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University Examinations 2013/2014

THIRD YEAR, SECOND SEMESTER EXAMINATION FOR DIPLOMA IN
MECHATRONICS ENGINEERING

EMT 0246: COMPUTER NUMERICAL CONTROL MACHINES

DATE: APRIL 2014

TIME: 1 ½ HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE – (30 MARKS)

- (a) Outline the four main areas in computer aided engineering. (6 Marks)
- (b) Differentiate between CADD and CAM. (4 Marks)
- (c) Define the term numerical control (NC). (3 Marks)
- (d) Briefly describe the advantages of numerical control in industry today. (6 Marks)
- (e) Describe any six areas where NC/CNC is used in industry today. (6 Marks)
- (f) With the aid of a diagram explain the product development process. (5 Marks)

QUESTION TWO – (15 MARKS)

- (a) Identify the basic robot elements and explain the function of each. (6 Marks)
- (b) What is the function of a servo in a robot? (3 Marks)

QUESTION THREE - (15 MARKS)

- (a) What is a part programme as used in NC? (5 Marks)
- (b) Outline the major parts of the NC procedure. (10 Marks)

QUESTION FOUR – (15 MARKS)

- (a) Describe any six NC words. (3 Marks)
- (b) Using neat sketches describe tape coding and format and how instructions are formed on the tape. (12 Marks)