



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

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AUGUST – DECEMBER 2018 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND LIBRARY SCIENCE

REGULAR PROGRAMME

SPECIAL EXAMINATION

CMT 415: CAD CAM TECHNIQUES

Date: DECEMBER 2018

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

- Q1. a) Name two software programs you can use to create documents to support your designing and making work. **(2marks)**
- b) State two ways Computer Aided Designing (CAD) is used during the designing of food products. **(2marks)**
- c) A biscuit production system has three main stages: Input, Process and Output. Place each of the materials/stages listed below under the correct heading.
Margarine, Shaping, Metal detection, Sugar, Baking and cooling, Packaging, Egg, Packet of biscuits. **(8 marks)**
- d) The barcode symbol appears on food packaging labels. Explain the importance of the barcode to supermarkets. **(3marks)**
- e) State four benefits of integrated CAD/CAM system. **(4marks)**
- f) Draw the basic structure of CAD software and explain its main parts. **(5marks)**
- g) A line is defined by its end points (0,0) and (2,3) in a two-dimensional graphic system. Express the line in matrix notation and perform the following transformation on this line: **(6marks)**

- i) Scale the line by a factor of 2
 - ii) Scale the original line by a factor of 3 in the x direction and 2 in the y direction.
 - iii) Translate the original line by 2 units in the x direction and 2 units in the y direction.

- Q2. a) Describe two ways in which CAD could be used to help with the development of a new product. **(6marks)**
- b) The manufacturer wants to put numbers on the wheels of a toy. The numbers will be drawn using CAD and made using CAM. Describe the stages involved in using CAD/CAM to put the numbers on the wheels. **(8marks)**
 - c) Use sketches to explain how you would accurately bend a plastic material into the correct shape **(6marks)**
- Q3. a) Describe briefly the following types of production: **(8marks)**
 - i) Continuous-flow processes
 - ii) Mass production
 - iii) Batch production
 - iv) Job shop production
- b) State and briefly describe the general design process. **(12marks)**
- Q4. a) What is automated drafting? **(2marks)**
- b) State five characteristics of a design work station. **(10marks)**
 - c) Name two basic techniques used in computer graphic terminals for generating the image on the screen. Describe each of them with aid of diagrams. **(8marks)**
- Q5. a) Name three operator input devices and describe the functions of each of them. **(6marks)**
- b) What is the relationship between the product data management system, and the CAD system? **(4marks)**
 - c) i) What is meant by the concept of geometric modelling? **(2marks)**
 - ii) Classify the types of geometric modelling. **(4marks)**
 - d) What is a material requirement planning? **(4marks)**

END