



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2015/2016

**FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF SCIENCE IN PUBLIC HEALTH
WITH INFORMATION TECHNOLOGY**

MAIN CAMPUS

PHT 114: PRINCIPLES OF CHEMISTRY

Date: 15th January, 2016

Time: 2.30 - 4.30 pm

INSTRUCTIONS:

- Write your University Registration Number on every Answer Booklet you use.
- Do not write your name on any paper you use.
- The time allowed for this paper is TWO (2) hours.
- The questions are set out in TWO (2) sections, A and B.
- Read carefully the additional instructions preceding each section.
- Observe carefully further instruction on the cover of Answer booklets.



SECTION A

INSTRUCTIONS: Answer all questions in this section (4 marks each)

1. State the three bonding arrangements in the element CARBON
2. State the temperature measurement scales
3. State the atomic Mass of $^{25}_{12}\text{Mg}$
4. Illustrate the electronic configuration of the element $^{25}_{12}\text{Mg}$
5. What is the minimum number of electrons at principal energy level 4
6. Define. a). Molality
b). Molarity
7. Write LEWIS STRUCTURE for:
a) CS_2
b) CCl_4
8. Differentiate LEWIS from ARRHENIUS acid
9. Indicate which pair of elements below are similar:
a) $1s^2, 2s^2, 2p^1$
b) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6$
c) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^{10}, 4s^2, 4p^6$
d) $1s, 2s^2, 2p^6, 3s^2, 3p^6, 3d^{10}, 4s^2, 4p^1$
10. Differentiate a sigma-bond from a pi-bond

SECTION. B

ATTEMPT TWO QUESTIONS FROM THIS SECTION

1. Predict the formula of reaction between:

- a) Mg and Cl
- b) Mg and N
- c) K. and S
- d) Al and S

2. Describe how the Periodic table can help illustrate the Metallic properties of elements

3. Explain and justify the AMPHIPROTIC. nature of:

- a) H_2O .
- b). $(\text{HSO}_4)^{1-}$