G.C.E. A/L Examination November - 2016

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

FWC

Grade :- 12 (2018)	CHEMISTRY	Time : 3.00 Hours

PART - I

➢ **Answer all questions.**

1) In the scientist who proposed the principles about the atomic structure who contribute to the least?

(1) Rutherford *(2)* Thompson *(3)* Neilbohr *(4)* Dalton *(5)* Masden

2) Which of the following statement is false regarding the Lewis structure of ClO_3^- ion?

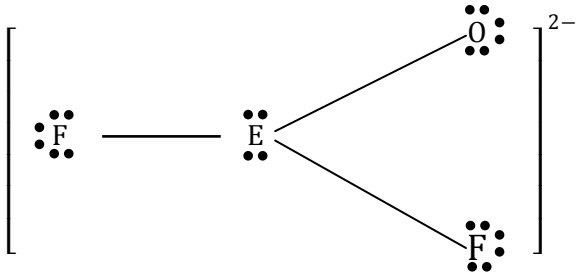
(1) Trigonal pyramidal relative to the central atom.

(2) Can draw equally stable three resonance structures

(3) All $Cl - O$ bond lengths are equal

(4) In all resonance structures the oxidation state of central atom is + 5

(5) One of these bonds can be identified be identified as a dative bond

3) 

According to the lewis structure given, To which group the E belongs to

(1) Group V *(2)* Group VI *(3)* Group IV

(4) Group VII (*5*) Group VIII

4) What is the oxidation state of X in the compound $X_2O_3^{2-}$

(1) 0 *(2)* $+1$ *(3)* $+2$ *(4)* $+3$ *(5)* $+4$

5) Which of the following quantum number correctly represents the quantum number of valance electron of the atom with atomic number 37

(1) $5,\ 0,\ 0,\ +\frac{1}{2}$ *(2)* $5,\ 1,\ 0,-\frac{1}{2}$ *(3)* $5,\ 1,\ 1,\ +\frac{1}{2}$

(4) $5,\ 1,\ 0,\ +\frac{1}{2}$ *(5)* $5,\ 0,\ 1,-\frac{1}{2}$

6) $0.217g\ HgO$ sample is treated with excess KI and the resultant mixture is neutralized with 0.1 mold m^{-3} HCl solution then what is the volume of HCl needed? $[MHgO - 217]$

$$HgO + 4I^- + H_2O \longrightarrow HgI_4^{2-} + 2OH^-$$

(1) $1\ cm^3$ *(2)* $10\ cm^3$ *(3)* $20\ cm^3$

(4) $50\ cm^3$ *(5)* $60\ cm^3$

7) A newly discovered compound was found to have 87.5% of Nitrogen and 12.5% of Hydrogen. The empirical formula of the compounds is

(1) NH_2 *(2)* N_2H_3 *(3)* NH *(4)* N_2H_2 *(5)* N_2H

8) The most acceptable conciusion from the balanced equation of the reaction is

$$\_MnO_4^- + \_I^- + \_H^+ \longrightarrow \_Mn^{2+} + \_IO_3^- + \_H_2O$$

(1) The $I^- : IO_3^-$ ratio is *3 : 1*

(2) The $MnO_4^- : I^-$ ratio is *6 : 5*

(3) The $MnO_4^- : Mn^{2+}$ ratio is *3 : 1*

(4) The $H^+ : I^-$ ratio is *2 : 1*

(5) The $MnO_4^- : IO_3^-$ ratio is *1 : 1*

9) The molecular formula of $2.68\,g$ hydrated sodium sulphate is $Na_2SO_4.nH_2O$ If the mass loss on heating is $1.26g$ then calculate the value of n .

$(Na - 23, \quad H - 1, \quad O - 16, \quad S - 32)$

(1) 4 *(2)* 7 *(3)* 5 *(4)* 3 *(5)* 6

10) Following statements are stated related to orbital overlapping and hybridization correct statement in these is

(1) Hybridized orbital can overlap only with hybridized orbital

(2) Atomic orbital can overlap only with Atomic orbital

(3) Overlapping can occur between the orbitals of one atom

(4) π Bond is formed by the lincar overlapping of two p orbitals

(5) Overlapping can occur between orbitals of different atoms

11) When a gaseous state Hydrocarbon gives $0.72\,g$ watervapour and $3.08\,g$ carbondioxide on combustion then what is the molecular formala of hydrocarbon

$(C - 12, \quad H - 1, \quad O - 16)$

(1) C_7H_8 *(2)* C_7H_4 *(3)* C_6H_6 *(4)* C_3H_4 *(5)* C_6H_5

12) Incorrect statement regarding $H-$ atomic spectrum

(1) The energy difference between energy levels $n = 2\ and\ n = 1$ is greater than the energy difference between energy levels $n = 3\ and\ n = 2$

(2) The energy corresponds to the lowest wavelength line of lymen series is the 1^{st} ionization enthalpy of hydrogen

(3) The lines of ultraviolet region of spectrum is obtarned when the electron transit from $n \geq 2$ energy levels to $n = 1$ energy level

(4) The violet colour line of visible region is obtained by the electron transition from $n = 5$ energy level to $n = 2$ energy level

(5) Each line of the spectrum directly related with the energy value of the particular energy level

13) In which of the following compound the mass percentage of carbon is 37.5%

(1) CO *(2)* CO_2 *(3)* C_2H_4 *(4)* C_2H_6 *(5)* CH_3OH

14) A HCl solution contain 36.5% HCl by mass. The density of this solution is $1.15\ g\ cm^{-3}$ Then calculate the molarity of HCl $(H-1, Cl-35.5)$

(1) $0.869\ mol\ dm^{-3}$

(2) $1.15\ mol\ dm^{-3}$

(3) $11.5\ mol\ dm^{-3}$

(4) $115\ mol\ dm^{-3}$

(5) $8.69\ mol\ dm^{-3}$

15) In a mixture containing ethanol and water the mole fraction of ethanol is 0.5. Then what can be the mass percentage of ethanol in this solution
$(Methanol$ - 46, MH_2O − 18)

(1) 10 %

(2) 25 %

(3) 50 %

(4) 70 %

(5) 90 %

❖ For each of the questions 16 to 20, one or more responses out of four responses (a), (b), (c) and (d) given is / are correct. Select the correct response / responses. In accordance with the instructions given on your answer sheet mark (1) if only (a) & (b) are correct (2) If only (b) & (c) are correct (3) if only (c) & (d) are correct (4) If only (d) & (a) are correct (5) If any other number or combination of responses is correct

Summary of the above instructions.

(1)	*(2)*	*(3)*	*(4)*	*(5)*
Only (a) & (b) are correct	Only (b) & (c) are correct	Only (c) & (d) are correct	Only (d) & (a) are correct	Any other number or combination of response is correct

16) Which of the following can be the reason for the strengthening of metallic bond

(a) Decrease of metallic radius

(b) Decrease of number of free electrons

(c) Decrease of charge of metallic cation

(d) Decrease of atomic radius

17) $26.8\ mg\ of\ Na_2SO_4.7H_2O$ was dissolved in 5 dm^3 of water and made as a solution. Correct statement regarding this solution.

(a) The concentration of Na^+ in the solution is $0.92\ mg\ /\ dm^3$

(b) The concentration of $SO_4{}^{2-}$ in the solution is $0.02\ mmol\ /\ dm^3$

(c) In the solution $2[Na^+_{(aq)}] = [SO^{2-}_{4(aq)}]$

(d) In this solution the concentration of Na_2SO_4 is $26.8g/dm^3$

18) From which of the following, the information about the electron's structure in Atom is obtained

(a) $\propto$ Scattering experiment (b) Datas about ionization energy

(c) Spectrum researches (d) Cathode ray experiment

19) Which of the relationship regarding the electro negativity is correct

(a) $Fe < Fe^{2+} < Fe^{3+}$ (b) $O < O^{-} < O^{2-}$

(c) $SP < SP^{2} < SP^{3}$ (d) $NH_2^- < NH_3 < NH_4^+$

20) Which of the following is / are dispropotionation reactions

(a) $NH_4Cl \longrightarrow NH_3 + HCl$ (b) $2H_2O_2 \longrightarrow 2H_2O + O_2$

(c) $4KO_2 \longrightarrow 2K_2O + 3O_2$ (d) $CaCO_3 \longrightarrow CaO + CO_2$

❖ In question No 21 to 25 two statements are given in respect of each question.
From the table given below, select the response out of responses (1), (2), (3), (4) & (5) that best fits the two statements & mark appropriately on your answer sheet

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

21) St I : The aquous solution of P_2Cl_6 can conduct electricity

St II : P_2Cl_6 is covalent bond

22) St I : Atomic size increases along the period while it decreases down the group

St II : The atomic size depends on the valance shell electronic configuration

23) St I : Nitrogen cannot form covalent bonds greater than three

St II : There is no 2^{nd} orbital in Nitrogen.

24) St I : The $O - O$ bond length of H_2O_2 is less than O_2F_2

St II : H_2O_2 is an ionic compound

25) St I : Electron can show wave nature and particle nature

St II : The wave nature and particle nature of electron can be observed in Hyfrogen emission spectrum