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**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF BIOLOGICAL & PHYSICAL SCIENCES**

**UNIVERSITY EXAMINATION FOR**

**DIPLOMA-ENGINEERING**

**1st YEAR 2ND SEMESTER 2015/2016 ACADEMIC YEAR**

**REGULAR**

**COURSE CODE: SCH 2121**

**COURSE TITLE: GENERAL CHEMISTRY 2**

**EXAM VENUE: STREAM: DIPLOMA-ENGINEERING**

**DATE: EXAM SESSION:**

**TIME: 1 ½ HOURS**

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**Instructions:**

1. **Answer question 1 (Compulsory) in Section A and ANY other 2 questions in Section B.**
2. **Candidates are advised not to write on the question paper.**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room.**

**QUESTION ONE (30 Marks)**

1. State the earlier perception and current definition of organic chemistry (4 marks)
2. Define and name three examples of ceramics (6 marks)
3. Carbon Atom has atomic number six (6) draw its two simple electronic configuration (4 marks)
4. Which other six elements can be found in organic compounds (3 marks)
5. Define Hybridization and using methane as an example explain why carbon is usually tetravalent in its compounds. (8 marks)
6. State three properties of silicon and some of its uses (5 marks)

**QUESTION TWO (15 marks)**

1. What is the name of the unbranched alkane with the formula: C10H22 (1 mark)
2. Name three common vinyl polymers and state their uses (6 marks)
3. Explain how petroleum is formed and its composition (6 marks)
4. When are the prefixes *iso*- and *neo*- used in the nomenclature of alkanes (2 marks)

**QUESTION THREE (15 marks)**

1. State four major desirable properties of plastics (4 marks)
2. State three physical properties of alkanes (3 marks)
3. Explain what cement is and define two types of cement (6 marks)
4. Draw the kekule and shorthand structures of the following molecules (2 marks)
   * + 1. 2-methylpropane
       2. 2,4-dimethylheptane

**QUESTION FOUR (15 marks)**

1. With examples state what hydrocarbons are (4 marks)
2. Differentiate between a monomer, copolymer, and a polymer (6 marks)
3. State and give two examples for the preparation of alkanes (5 marks)

**QUESTION FIVE (15 marks)**

1. Alkyl groups are generally represented by the symbol R. Name and draw four of them. (4 marks)
2. Name four types of silicates (4 marks)
3. What is a thermoplastic polymer (2 marks)
4. Name and draw the structures of five cycloalkanes (5 marks)