G.C.E. A/L Examination November - 2017

FWC

Conducted by Field Work Centre, Thondaimanaru

In Collaboration with

Provincial Department of Education Northern Province.

Chemistry I	Grade :- 12 (2019)	Time :- Three hours

Part -I

$N_A = 6.022 \times 10^{23} mol^{-1}$ $h = 6.62 \times 10^{-34}$ Js $C = 3 \times 10^8$ ms^{-1}

❖ **Answer all the questions**

1. Which one of the following scientist is not connected directly to explain the behavior of electrons?
   1) Neil Bohr 2) Aufbau 3) Pauli
   4) Dalton 5) Rutherford

2. What is false regarding cathode rays?
   1) Cathode rays creates chemical change.
   2) Heat is generated when strike with matter.
   3) Green in colour.
   4) Deflect in both electric and magnetic fields .
   5) Make fluorescence with the collision of certain matter.

3. The set of quantum numbers for the outermost election for copper in its ground state is,
   1) $3, 2, 2, +\,{}^1/_2$ *2)* $4, 1, 1, +\,{}^1/_2$ 3) $4, 2, 2, +\,{}^1/_2$
   4) $4, 1, 0, +\,{}^1/_2$ 5) $4, 0, 0, +\,{}^1/_2$

4. First ionization energy of potassium is 418kJmol^{-1}. The maximum number of K^+ ions that can be produced by potassium atoms in gaseous state by absorbing 1J of energy is,
   1) 1.44×10^{16} *2)* 1.44×10^{17} *3)* 1.44×10^{22} *4)* 1.44×10^{18} *5)* 1.44×10^{20}

5. The skeletal structure of a chemical species that have approximately equal $N - N$ bond lengths is given below

   $$N_1 - C - N_2 - N_3 - N_4$$

   The respective order of hybridization states of N atoms in the most stable Lewis structure of this compound is,
   1) SP^2, SP^2, SP, SP^2 *2)* SP, SP^2, SP^2, SP^2 *3)* SP, SP^2, SP, SP^2
   4) SP^2, SP, SP^2, SP *5)* SP, SP^2, SP^2, SP

6. An instance that can exist the type of secondary interaction as dipole – induced dipole.
   1) $I_{2(s)}$ dissolves in water 2) $CO_{2(g)}$ dissolves in water 3) $MgCl_2$ dissolves in water
   4) $H_2S_{(g)}$ dissolves in water 5) $NH_{3(g)}$ dissolves in water

7. The correct increasing order of ionic radii is,
   1) $Mg^{2+} < Ne < O^{2-} < N^{3-} < H^-$
   2) $H^- < Mg^{2+} < Ne < N^{3-} < O^{2-}$
   3) $Mg^{2+} < Ne < H^- < N^{3-} < O^{2-}$
   4) $Mg^{2+} < H^- < O^{2-} < N^{3-} < Ne$
   5) $Ne < Mg^{2+} < H^- < N^{3-} < O^{2-}$

8. Which one of the following pairs of ions show + 6 oxidation. State of central atom.
   1) $Cr_2O_7{}^{2-}, Mno_4{}^-$
   2) $Cr_2O_7{}^{2-}, C_2O_4{}^{2-}$
   3) $MnO_4{}^-, CrO_4{}^{2-}$
   4) $MnO_4{}^-, MnO_4{}^{2-}$
   5) $MnO_4{}^{2-}, Cr_2O_7{}^{2-}$

9. Which of the following compounds has the highest ionic character,
   1) $LiCl$
   2) HF
   3) $LiBr$
   4) $RbCl$
   5) HI

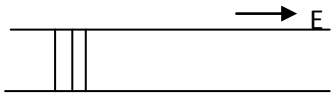
10. Data that can be directly obtained from the resonance structures of $CO_3{}^{2-}$ is,
   1) Bond length of $C - 0$
   2) Hybridization of atoms
   3) Shape of the ion
   4) Formal charge on atoms
   5) Values of the bond angles of $O\hat{C}O$.

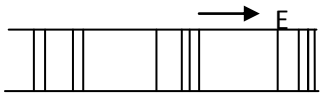
11. Number of glucose molecules found in $1.8g$ of Glucose [$C_6\ H_{12}\ O_6$] is,
   1) $6.022\ x\ 10^{23}$
   2) $3.011\ x\ 10^{21}$
   3) $6.022\ x\ 10^{21}$
   4) $3.011\ x\ 10^{23}$
   5) $3.011\ x\ 10^{22}$

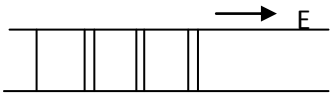
12. Which of the following compounds has maximum electro negativity of N.
   1) NO_2F
   2) N_2O_3
   3) N_2H_4
   4) $NOCl$
   5) $NH_4{}^+$

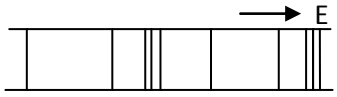
13. The group of compounds do not having octet electron of central atom.
   1) $BeCl_2,\ GeF_2, SCl_2$
   2) $BeCl_2,\ GeF_2, Cl_2O$
   3) BCl_3, NCl_3, CH_4
   4) $AlCl_3,\ GeF_2, BeCl_2$
   5) $GeCl_2, NO_2, PH_3$

14. Which of the following represents the arrangement of the emission lines in the atomic spectrum of hydrogen.

   1) 

   2) 

   3) 

   4) 

   5) None of above are related to line representation of spectrum .

15. Which of the following statement is false regarding σ and π bonds.
   1) Compounds can form only σ bonds
   2) σ bond is stronger than π bond.
   3) π bond can be a single bond between two atoms.
   4) π bonds are formed by P orbitals only.
   5) π bonds are not formed by the overlapping of hybrid orbitals.

❖ **Instructions for questions 16 - 20**

1	2	3	4	5
only (a) and (b) are correct	only (b) and (c) are correct	only (c) and (d) are correct	only (a) and (d) are correct	any other number or combination is correct

16. Which of the following statement (s) is / are true regarding the formation of chemical bond.
    a) Orbital having one electron can overlap with another orbital having one electron.
    b) Orbital having 2 electrons can overlap with another orbital having 2 electrons.
    c) Orbital having 2 electrons can overlap with another orbital having no electrons.
    d) Linear overlapping of electrons results in π bond formation.

17. Which of the following statements regarding the periodic properties of elements is / true.
    a) Bond angle of $O_3 > H_2O$
    b) Ionic property increases in the order of $AgF < AgCl < AgBr < AgI$
    c) The standard enthalpy change of first ionization of $Ar > F$
    d) Ionic radius of $H^- > S^2$

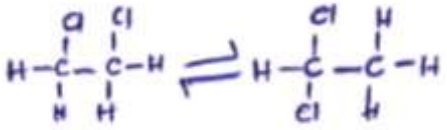
18. Which of the following statement (s) regarding positive rays is / are false.
    a) Path of the positive ray can be altered by magnetic field
    b) $^e/_m$ratio of positive ray is constant.
    c) The positive ray particles are produced from the anode material of the discharge tube.
    d) Positive rays can give glow on ZnS screen.

19. Which of the following statements is / are true regarding the central atom of the SP^3 hybridized molecule.
    a) Geometry of the molecule should be tetrahedral.
    b) Electron pair geometry around the central atom is tetrahedral.
    c) Geometry of the molecule can be tetrahedral, pyramidal or angular.
    d) Bond angles should be equal or higher than 109°.

20. Compound having highest oxidation state S is / are,
    a) $Na_2S_4O_6$ b) $Na_2S_2O_3$ c) $Na_2S_2O_8$ d) SO_2Cl_2

❖ **Instructions for questions 21 - 25**

First statement	Second statement
1) True	Ture and correctly explains
2) True	Ture but does not explain correctly
3) True	False
4) False	Ture
5) False	False

	First statement	Second statement
21.	 are two resonance structures of $C_2H_4Cl_2$.	When drawing resonance structure only delocalization of electrons happens.
22.	Cr is a harder metal than Na	Cr Provides six valance electrons to its metallic bond while Na atom provides only one valance electrons for its metallic lattice.
23.	$MgCl_2$ is an ionic substance	$MgCl_2$ can conduct electricity in aqueous state.
24.	SO_2 and ${CO_3}^{2-}$ are isoelectronic species.	Both S & C are in SP^2 hybridized state.
25.	PCl_5 is stable but NCl_5 is unstable	Maximum valency of N is 5.