



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE MECHANICAL ENGINEERING
EMM 202: ENGINEERING MATERIALS

DATE: Friday, 13th April, 2012

TIME: 2.00 p.m. – 4.00 p.m.

INSTRUCTIONS:

The paper consists of **FOUR** questions

Answer any **THREE (3)** questions.

Use clear and neat diagrams

Answer books provided

All questions carry equal marks each

Question One

- a) With the aid of well labeled diagram distinguish between extrusion molding process and injection molding process of plastics (8 marks)
- b) Explain the TWO classification of polymerization process (5 marks)
- c) Describe one main process that is used for making parts of reinforced plastics that have constant cross sections of any length (7 marks)

Question Two

- a) What is the difference between Glass and Ceramics? (4 marks)
- b) Explain any Four characteristics of Plastic materials and give one application in each case (8 marks)

- c) With an aid of a flow diagram explain the common manufacturing operation for a ceramic component (8 marks)

Question Three

- a) Describe the production process of producing refined copper from copper sulphide based ores (8 marks)
- b) Explain the term electrochemical corrosion as applied to metal and hence describe electrochemical corrosion of an iron based metal exposed to water. (8 marks)
- c) Describe production process of pig iron from magnetite iron ore (6 marks)

Question Four

- a) Describe the extraction process of Alumina (Al_2O_3) by digesting crushed bauxite in strong sodium hydroxide (NaOH) solution using Bayer Process (10 marks)
- b) State **Four** application of aluminium and explain a property that is associated to each application (6 marks)
- c) Explain the role of Carbon in Steel (4 marks)