JUNE 2019
EBS 115
GENERAL CHEMISTRY THEORY 1
30 MINUTES

CANDIDATE'S INDEX NUMBER:
SIGNATURE:

UNIVERSITY OF CAPE COAST
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INSTITUTE OF EDUCATION

COLLEGES OF EDUCATION
FOUR-YEAR BACHELOR OF EDUCATION (B.ED)
FIRST YEAR, SECOND SEMESTER QUIZ 1, JUNE 2019

JUNE 7, 2019 GENERAL CHEMISTRY THEORY 1 8:00 AM – 8:30 AM

INSTRUCTION: Answer ALL the questions on the question paper.

From items 1 to 10, each stem is followed by four options lettered A to D. Read each statement carefully and circle the letter of the correct or best option.

1. The electronic configuration of chromium is [Ar] $3d^5\ 4s^1$ and not [Ar] $3d^4\ 4s^2$ because of the .....
   A. extra stability of the half –filled sub-shell.
   B. unstable nature of the s-orbital.
   C. low energy d-orbital.
   D. high energy s-orbital.

2. How many orbitals are present in the third shell?
   A. 3
   B. 9
   C. 10
   D. 14

3. The electronic configuration for $_{10}Ne$ was wrongly given as $1s^3 2s^2 2p^5$. The wrong configuration violates.....
   A. Aufbau's principle only.
   B. both Aufbau's principle and Pauli's exclusion principle.
   C. Hund's rule only.
   D. Pauli's exclusion principle only.

4. Which of the following statements is/are true?
   I. The s-orbital is spherical.
   II. The p-subshell, in a magnetic field, has three sub-orbitals namely p_x, p_y, and p_z.
   III. The d-subshell splits into five orbitals under the influence of a magnetic field.
   IV. The 1s- and 2s-orbitals in their ground states have similar energies.

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

5. Which of the following statements is true about Aufbau's principle when filling orbitals with electrons?
   A. A maximum of three electrons can occupy the same orbital.
   B. Electrons are initially placed into orbitals of the same energy singly before any other.
   C. Electrons can enter into any orbitals.
   D. Electrons enter the lower energy level before the highest energy levels available electrons are added.

6. The isotopes of neon are represented by the symbols $^{20}{}_{x}Ne$, $^{21}{}_{y}Ne$, and $^{22}{}_{z}Ne$. The relation between x, y and z.
   A. $x > y > z$.
   B. $x < y < z$.
   C. $x = y = z$.
   D. $x < z < y$.

7. When an ion is formed, the number of ..... do not change.
   A. atoms and electrons
   B. electrons and neutrons
   C. protons and electrons
   D. protons and neutrons

8. How many electrons does the element $^{14}{}_{7}N$ have in its p – subshell?
   A. 2
   B. 3
   C. 3
   D. 7

9. The sequence of filling up the orbitals with electrons is as follows: 1s 2s 2p 3s 3p 4s 3d
   4s is filled before 3d because.....
   A. 4s energy level is lower than 3d energy level.
   B. 3d energy level is lower than 4s energy level.
   C. the order obeys Hunds Rule of Maximum Multiplicity.
   D. the order obeys Pauli Exclusive Principle.

10. Which of the following is **not** a covalent compound?
    A. CH_4.
    B. NH_3.
    C. CO_2.
    D. Cl_2.

Items 11 to 15 are statements followed by True and False options. Read each statement carefully and indicate whether it is True or False by circling the letter of the correct option.

11. A minimum of 4 electrons are needed to form a bond.
    A. True
    B. False

12. Dative covalent bond exist in ammonia molecule, NH_3
    A. True
    B. False

13. It is usually very difficult naming substances without knowing their oxidation numbers.
    A. True
    B. False

14. Oxidation number of the underlined element in the compound $K\underline{Mn}O_4$, is -4.
    A. True
    B. False

15. Hydrogen bond exist between H_2O and NHCl.
    A. True
    B. False

For items 16 to 20, write the appropriate responses in the spaces provided.

16. The electrical conductivity nature of metals is as a result of the presence of .....
    .....

17. Electrons, protons and neutrons are collectively known as.....particles.

18. The IUPAC name for SO_4^{2-} is.....

19. Arrange the compounds below in order of increasing boiling point: H_2O, CH_4 and H_2S.
    .....

20. The shape of CH_4 is .....