None of these

( This Answer is Correct )

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**Q 22 :** Consider the ground state of Cr atom. The numbers of electrons with the azimuthal quantum numbers,  $l=1$  and  $2$  are, respectively

**Marks :** 1

1. 12 and 4
2. 12 and 5
3. 16 and 4
4. 16 and 5

( This Answer is Correct )

**Q 23 :** The size of nucleus is-

**Marks :** 1

1. 10–12 m
2. 10–8 m
3. 10–15 m
4. 10–10 m

( This Answer is Correct )

**Q 24 :** A dipositive ion  $Z^{++}$  has  $2e^-$  in the K shell, 8 electrons in the L shell and  $8e^-$  in the M shell. Atomic number of Z is-

**Marks :** 1

1. 19
2. 20
3. 16
4. 15

( This Answer is Correct )

**Q 25 :** The ion that is isoelectronic with NO is-

**Marks :** 1

1.  $CN^-$
2.  $O_2^+$
3.  $O_2^-$
4.  $N_2$

( This Answer is Correct )

**Q 26 :** Which of the following statements is/are true?

**Marks :** 1

1. Axial bond is shorter than equatorial bond
2. Equatorial bond is shorter than axial bond
3. The bond length of both axial and equatorial bonds are the same
4. None of the above

( This Answer is Correct )

**Q 27 :** A  $He_2$  molecule is not formed because\_\_\_\_\_

**Marks :** 1

1.  $N_a > N_b$
2.  $N_b = N_a$
3.  $N_b > N_a$
4.  $N_b - N_a = +ve$

( This Answer is Correct )

**Q 28 :** Between the following which has higher dipole moment?

**Marks :** 1

1. Cis- butene
2. Trans- Butene
3. Propene
4. Both a and b are having same

( This Answer is Correct )

- Q 29 :** Between CD3F and CH3F, which one has higher dipole moment? **Marks : 1**
- 1 . CD3F  ( This Answer is Correct )
  - 2 . CH3F
  - 3 . Can't be predicted
  - 4 . None of these
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- Q 30 :** Which of the following is false for gases? **Marks : 1**
- 1 . They diffuse easily
  - 2 . They have mass
  - 3 . They are highly compressible
  - 4 . They don't mix well  ( This Answer is Correct )
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- Q 31 :** The gas law giving relationship between volume and pressure of gas? **Marks : 1**
- 1 . Dalton's law
  - 2 . Charle's Law
  - 3 . Graham's law
  - 4 . Boyel's law  ( This Answer is Correct )
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- Q 32 :** 700 torr is equal to? **Marks : 1**
- 1 . 1 atm
  - 2 . 760 atm
  - 3 . 0.92 atm  ( This Answer is Correct )
  - 4 . 700 atm
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- Q 33 :** A graph plotted by Boyle's Law is? **Marks : 1**
- 1 . A curve with maximum
  - 2 . A straight line
  - 3 . A curve with minimum
  - 4 . A parabolic curve  ( This Answer is Correct )
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- Q 34 :** If a graph is plotted between temperature on x-axis and volume of the one mole of gas on V-axis at constant pressure, than a straight line is obtained which cuts a temperature axis at? **Marks : 1**
- 1 .  $-273.16^{\circ}\text{C}$   ( This Answer is Correct )
  - 2 . 300 K
  - 3 .  $-273.16\text{ K}$
  - 4 . A parabolic curve

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**Q 35 :** The energy of gas molecules increases **Marks : 1**

1. The energy of gas molecules increases
2. The rate of collision increases
3. Pressure of a gas increases
- 4. The number of moles of gas increase**

( This Answer is Correct )

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**Q 36 :** The collision of molecules of gases at reduced volume causes? **Marks : 1**

- 1. Higher pressure**
2. medium pressure
3. Lower pressure
4. No effect on pressure

( This Answer is Correct )

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**Q 37 :** Standard enthalpy of vapourisation  $\Delta_{\text{vap}}H^\ominus$  for water at  $100^\circ\text{C}$  is  $40.66\text{ kJmol}^{-1}$ . The internal energy of vapourisation of water at  $100^\circ\text{C}$  (in  $\text{kJmol}^{-1}$ ) is **Marks : 1**

1. (+)43.76
2. (+)40.66
- 3. (+)37.56**
4. (-)43.76

( This Answer is Correct )

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**Q 38 :** The enthalpy of fusion of water is  $1.435\text{ kcal/mol}$ . The molar entropy change for the melting of ice at  $0^\circ\text{C}$  is- **Marks : 1**

- 1.  $5.260\text{ cal}/(\text{mol K})$**
2.  $0.526\text{ cal}/(\text{mol K})$
3.  $0.526\text{ cal}/(\text{mol K})$
4.  $21.04\text{ cal}/(\text{mol K})$

( This Answer is Correct )

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**Q 39 :** Based on the first law of thermodynamics, which one of the following is correct? **Marks : 1**

1. For an isothermal process,  $q = +w$
2. For an isochoric process,  $\Delta U = -q$
3. For an adiabatic process,  $\Delta U = -w$
- 4. For a cyclic process,  $q = -w$**

( This Answer is Correct )

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**Q 40 :** The species which by definition has ZERO standard molar enthalpy of formation at  $298\text{ K}$  is- **Marks : 1**

1.  $\text{Br}_2(\text{g})$
- 2.  $\text{Cl}_2(\text{g})$**
3.  $\text{H}_2\text{O}(\text{g})$

( This Answer is Correct )

4. CH<sub>4</sub>(g)

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**Q 41 :** Which of the following is an intensive property?

**Marks :** 1

1. Temperature
2. surface tension
3. viscosity
4. all of these

( This Answer is Correct )

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**Q 42 :** The temperature of the system decreases in an-

**Marks :** 1

1. Adiabatic compression
2. Isothermal expansion
3. Isothermal compression
4. Adiabatic expansion

( This Answer is Correct )

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**Q 43 :** The standard enthalpy change of neutralization involves the reaction of an acid with an alkali to form 1 mol of-

**Marks :** 1

1. water
2. oxygen
3. nitrogen
4. anhydrous salt

( This Answer is Correct )

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**Q 44 :** Which of the compounds is known as Slaked lime?

**Marks :** 1

1. CaO
2. CaSO<sub>4</sub>
3. Ca (OH)<sub>2</sub>
4. CaCO<sub>3</sub>

( This Answer is Correct )

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**Q 45 :** Which of the ions have maximum hydration energy?

**Marks :** 1

1. Sr<sup>2+</sup>
2. Ca<sup>2+</sup>
3. Mg<sup>2+</sup>
4. Be<sup>2+</sup>

( This Answer is Correct )

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**Q 46 :** As compared to K, Na has

**Marks :** 1

1. higher ionization potential
2. lower melting point

( This Answer is Correct )

3 . lower electronegativity

4 . larger atomic radius

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**Q 47 :** Which one is the most stable carbonate?

**Marks :** 1

1 . BaCO<sub>3</sub>

( This Answer is Correct )

2 . MgCO<sub>3</sub>

3 . CaCO<sub>3</sub>

4 . BeCO<sub>3</sub>

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**Q 48 :** Plaster of Paris (POP) is

**Marks :** 1

1 . CaSO<sub>4</sub> H<sub>2</sub>O

2 . CaSO<sub>4</sub> 2H<sub>2</sub>O

3 . CaSO<sub>4</sub>

4 . CaSO<sub>4</sub> 1/2H<sub>2</sub>O

( This Answer is Correct )

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**Q 49 :** Which oxide is amphoteric?

**Marks :** 1

1 . BaO

2 . CaO

3 . BeO

4 . MgO

( This Answer is Correct )

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**Q 50 :** Be shows the diagonal relationship with

**Marks :** 1

1 . Na

2 . Al

3 . Mg

4 . B

( This Answer is Correct )

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**Q 51 :** Photochemical smog normally does not contain

**Marks :** 1

1 . Chlorofluorocarbons

( This Answer is Correct )

2 . Peroxyacetyl nitrate

3 . Ozone

4 . Acrolein

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**Q 52 :** Find the incorrect statement

**Marks :** 1

1 . BOD value of clean water is less than 5 ppm

2. Drinking water pH should be between 5.5-9.5
  3. carbon, sulphur and nitrogen oxides are the most widespread air pollutants
  4. dissolved oxygen concentration below 5 ppm is ideal for the growth of fish  (This Answer is Correct )
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**Q 53 :** Find the secondary pollutant among these

**Marks :** 1

1. PAN
2. N<sub>2</sub>O
3. SO<sub>2</sub>
4. CO<sub>2</sub>

( This Answer is Correct )

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**Q 54 :** The reaction responsible for the radiant energy of the Sun is-

**Marks :** 1

1. nuclear fission
2. nuclear fusion
3. chemical reaction
4. combustion

( This Answer is Correct )

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**Q 55 :** Alum's capacity to purify water is due to-

**Marks :** 1

1. softens hard water
2. pathogenic bacteria get destroyed
3. impurities' coagulation
4. it improves taste

( This Answer is Correct )

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**Q 56 :** The coldest region of the atmosphere-

**Marks :** 1

1. Troposphere
2. Thermosphere
3. Stratosphere
4. Mesosphere

( This Answer is Correct )

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**Q 57 :** Which of the oxide of nitrogen is not a common pollutant?

**Marks :** 1

1. N<sub>2</sub>O<sub>5</sub>
2. N<sub>2</sub>O
3. NO
4. NO<sub>2</sub>

( This Answer is Correct )

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**Q 58 :** The compound essential for the process of photosynthesis has this element-

**Marks :** 1

1. Ca
2. Ba
3. Fe
4. Mg

( This Answer is Correct )

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**Q 59 :** Find the incorrect statement for a nucleophile-

**Marks :** 1

1. A nucleophile is a Lewis acid
2. Nucleophiles do not seek electron
3. Ammonia is a nucleophile
4. Nucleophiles attack low electron density sites

( This Answer is Correct )

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**Q 60 :** Which among the following is the most deactivating meta-directing group in aromatic substitution reaction?

**Marks :** 1

1. CARBOXYLIC ACID GROUP
2. SULPHONIC ACID GROUP
3. NITRO GROUP
4. CYANIDE GROUP

( This Answer is Correct )

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**Q 61 :** The correct order of increasing nucleophilicity is-

**Marks :** 1

1.  $\text{Cl}^- < \text{Br}^- < \text{I}^-$
2.  $\text{Br}^- < \text{Cl}^- < \text{I}^-$
3.  $\text{I}^- < \text{Br}^- < \text{Cl}^-$
4.  $\text{I}^- < \text{Cl}^- < \text{Br}^-$

( This Answer is Correct )

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**Q 62 :** Homologous series of alkanols have a general formula-

**Marks :** 1

1.  $\text{C}_n\text{H}_{2n}\text{O}_2$
2.  $\text{C}_n\text{H}_{2n}\text{O}$
3.  $\text{C}_n\text{H}_{2n+1}\text{O}$
4.  $\text{C}_n\text{H}_{2n+2}\text{O}$

( This Answer is Correct )

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**Q 63 :** How many structural isomers are possible if one hydrogen in diphenylmethane is replaced by chlorine?

**Marks :** 1

1. 8
2. 4
3. 7
4. 6

( This Answer is Correct )

**Q 64 :** Which of the following is known as the "BAKER-NATHAN" effect? **Marks : 1**

1 . Hyperconjugation  ( This Answer is Correct )

2 . Resonance

3 . Inductive

4 . Electromeric

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**Q 65 :** Equivalent mass of  $K_2Cr_2O_7$  in acidic medium- **Marks : 1**

1 . 49  ( This Answer is Correct )

2 . 45

3 . 52

4 . 94

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**Q 66 :** The transition element having maximum number of oxidation states- **Marks : 1**

1 . Ti

2 . Cu

3 . Mn  ( This Answer is Correct )

4 . Cr

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**Q 67 :** 14 elements after actinium is called- **Marks : 1**

1 . Lanthanides

2 . Actinides  ( This Answer is Correct )

3 . d-block elements

4 . P-block elements

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**Q 68 :** Which one will have the highest 1st ionisation energy? **Marks : 1**

1 .  $1s^2 2s^2 2p^6 3s^1$

2 .  $1s^2 2s^2 2p^4$

3 .  $1s^2 2s^2 2p^6$   ( This Answer is Correct )

4 .  $1s^2 2s^2 2p^6 3s^2$

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**Q 69 :** Which of the following always increases on going from top to bottom in a group? **Marks : 1**

1 . Metallic character  ( This Answer is Correct )

2 . Electronegativity

3 . Oxidizing power

4 . The tendency to get reduced

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**Q 70 :** Among halogens, the highest boiling point is shown by- **Marks : 1**

1. Fluorine
2. Chlorine
3. Bromine
- 4. Iodine**

( This Answer is Correct )

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**Q 71 :** Which is not true about the noble gases? **Marks : 1**

1. They are non-metallic in nature
2. They exist in atomic form
- 3. They are radioactive in nature**
4. Xenon is the most reactive among these

( This Answer is Correct )

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**Q 72 :** The molecular orbitals formed as a result of LCAO method obey\_\_\_\_\_ **Marks : 1**

1. Pauli's exclusion principle
2. Hund's rule of maximum multiplicity
3. Aufbau principle
- 4. all of these**

( This Answer is Correct )

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**Q 73 :** Which of the following pairs have the same state of hybridization? **Marks : 1**

- 1. NH<sub>3</sub> & H<sub>2</sub>O**
2. H<sub>2</sub>O & BF<sub>3</sub>
3. BeCl<sub>2</sub> & BF<sub>3</sub>
4. None of these

( This Answer is Correct )

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**Q 74 :** VSEPR theory can be utilized for predicting the shape and geometry of- **Marks : 1**

1. Only electrovalent compounds
- 2. Only covalent compounds**
3. Both electrovalent & covalent compounds
4. none of these

( This Answer is Correct )

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**Q 75 :** The bond order in O<sub>2</sub><sup>+</sup>, O<sub>2</sub><sup>-</sup> and O<sub>2</sub><sup>2-</sup> respectively is\_\_\_\_\_ **Marks : 1**

1. 1, 1.5, 2.0
2. 1.5, 2.0, 2.5
- 3. 2.5, 1.5, 1**
4. 2.5, 1.0, 1.5

( This Answer is Correct )

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**Q 76 :** Find the number of neutrons present in  $5 \times 10^{-4}$  of  $^{14}\text{C}$  isotope-

**Marks :** 1

1.  $2.4088 \times 10^{23}$
2.  $2.4088 \times 10^{21}$
3.  $4.40282 \times 10^{22}$
4.  $2.4088 \times 10^{22}$

( This Answer is Correct )

**Q 77 :** Two elements X (Atomic mass 75) and Y (Atomic mass 16) combine to give a compound having 75.8% X. The formula of the compound is

**Marks :** 1

1. XY
2.  $\text{XY}_2$
3.  $\text{X}_2\text{Y}_2$
4.  $\text{X}_2\text{Y}_3$

( This Answer is Correct )

**Q 78 :** The number of unpaired electrons in the ground state of copper is-

**Marks :** 1

1. 1
2. 6
3. 7
4. 2

( This Answer is Correct )

**Q 79 :** The maximum number of electrons that can be accommodated by an atom in g-sub-energy level are-

**Marks :** 1

1. 20
2. 25
3. 18
4. 12

( This Answer is Correct )

**Q 80 :** Which of the molecule is non polar?

**Marks :** 1

1.  $\text{PH}_3$
2.  $\text{CS}_2$
3.  $\text{NH}_3$
4.  $\text{H}_2\text{O}$

( This Answer is Correct )