G.C.E. A/L Examination March - 2018

FWC

Conducted by Field Work Centre, Thondaimanaru

In Collaboration with

Provincial Department of Education, Northern Province.

Grade :- 12 (2019)	Chemistry I	Time :- One 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. The scientist who had experimentally obtained the value of $\frac{\text{Charge}}{\text{Mass}} (e/m)$ of electron.
   1) Robert Millikan 2) Henry Mosely 3) Ernest Rutherford
   4) Neil Bohr 5) J.J Thomson

2. Which of the statements is false regarding the molecules given below.
   $BeCl_2$, BCl_3, NH_3, CCl_4, ICl_3, SF_4, XeF_4, SF_6
   1) All the molecules have different shapes.
   2) All the molecules have polar covalent bonds.
   3) They have five types of electron pair geometry.
   4) All the molecules satisfy octet rule .
   5) Only four molecules have lone pairs of electrons at the central atoms.

3. Oxidation state of sulphur is -1 in.
   1) Na_2SO_3 *2)* $Na_2S_2O_8$ *3)* Na_2S_8 *4)* $Na_2S_2O_3$ *5)* $Na_2S_4O_6$

4. Using the tetrahedral electron pair geometry around the central atom, the shapes of many molecules are obtained they are,
   1) angular shape, triangular bipyramidal, see saw.
   2) angular shape, triangular pyramidal, tetrahedron.
   3) angular shape, triangular pyramidal, T – shape.
   4) triangular bipyramidal, see – saw , T – shape.
   5) angular shape, see – saw, T – shape.

5. For the complete combustion of 1 *mol*. of an organic compound A 2mol of O_2 was required and the products were 2mol of CO_2 and 2mol of H_2O only. The molecular formula of A is,
   1) $C_2H_4O_2$ *2)* C_2H_4O *3)* C_2H_4 *4)* C_2H_6 *5)* CH_4O

6. The effective nuclear charge felt by the valence electron of sodium (Na) is (Na $Z - 11$, relative atomic mass = 23)
   1) less than + 11 2) equal to + 11 3) more than + 11
   4) less than + 23 5) equal to + 23

7. At 25°C when $(NH_4)_2\ Cr_2O_7$ is heated it decomposes. In this process which of the following for $\Delta H^{\emptyset}, \Delta S^{\emptyset}$ is correct.

	$\Delta H^{\emptyset}$	$\Delta S^{\emptyset}$
1)	Positive	Negative
2)	Positive	Positive
3)	Negative	Positive
4)	Negative	Negative
5)	Positive	Zero

8. A light produces 10J of energy per second in the red zone (650nm) of the visible region. How long will it take for the light to produce 1 x 10^{22} photons.

1) $3.05Sec$ *2)* $10.5Sec$ *3)* $305Sec$ *4)* $61Sec$ *5)* $71Sec$

9. The following procedure was used to find the molar mass of an unknown gas. The mass of an empty rigid vessel of volume V was m_1 . Then when the vessel was filled with the unknown gas X the mass was m_2. The gas is at temperature T and pressure P. Which of the following expressions gives the molar mass of the unknown gas.

1) $\frac{dRT}{P}$ *2)* $\frac{(m_1-m_2)RT}{PV}$ *3)* $\frac{m_1RT}{PV}$ *4)* $\frac{(m_2-m_1)RT}{PV}$ *5)* $\frac{m_2RT}{PV}$

10. Which of the following statements is false regarding the chemistry of Li and it's compounds?
    1) Li reacts with N_2 to produce Li_3N.
    2) among the $gp\ I$ elements, Li has the highest melting point.
    3) among the hydroxides of $gp\ I$ elements. $LiOH$ has the lowest basicity.
    4) $LiNO_3$ decomposes to produce $Li_2O,\ NO_2\ and\ O_2$.
    5) Li does not answer for flametest.

11. How many stable resonance structures could be drawn to the molecule N_2O_5

$$(O-\overset{\overset{O}{|}}{N}-O-\overset{\overset{O}{|}}{N}-O)\ .$$

1) 4 2) 5 3) 6 4) 8 5) 9

12. Which of the following statements regarding $H_2\ S$ is false?
    1) H_2S acts as oxidizing agent.
    2) H_2S acts as reducing agent.
    3) H_2S bleaches wet petal of a flower.
    4) H_2S acts as an acid.
    5) H_2S does not support acid rain.

13. When Li, Na, K, Mg are burnt in laboratory, which of the following products is not possible.
    1) $Li_2O,\ Li_3N,\ Na_2O,\ Mg_3\ N_2$ *2)* $Li_2O,\ Na_2O_2,\ K_2O_2,\ Mg(O_2)_2$
    3) $Li_3N,\ Na_2O,\ Na_2O_2,\ K_2O$ *4)* $Li_2O,\ Na_2O,\ Na_2O_2,\ KO_2$
    5) $Na_2O,\ K_2O,\ KO_2\ , Mg_3\ N_2$

14. When $8\,g$ of a mixture containing $Na_2\,CO_3$ *and* $NaHCO_3$ is heated, if the loss of mass is 1.845 g what is the mass percentage of $Na_2\,CO_3$.
1) 31.24 *2) 68.76* *3) 62.5* *4) 37.5* *5) 50*

15. Standard enthalpies of combustion of $C_2H_{2(g)}, C_6\,H_{6(l)}$ *and* $C_{(s)}$ are $-1300, -3304$, and $-394\ kJmol^{-1}$ respectively. Find the ethalpy change for the reaction $3C_2\,H_{2(g)} \longrightarrow C_6\,H_{6(l)}$
1) $596\ kJmol^{-1}$ *2)* $-596\ kJmol^{-1}$ *3)* $2004\ kJmol^{-1}$
4) $-2004\ kJmol^{-1}$ *5)* $200.4\ kJmol^{-1}$

❖ **Instructions for questions 16 - 20**

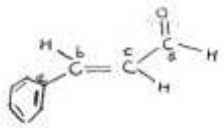
1	2	3	4	5
only (a) and (b) are correct	only (b) and (c) are correct	only (c) and (d) are correct	only (a) and (d) are correct	any other number or combination is correct

16. Which of the following statement / s regarding NH_3 *and* NF_3 is / are correct?
a) Bond angle of NF_3 is a approximately 102°.
b) Bond angle of NH_3 is approximately 107°.
c) The repulsion between bonded pairs in NF_3 is stronger than that in NH_3.
d) The dipole moment in NF_3 is larger than that in NH_3.

17. When the gases CO_2, SO_2 are passed through the solutions that could be differentiated by the changes in colour.
a) $Mn^{2+}{}_{(aq)}$ b) $MnO_4{}^{-}{}_{(aq)}$ c) $Cr_2O_7{}^{2-}{}_{(aq)}$ d) $Cr^{3+}{}_{(aq)}$

18. Which of the following is / are not the assumptions of the molecular kinetic theory of gases?
a) all gases are point masses.
b) volume of gases are negligible , compared to the volume of the vessel.
c) at a given temperature the kinetic energies of all the molecules are equal.
d) at a given temperature, the velocities of all the molecules are equal.

19. Among group IA elements, the element that forms one type of oxide is Li. In an experiment, $21g$ of Li. is allowed to react with $33g$ of O_2. Which of the following statements is / are true? $(Li-7, O-16)$.
a) Li completely reacts and small amount of O_2 is left behind.
b) O_2 reacts completely and small amount of Li remains.
c) Li and O_2 react completely.
d) Theoretically 45g of product is formed.

20. 

The statement /s that is / are correct regarding the molecule given above.

a) The atoms which are marked a, b, c, d are on a straight line.

b) all the carbon atoms which are marked a, b, c, d are SP^2 hybridized.

c) bond length between b and c is less than that of c and d.

d) c atoms b, c, d are on the same plane.

❖ **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.	The reaction between H_2S *and* SO_2 is an example for (comproportionation) reverse of disproportionation.	Reverse of disproportionation (comproportionation) is the process in which an element in two different oxidation states form a product with the intermediate oxidation state.
22.	When steam in an isolated vessel condenses, the entropy in the environment increases.	The heat expelled from an isolated vessel causes the molecules in the environment to increase heat motion.
23.	$C - O$ bonds in bicarbonate ion are not equal.	bicarbonate ion has two stable resonance structures.
24.	solubility of sulphates of group II reduces along group.	The hydration enthalpy of the cations of group II increases along group.
25.	When going downwards along the group, the reactivity of basic metals reduces.	When size of metallic atoms increases along group, the ability of losing electrons increases.