MAY 2022
EBS 302
GENERAL CHEMISTRY THEORY III
1 HOUR 30 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)
THIRD YEAR, END-OF-FIRST SEMESTER EXAMINATION, MAY 2022

MAY 25, 2022 GENERAL CHEMISTRY THEORY III 2:30 PM – 4:00 PM

Section B
(40 marks)

Answer any TWO questions in this Section.

1.

a. Balance the following Redox reaction in the acidic medium. Indicate clearly the oxidation and reduction half equations and the net equation $Fe_2O_3 + C \rightarrow Fe + CO_2$ **[8 marks]**

b.

i. Why was Tetraethyl lead added to gasoline? **(6 marks)**

ii. Describe how octane number is determined.

c. Explain the following words as applied to organic chemistry: **(6 marks)**

i. Monosaccharide

ii. Disaccharides

iii. Polysaccharides

2.

a. Explain each of the following observations as applied to the periodic properties of elements.

i. The general trend for the first ionization energy is to increase from left to right across a period in the periodic table, however, the first ionization energy for aluminium is less than the first ionization for Mg. **[4 marks]**

ii. The atomic radius for oxygen is smaller than the atomic radius for Be. **[4 marks]**

b.

i. State **four** components of glass. **[8 marks]**

ii. Why is glass not a true solid? **[2 marks]**

iii. State **two** uses of glass. **[2 marks]**

3.

a. Using appropriate examples, explain the following concepts:

i. An element X belongs group VI **[4 marks]**

ii. Y is an S – block element **[4 marks]**

iii. Z belongs to period III **[4 marks]**

b. Write the oxidation and reduction half equations for the following chemical reactions.

i. $2Al + Fe_2O_3 \rightarrow Al_2O_3 + 2Fe$ **[2 marks]**

ii. $HNO_3 + Cu_2O \rightarrow Cu^{2+} + NO + H_2O$ **[2 marks]**

c. Balance the **reduction half equation** in (b) (ii) in acidic medium **[4 marks]**

4.

a. What is a monomer? Give **two** examples. **[4 marks]**

b. What are synthetic polymers? Give **two** examples. **[4 marks]**

c. What are polypeptides? **[4 marks]**

d. Outline how Sudan IV test is used to detect the presence of lipid in a solution. **[8 marks]**