



FWC

# G.C.E. A/L Examination November - 2018

Conducted by Field Work Centre, Thondaimanaru  
In Collaboration with  
Provincial Department of Education, Northern Province.

Grade :- 12 (2020)

Chemistry I

Time :- One hours

## Part - I

$$N_A = 6.022 \times 10^{23} \text{ mol}^{-1} \quad h = 6.62 \times 10^{-34} \text{ Js} \quad c = 3 \times 10^8 \text{ ms}^{-1} \quad R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1}$$

### ❖ Answer all questions.

1. Scientist related with the discovery of protons,
  1. Neil Bohr
  2. Ernest Rutherford
  3. James Chadwick
  4. Marsden
  5. Becquerel
2. Which one of the following statements is true regarding cathode rays?
  1. Cathode rays originate from Anode.
  2. They are attracted towards the cathode.
  3. Cathode rays move in a curved path in magnetic field.
  4. These are a type of electromagnetic radiation.
  5. Cathode rays does not show wave and particle nature at the same time.
3. Number of neutrons in  $^{207}_{82}\text{Pb}$ ,
  1. 82
  2. 125
  3. 207
  4. 115
  5. 289
4. Which of the following is least appropriate regarding the isotopes of an element?
  1. They have same number of electrons.
  2. Have different number of neutrons.
  3. Shows similar chemical properties.
  4. Have different number of nucleons.
  5. Have same density.
5. Oxidation number and valency of N in,
$$\begin{array}{c} + \\ F - N = 0 \\ | \\ O^- \end{array}$$
  1. 5, +5
  2. 4, +5
  3. 4, +1
  4. 3, +5
  5. 5, +4
6. Correct increasing order of first ionization enthalpies of O, Mg, Al, P, S, Cl.
  1.  $Mg < Al < S < P < Cl < O$
  2.  $Al < Mg < S < O < P < Cl$
  3.  $Al < Mg < S < P < Cl < O$
  4.  $Mg < Al < S < P < O < Cl$
  5.  $Al < Mg < S < P < O < Cl$

7. Energy of a photon having wavelength of 150 nm. (Planck constant  $h = 6.62 \times 10^{-34} \text{ J s}$ )

1.  $1.1 \times 10^{-18} \text{ J}$                       2.  $1.32 \times 10^{-18} \text{ J}$                       3.  $1.38 \times 10^{-17} \text{ J}$   
4.  $1.5 \times 10^{-18} \text{ J}$                       5.  $1.35 \times 10^{-18} \text{ J}$

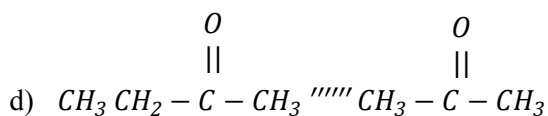
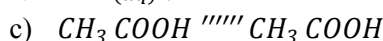
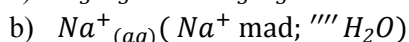
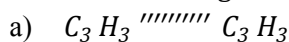
8. Least suitable regarding the bonding of atoms.

1.  $s - s, s - p$  and  $p - p$  atomic orbitals linearly overlap to form  $\sigma$  bond.
2. By the lateral overlapping of 2  $p$  orbitals  $\pi$  bond is formed.
3.  $3sp^2$  hybridized orbitals of carbon atom differ in size, energy and shape.
4. By the overlapping of hybrid orbitals only  $\sigma$  bond forms.
5. Hybridizing orbitals should belong to the same atom.

9. Correct electronic configuration of (Cr) is?

1.  $1s^2 2s^2 2p^6 3p^6 3d^5 4s^2$
2.  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^4 4s^2$
3.  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^4 4s^1$
4.  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$
5.  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2$

10. Consider the following attraction forces among the molecules. Find the best fitting order for increase of strength of attraction.



1.  $a < d < c < b$
2.  $a < d < b < c$
3.  $b < c < d < a$
4.  $c < b < d < a$
5.  $d < a < b < c$

11. Empirical formula of Glucose molecule is,

1.  $C_6H_{12}O_6$
2.  $CH_2O$
3.  $C_2H_4O_2$
4.  $C_{12}H_{22}O_{11}$
5.  $CHO$

12. Find the mass fraction of Cu in an alloy containing 8g Ni, 12g Cu, 20g Zn in their pure state.

1. 0.25
2. 0.2
3. 0.3
4. 0.15
5. 0.5

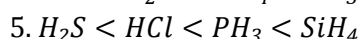
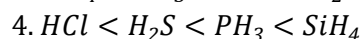
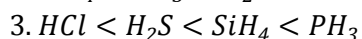
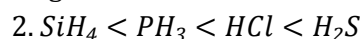
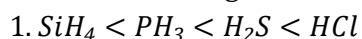
13. Second ionization enthalpy of an element X is defined as,

1. Energy needed to remove two moles of electrons from one mole of gaseous X atoms.
2. Energy needed to remove one mole electrons from one mole of  $X^+$  gaseous ions.
3. Energy needed to remove one mole of electrons from one mole of  $X^{2+}$  gaseous ions.
4. Energy needed to add one mole of electrons to one mole gaseous  $X^+$  ions.
5. Energy needed to add two moles of electrons to one mole of  $X^{2+}$  gaseous ions.

14. Electron represented by the following set of quantum number  $[n = 3, l = 1, ml = 0, m_s = -1/2]$

1. 1s electron
2. 2s electron
3. 2p electron
4. 3s electron
5. 3p electron

15. Correct increasing order of boiling point from the given sets.



❖ **Summary of instructions for question from 16 - 20.**

1	2	3	4	5
a,b only correct	b,c only correct	c,d only correct	a,d only correct	Any other Answer

16. Which one of the following statement/s is / are true regarding ions & atoms?

- a) Cations formed by *s, p* block elements are always smaller than their neutral atoms.
- b) Anions formed by *s, p* block elements are always larger than that of their neutral atoms.
- c) Non - metal with higher non - metallic character in the 3<sup>rd</sup> period has the highest ionic radius.
- d) Always Ions such as  $\text{P}^{3-}, \text{S}^{2-}, \text{Cl}^-$  have same number of electrons as *Ar*.

17. **Incorrect** regarding the molecule,  $\text{CH}_3\text{CH}=\text{CH}_2$

- a) All three carbon atoms are  $sp^3$  hybridized.
- b) In the above molecule carbon atoms with  $sp^3, sp^2$  hybridization exists.
- c) All three carbon atoms are found in the same plane.
- d) None of the carbon atoms are found in the same plane.

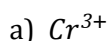
18. Correct statement with respect to Ionic compounds?

- a) All the ionic compounds are water soluble.
- b) Ionic compounds generally have higher melting & boiling points.
- c) All the ionic compounds exist at solid state in room temperature.
- d) When *NaCl* crystal is added to water there is ion - dipole interaction forms between water molecule and  $\text{Na}^+$  ion.

19. **Incorrect** statement regarding Hydrogen spectrum?

- a) In it "Paschen" & "Bracket" series are found in the IR region.
- b) Information regarding energy levels & sub - energy levels are obtained from the hydrogen emission spectrum.
- c) Transition of electron between  $n = 4$  to  $n = 2$  is relevant to the blue colour line of the Balmer series.
- d) Energy difference between the 2<sup>nd</sup> & 3<sup>rd</sup> lines of Lyman. Series is found as same as that of 3<sup>rd</sup> & 4<sup>th</sup> lines of Balmer series.

20. Which of the following is/are having isoelectronic configuration?



❖ Following the introduction given for question 21 - 25.

First statement	Second statement	Response
True	True and correctly explains the first statement	1
True	True, but does not explain the first statement	2
True	False	3
False	True	4
False	False	5

	First statement	Second statement
21.	Cathode rays do not deflect towards neither north pole nor south pole but a curved path is preferred in the magnetic field.	Cathode rays are negatively charged.
22.	Electron affinity of Nitrogen is lesser than that of carbon's	When carbon accepts an electron it gains stable electronic configuration however nitrogen does not.
23.	$KOH_{(s)}$ is an ionic compound.	When $KOH_{(s)}$ dissolves in water $K^+_{(aq)}$ , $OH^-_{(aq)}$ are formed.
24.	$SO_3$ & $NH_3$ have same molecular shape.	$SO_3$ & $NH_3$ have same number of bond pair electrons.
25.	Size of gaseous state $Ca^{2+}$ is greater than that of gaseous state $Mg^{2+}$	Effective nuclear charge of $Mg$ is greater than that of $Ca^{2+}$ .