



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

❖ Answer all the questions.

1. The outer shell electronic configuration of the higher electronegative element is.

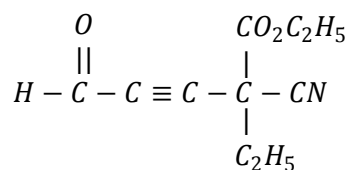
- 1) $2S^22P^2$ 2) $3S^23p^4$ 3) $4S^24P^5$
4) $2S^22p^1$ 5) $3S^23P^3$

2. Maximum number of electrons possible to have for the quantum number

$n = 3, l = 2$ and $m_s = -1/2$ is,

- 1) 1 2) 2 3) 3 4) 4 5) 5

3. The IUPAC name of this compound is,



- 1) Ethyl 2 - cyano - 2 - ethyl - 5 - formyl pentaoate.
2) Ethyl - 2- cyano - 2 - ethyl -5 - oxopentanoatc.
3) ethyl - 2 cyano - 2 - ethyl - 5 - oxo - 3 - pentynoate.
4) ethyl 2 - cyano - 2 - ethyl - 5 - oxo - 3 - pentynoate.
5) ethyl 2 - cyano - 2 - ethyl - 4 - formylbut - 3 y noate .

4. Which of the following statements is false regarding 3rd transition metals and their compounds?

- 1) Vanadium forms acidic, amphoteric and basic orides.
2) Only one element shows the Oxidation state of +7.
3) Ti, Fe and Cu do exhibit variable valency.
4) Electro negativity of 3rd transition metals is lower than 4S metals.
5) Nis cannot be precipitated by H_2S from acidic solutions.

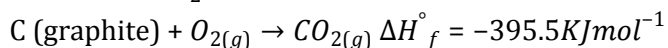
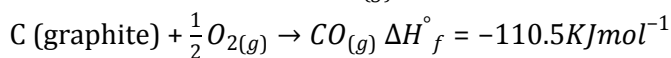
5. When a sample of sodium hydrogen Oxalate $\left[\begin{array}{l} COOH \\ | \\ COONa \end{array} \cdot x H_2O \right]$ was heated strongly CO, CO_2

1.06g of Na_2CO_3 and 0.9g of H_2O were obtained as the only products. What is the Value of x.

[Na - 23 C - 12, O - 16, H - 1]

- 1) 1 2) 2 3) 3 4) 5 5) 10

6. At 25°C and at constant pressure 12.0g of carbon (graphite) gave a mixture of $CO_{(g)}$ and $CO_{2(g)}$ in combustion with oxygen gas. Heat evolved during this is 324.25KJ The mass percentage of carbon that converted to $CO_{(g)}$ is [C -12]



- 1) 10% 2) 20% 3) 25% 4) 50% 5) 75%

7. Which of the following produces an immediate precipitate with $NH_3/AgNO_3$ (ammonical $AgNO_3$)?

- 1) C_6H_5Cl 2) C_6H_5I 3) $(C_6H_5)_3CCl$
 4) $(C_6H_5)_2CHI$ 5) $C_6H_5CH=CHCl$

8. O_2 gas formed by the thermal decomposition of $KMnO_4$ is collected by down ward displacement of water. The volume of O_2 gas collected in such an experiment at 300K and 1.25×10^5 Pa pressure was $200cm^3$. Given that the saturated vapour pressure of water is 0.05×10^5 Pa at 300K. The mass of O_2 gas collected is (O -16)

- 1) 0.307g 2) 0.370g 3) 30.7g
 4) 0.154g 5) 1.54g

9. Which of the following statements is false regarding the colours of complexes formed by 3d transition elements?

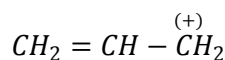
- $[Co(NH_3)_6]^{2+}$ is yellow - brown in colour.
- $[Fe(NO)(H_2O)_5]^{2+}$ is brown in colour.
- $[MnCl_4]^{2-}$ is Blue Violet in colour.
- $[FeCl_4]^-$ is yellow in colour.
- $[Ni(NH_3)_6]^{2+}$ is Deep blue in colour.

10. Which of the following statements is / are true.

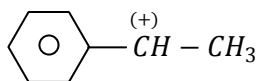
- Bond angle of ONO : $NO_2^+ > NO_2 > NO_2^- > NO_4^{3-}$
- $PbCrO_4$ is completely dissolve in dil HCl.
- Concentrated H_2SO_4 Can act as a strong acid, an oxidizing agent, Reducing agent and dehydrating agent.
- Although the electron pair geometry of $SiBr_4, NF_3, SCl_2$ is tetrahedral.

1. a, b 2. a, c 3. c, d 4. a, d 5. a, b, c and d

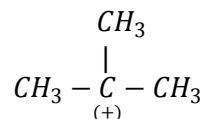
11. The current stable increasing order of following A,B,C and D carbo - cation is,



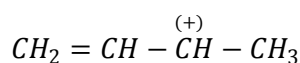
A



B



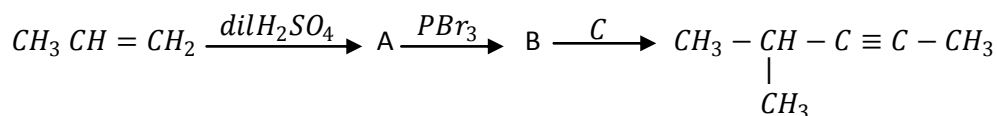
C



D

- $B < C < A < D$
- $C < B < A < D$
- $A < D < B < C$
- $A < B < C < D$
- $C < A < D < B$

12. Consider the following reaction scheme



The correct compounds A, B and C are.

- | A | B | C |
|--|---|---|
| 1) $\text{CH}_3\text{CH}_2\text{OH}$ | $\text{CH}_3\text{CH}_2\text{Br}$ | $\text{CH}_3\text{C}\equiv\text{CBr}$ |
| 2) $\text{CH}_3\underset{\text{OH}}{\text{CH}}\text{CH}_3$ | $\text{CH}_3\underset{\text{Br}}{\text{CH}}\text{CH}_3$ | $\text{CH}_3\text{C}\equiv\text{C}-\text{Br}$ |
| 3) $\text{CH}_3\underset{\text{OH}}{\text{CH}}\text{CH}_3$ | $\text{CH}_3\underset{\text{Cl}}{\text{CH}}\text{CH}_3$ | $\text{CH}_3\text{C}\equiv\text{CNa}$ |
| 4) $\text{CH}_3\underset{\text{OH}}{\text{CH}}\text{CH}_3$ | $\text{CH}_3\underset{\text{Br}}{\text{CH}}\text{CH}_3$ | $\text{CH}_3\text{C}\equiv\text{CNa}$ |
| 5) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ | $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br}$ | $\text{CH}_3\text{C}\equiv\text{CNa}$ |

13. Which of the following doesn't dissolve in excess RbOH

- 1) $\text{Cr}(\text{OH})_3$ 2) $\text{pb}(\text{OH})_2$ 3) $\text{cd}(\text{OH})_2$ 4) $\text{Al}(\text{OH})_3$ 5) $\text{Be}(\text{OH})_2$

14. At 298K for reaction $\text{CO}_{(g)} + \frac{1}{2}\text{O}_{2(g)} \rightarrow \text{CO}_{2(g)}$

$$\Delta_S^\theta = 94 \text{ J mol}^{-1} \text{ K}^{-1}, \quad \Delta G_f^\theta[\text{CO}_{2(g)}] = -394 \text{ KJ mol}^{-1}, \quad \Delta G_f^\theta[\text{CO}_{(g)}] = -137 \text{ KJ mol}^{-1}$$

- This reaction
- Occurs Spontaneously
 - is exothermic
 - $\Delta H_r^\theta = -238.99 \text{ kJ mol}^{-1}$

The correct statement is/are

- | | | |
|-----------------|-----------------|-----------------|
| 1) a and b only | 2) b and c only | 3) a and c only |
| 4) a, b, c all | 5) a only | |

15. Which is the most basic nature?

- 1) NaNH_2 2) Na_2O 3) NaOH 4) Na_2CO_3 5) NaHCO_3

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

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

16. In which of the following reaction/s involved in benzyl chloride.

- Nucleophilic substitution.
- Hydrolysis
- Nucleophilic Addition.
- Electrophilic substitution

17. Which of the following processes/ process are/is endothermic
- $2Al_{(g)}^{3+} + 3O_{(g)}^{2-} \rightarrow Al_2O_{3(s)}$
 - $Ca_{(g)}^+ \rightarrow Ca_{(g)}^{2+} + e$
 - $O_{(g)}^- + e \rightarrow O_{(g)}^{2-}$
 - $H_{(aq)}^+ + OH_{(aq)}^- \rightarrow H_2O_{(l)}$
18. According to the kinetic molecular theory, the pressure of a given volume of ideal gas increases with temperature due to which of the following reason(s)?
- Inter molecular forces become negligible at high temperatures.
 - There are no attraction or repulsions between molecules of any temperatures.
 - In a given time the number of collisions of molecules with the vessel containing the gas increase with increasing temperatures.
 - Energy loss at collisions is much larger at higher temperatures.
19. Which of the following statements is/ are false.
- $POCl_3$ reacts with water and gives H_3PO_4 and HCl.
 - 2- butene shows diastereoisomerism.
 - $CH_3C \equiv CH$ gives red precipitate when treated with ammoniacal $CuCl_2$.
 - The solubility of group II carbonates decrease down the group primarily due to Increase in hydration enthalpy of the cations.
20. Which of the following statement is/are true.
- The compound $NaOBr$ is stable at Room Temperature.
 - All N - O bond lengths in NO_3^- are equal.
 - Aluminium chloride exists as dimer in the solid state.
 - H_2O_2 molecule is planar.

❖ 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

21. First statement :- White precipitate is formed when adding HCl dropsily to $Ba (AlO_2)_2$.
Second statement :- $Al(OH)_3$ in water insoluble hydroxide.
22. First statement :- The standard enthalpy of formation of any substance ΔH_f^θ is taken as equal to the standard enthalpy of that substance at the same temperature.
Second statement :- The enthalpy values of all elements under Ok condition are taken as zero.
23. First statement :- $Na_{(g)}^+$ is more thermal stable than $Na_{(g)}$.
Second statement :- The electronic configuration of Na^+ is $1S^22S^22P^6$ while that of Na is of the form $1S^22S^22P^63s^1$.
24. First statement :- Ideal gas has kinetic energy and potential energy.
Second statement :- $PV = nRT$ equation can't apply to real gas.
25. First statement :- 2 -methyl - 1 - butanol shows enantiomers.
Second statement :- A pair of stereoisomers which are mirror images of each other are known as enantiomers.