



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

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

Grade :- 12 (2018)

**CHEMISTRY**

## PART - II

Index No :.....

### A. Structured Essay

❖ **Answer all questions on the paper itself.**

01) (a) You are provided with the following list of some elements and compounds

*Ice, SiO<sub>2</sub>, He, K, Li, Mn, V, Cl, Cr, Na, O, I<sub>2</sub>* From the list

(i) Identify the element which can conduct electricity and can form highest positive oxidation state compound  
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(ii) Identify the element which has lowest ionization energy  
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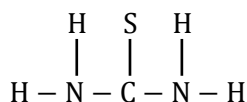
(iii) Identify the element which has highest reducing ability  
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(iv) Identify the compound which is the polar molecular lattice  
.....

(v) Identify the element with highest number of unpaired electrons in its ground state electronic configuration  
.....

(vi) Identify the element with high electronegativity  
.....

(b) The following parts (i) to (iv) are based on the molecule Thiourea ( $CS(NH_2)_2$ ). It has the following skeletion.



(i) Draw the most acceptable lewis structure for this molecule?

(ii) Draw resonance structures for this molecule? Comment on their stability?

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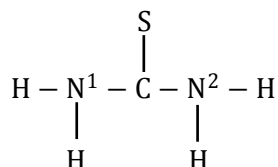
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(iii) Based on the lewis structure drawn in (i) above, state the following regarding C, N atoms given in the table below.

- (i) VSEPR pairs around the atom
- (ii) Electron pair geometry around the atom
- (iii) Shape around the atom
- (iv) Hybridization of the atom



	C	N <sup>1</sup>
VSEPR pairs		
Electron pair geometry		
Shape		
Hybridization		

(iv) Identify the atomic / hybrid orbitals involved in the following  $\sigma$  bonds in the lewis structure drawn in part (i) above.

- (i)  $\text{N}^1 - \text{C}$        $\text{N}^1$  .....       $\text{C}$  .....
- (ii)  $\text{C} - \text{S}$        $\text{C}$  .....       $\text{S}$  .....
- (v)  $\text{N}^1 - \text{H}$        $\text{N}^1$  .....       $\text{H}$  .....

(c) State whether the following statements are true or false (Reasons are not required)

(i) Ionization energy of elements increases along the period

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(ii) The electron affinity of oxygen is greater than sulphur

.....

(iii) *Cl* has highest atomic radius in 3<sup>rd</sup> period

.....

(iv) *SO<sub>2</sub>*, *NO<sub>2</sub>*, *CO<sub>2</sub>* are linear as they have same number of atoms

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02) (a)

Element	A	B	C	D	E	F
Atomic number	$n - 2$	$n - 1$	$n$	$n + 1$	$n + 2$	$n + 3$
1 <sup>st</sup> ionization enthalpy	786	1060	1000	1260	1520	418

A, B, C, D, E and F are 6 consecutive elements in the periodic table. Their ionization enthalpy values are given in the table above.

(a) In the above elements which element exist as monoatomic gas.

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(b) Why the 1<sup>st</sup> ionization enthalpy of C is less than the 1<sup>st</sup> ionization enthalpy of B ?

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(c) If element F belongs to 4<sup>th</sup> period of the periodic table. Give the electronic configuration of element D in  $1S^2 2S^2$  form

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(d) In these element which element have highest 2<sup>nd</sup> ionization enthalpy

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(e) Draw a graph showing first eight successive ionization enthalpy of element B against the number of electrons removed

(f) Which element has very low covalent radius?

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(b) Masses of  $CO_2, H_2O$  released when  $1\text{ g}$  of compound is completely combusted are  $1.76\text{ g}$  and  $1.44\text{ g}$  respectively. If this compound contain only  $C, H, O$  calculate their mass percentage?

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