SEPTEMBER 2023
EBS 132
GENERAL CHEMISTRY I
45 MINUTES

Candidate's Index Number
Signature:

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

COLLEGES OF EDUCATION
FOUR-YEAR BACHELOR OF EDUCATION (B.ED)
FIRST YEAR, SECOND SEMESTER MID-SEMESTER QUIZ, SEPTEMBER 2023

26TH SEPTEMBER 2023 **GENERAL CHEMISTRY I** **5:30 PM – 6:15 PM**

Answer ALL the questions.
[20 MARKS]

For items 1 to 15, each stem is followed by four options lettered A to D. Read each item carefully and circle the letter of the correct or best option.

1. What type of bond is between the atoms of chlorine in chlorine gas? ..... bond
   A. Covalent
   B. Intermolecular
   C. Ionic
   D. Metallic

2. Which of the following represents the chemical formula of aluminium oxide?
   A. Al_2O
   B. Al_2O_3
   C. Al_3O_2
   D. AlO_2

3. What is the arrangement of electrons in the shells of an aluminium ion $^{27}_{13}Al^{3+}$?
   A. 2, 8, 3
   B. 2, 4, 6
   C. 2, 1
   D. 2, 8

4. What is the maximum number of electrons in the M-shell of an atom?
   A. 2
   B. 8
   C. 18
   D. 24

5. Which of the following types of bonds is/are exhibited by the compound NH_4Cl?
   I. Covalent bond
   II. Coordinate covalent bond
   III. Metallic bond
   IV. Electrovalent bond

   A. I, II and III
   B. I, II and IV
   C. I, III and IV
   D. II, III and IV

6. Which rule governs the filling of the K-shell? ..... rule
   A. duplet
   B. octet
   C. quadruplet
   D. triplet

7. How many chlorine atoms are present in 0.4 mol of $CaCl_2$? ($L = 6.02 \times 10^{23}$)
   A. 2.0×10^{23} atoms
   B. 2.40×10^{23} atoms
   C. 2.83×10^{24} atoms
   D. 4.82×10^{24} atoms

8. Which of the following represents the three subatomic particles of an atom? ..... and electrons.
   A. Neutrino, proton
   B. Positron, neutron
   C. Proton, neutron
   D. Proton, positron

9. Which of the following statements explains the duplet of electrons? The maximum number of electrons required to fill .....
   A. any shell must be 8.
   B. subsequent shells must be 8.
   C. the first shell must be 2.
   D. the outermost shell must be 8.

10. How many moles of ammonia molecule are contained in 34 g sample of the gas? [H = 1, N = 14]
   A. 0.5 mol
   B. 17 mol
   C. 2.0 mol
   D. 3.0 mol

11. According to Bohr's model of the atom, the electron groups that occur in an atom are known as electron .....
   A. cell.
   B. level.
   C. orbital.
   D. shell.

12. What are the basic building units of an element?
    A. Atoms
    B. Compounds
    C. Ions
    D. Molecules

13. What is the total number of oxygen atoms contained in two (2) formula units of Iron (III) oxide?
    A. 2
    B. 3
    C. 4
    D. 6

14. The atoms that readily transfer their valence electrons during ionic bonding are called ..... element.
    A. atomized
    B. electronegative
    C. electropositive
    D. negative

15. What is the collective name for protons and neutrons in the nucleus of an atom?
    A. Mass number
    B. Molecules
    C. Moles
    D. Nucleons

For items 16 to 18, write the appropriate responses in the spaces provided.

16. An atom has six protons and seven neutrons in its nucleus. Find the following for the atom. **(2 marks)**

    a. mass number

    .....

    .....

    .....

    b. Number of electrons

    .....

    .....

    .....

17. Write down the electron configuration of the following elements using the Bohr's model. **(2 marks)**

    a. Neon

    .....

    .....

    .....

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   IV. Electrovalent bond

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   B. I, II and IV
   C. I, III and IV
   D. II, III and IV

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11. According to Bohr's model of the atom, the electron groups that occur in an atom are known as electron .....
   A. cell.
   B. level.
   C. orbital.
   D. shell.

b. Chlorine

.....

.....

.....

18. How will you represent an element X with atomic number of 11 and mass number of 23?
(1 mark)

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