G.C.E. A/L Examination July - 2015

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In Collaboration with

Zonal Department of Education Jaffna.

FWC

Grade :- 12 (2016)	CHEMISTRY	Time :- 3 Hours

01) The compound whose molecule has the smallest bond angle among them is

1) SO_2 2) H_2O 3) H_2S 4) NH_3 5) CF_4

02) Which of the following is the most suitable Lewis structure for CNO^- ion

1) $:\ddot{N}^{(-)} = C = \ddot{O}:$ 2) $\ddot{N} \equiv C - \ddot{O}:^{(-)}$ 3) $:\ddot{N}^{2-} - C^{2+} - \ddot{O}:^{(-)}$

4) $:C = N^{2+} - \ddot{O}:^{(-)}$ 5) $\ddot{O} = N^{+} - C:^{2-}$

03) Mass of an atom of element B is five times the mass of an atom of element A. If the mass of an atom of B is 3 times the mass of an atom of $^{12}_{6}C$ isotope, the relative atomic mass of A is

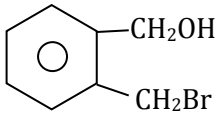
1)180 2) 36 3) 18 4) 14.4 5) 7.2

04) The number of enantiomer pairs among the mono – chloro substituted products formed in the reaction of 2 – methybutane with $C\ell_2$ in the presence of diffused light is

1) 2 2) 3 3) 4
4) 6 5) None of the above

05) Which of the following compounds may be used for preparing Grignard's reagent by treating it with Mg?

1) $HC \equiv C - CH_2CH_2Cl$ 2) $CH_3 - \overset{O}{\overset{\|}{C}} - CH_2Br$

2) $CH_2 = CH - CH_2Br$ 4) 

5) $CH_3 - \underset{\underset{I}{|}}{CH} - CH_2 - C(=O)H$

06) When boiled with conc. HNO_3 an inorganic salt Y produced a dark coloured gas. The solution obtained above gave a white precipitate with $BaCl_{2(aq)}$ The salt Y could be

1) $CuBr$ 2) Ag_2CO_3
3) CuI 4) AgI 5) PbO

07) The composition of $NaOH$ in a $250cm^3$ solution prepared by dissolving a particular mass of $NaOH$ in water was found to be $5 \times 10^3\ ppm$ The mass of $NaOH$ dissolved is $(Na = 23, O = 16)$

1) $4g$ 2) $2g$ 3) $1.25g$
4) $1g$ 5) None of the above

08) The cation that

i) Produces a black precipitate with H_2S in the presence of OH^-
ii) does not produce a precipitate with H_2S in dil HCl and
iii) forms a blue coloured solution with concentrated $NH_{3(aq)}$ is

1) Cu^{2+} 2) Mn^{2+} 3) Co^{2+} 4) Ni^{2+} 5) Fe^{2+}

09) Which one of the following compounds exhibits both enantiomer and diastereo isomerisms?

1) $CH_3CH = CH - CH_2CH_3$ 2) $CH_3CH = CH - \underset{\displaystyle COOH}{\underset{|}{CH}} - CH_3$

3) $CH_3\underset{\displaystyle C\ell}{\underset{|}{CH}} - CH = CH_2$ 4) $CH_3 - \underset{\displaystyle OH}{\underset{|}{CH}} - CH_2CH_3$

5) $CHF = CH - \underset{\displaystyle CH_3}{\underset{|}{CF_2}}$

10) $500\ m\ell\ of\ a\ NaOH$ solution of concentration $4\ moldm^{-3}$has a density of $1.6\ gcm^{-3}$ The mole fraction of $NaOH$ in the solution
$(Na = 23, O = 16, H = 1)$

1) $\frac{1}{21}$ 2) $\frac{2}{21}$ 3) $\frac{20}{21}$ 4) $\frac{1}{2}$ 5) $\frac{1}{4}$

11) Consider the following statements regarding 1 – butyne

a) It forms an aldehyde when treated with dil. $di\ell\ H_2SO_4\ /\ HgSO_4$
b) It produces $NH_{3(g)}$ when reacting with $NaNH_2$
c) The product formed when it reacts with $H_2\ /\ Lindlar\ catalyst$ does not exhibit stereo isomerism.
d) In its molecule, three carbon atoms are linear

Which of the above statements are true

1) a, b, c only 2) b, c, d only 3) c, d only
4) a, c, d only 5) c only

12) An organic compound A reacts with $Br_2\ /\ CC\ell_4$ to form a product B. The product obtained when B is treated with $C_2H_5OH/\ KOH$ gives a reddish brown precipitate with $NH_3/Cu_2C\ell_2$ The compound which has the possibility to be A

1) $CH_3 - \underset{\displaystyle CH_3}{\underset{|}{C}} = CH_2$ 2) $CH_3CH = CH - CH_3$ 3) $CH_3 - \underset{\displaystyle CH_3}{\underset{|}{C}} = \underset{\displaystyle CH_3}{\underset{|}{C}} - CH_3$

4) $CH_3CH_2\ CH = CH_2$ 5) None of the above

13) Given that the average bond energy values of the bonds $C-H,\ C-C,\ C=C$ and $H-H$ at $298\ K$ are $414, 347, 615,$ and $435\ KJmol^{-1}$
The enthalpy change for the reaction $CH_2 = CH_2 + H_2 \rightarrow CH_3CH_3$ is

1) $+250kJ$
2) $-250kJ$
3) $+125kJ$
4) $-125kJ$
5) None of the above

14) Which of the following statements regarding the elements in the peridic table is false

1) Group 14 consists of the three types metals, non – metals and metalloids
2) Periods 4, 6 contain elements of all the 3 physical states solid, liquid and gas at 25^0C
3) All the uni-valent elements are metals
4) Group 17 contain elements of all the 3 physical states – solid, liquid and gas
5) In general, d – block elements have higher melting points than s – block elements

15) In acidic medium, VO_3^- ions are reduced to VO^{2+} ions. In the balancel equation for the above reaction, the correct stoichiometric coefficients of H^+ ions and electrons are respectively

1) 1,4 2) 4, 1 3) 2, 1 4) 5, 1 5) 5, 2

❖ Summary of above Instructions for question no. 16 - 20

1	2	3	4	5
Only (a) and (b) correct	Only (b) and (c) correct	Only (c) and (d) correct	Only (d) and (a) correct	**Any other** response or combination of responses correct.

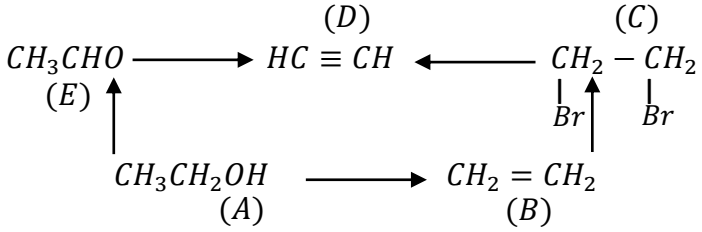
16) In the hydrogen halides $HF, HCl, HBr\ and\ HI$ which of the following properties decreases / decrease in the given order of the species?

a) Boiling point
b) Reducing ability
c) Thermsl stsbility
d) Dipole moment

17) With which of the following does H_2O_2 act as an oxidizing agent?

a) Mno_4^-/H^+
b) Cr^3 / in OH^- Medium
c) Water supension of Pbs
d) MnO_2

18) Consider the following reaction scheme



The correct statement / Statements regarding the above is / are

a) Al_2O_3/Δ may be used for the conversion of A into B

b) $Br_{2(aq)}$ can be used to convert B into C

c) $dilH_2SO_4/HgSO_4$ can be used to obtain E from D

d) E can be obtained by adding PCC /$CH_2C\ell_2$ *to* A

19) A gaseous mixture containg H_2 *and* CH_4 gases has a density of $0.6kgm^{-3}$ at 300k and under a pressure of $3 \times 10^5 Nm^{-2}$ Assuming ideal behavior of gases,, which of the following is / are true?

a) The mole fraction of H_2 in the mixture is $^{11}/_{14}$

b) The average molar mass relevant to the gas mixture is approximately 5gmol^{-1}

c) The partial pressure of CH_4 in the mixture is $^{3}/_{14} \times 10^5 Nm^{-2}$

d) Even if the temperature of the system is changed to $500k$, the density of the mixture remains the same as $0.6kgm^{-3}$

20) Which of the following contains / contain species of almost the same colour?

a) $Ag_2CrO_4,\ PbCrO_4, BaCrO_4$

b) $[FeCl_4]^-, [NiCl_4]^{2-}, [CoCl_4]^{2-}$

c) Dry $CuCl_2, Cds, As_2S_3$

d) $[Cu(NH_3)_4]^{2+}$, $[Cr(NH_3)_6]^{3+}$ $[Ni(NH_3)_6]^{2+}$

❖ Summary of instructions for question 21 - 25

Statement - I	Statement - II
1) True	True and correctly explains statement I
2) True	True but does not explain statement I
3) True	False
4) False	True
5) False	False

	Statement I	Statement II
21)	Acetalene is more reactive than ethane	$C \equiv C$ bond energy is greater than $C - C$ bond energy
22)	Endothermic reactions occuring with a decrease in entropy cannot be spontaneous at any temperature	A reaction is spontaneous if only the Gibb's free energy change is negative
23)	Aqueous solution of NH_3 cannot be used for distinguishing $Cu^{2+}, and\ Ni^{2+}$ solution	Both $Cu^{2+}\ and\ Ni^{2+}_{(aq)}$ form deep blue complex with excess NH_3solution.
24)	$NH_3\ /AgNO_3$ canonot be used for differentiating 1- butyne and 2 - butyne	Both 1 – butyne and 2 – butyne give the same product with $dil\ H_2\ SO_4$ / H_gSO_4
25)	The boiling point of 2 - methylbutane is greater than that of 2 – 2 dimethy / propane	The strength of London forces decrease when the number of branches increases in the isomers of alkanes having the same molecular formula.