The Open University of Sri Lanka
Faculty of Engineering Technology

00032

Study Programme	:	Bachelor of Technology (Engineering)
Name of the Examination	:	Final Examination
Course Code and Title	:	**MEX6334 – ADVANCED MANUFACTURING TECHNOLOGY**
Academic Year	:	2013/2014
Date	:	19th August 2014
Time	:	0930 -1230 Hrs
Duration	:	3 hours

General instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of 8 questions. All questions carry equal marks.
3. Answer any 5 questions only.

Question 01

(a) Distinguish between a 'Manufacturing System' and a 'Production System'. Elaborate by taking suitable examples.

(b) Discuss briefly the classifications of Industry in relation to the modern industrial environment.

(c) By using a typical example, explain the major characteristics of a new manufacturing organization.

Question 02

(a) Define the term automation and discuss its evolutionary stages.

(b) Explain the concept of Computer Integrated Manufacturing (CIM) and state reasons for its implementation in the modern manufacturing environment.

(c) Distinguish between 'computer-aided' and 'computer-integrated' in the context of manufacturing.

Question 03

(a) What is Computer Aided Process planning (CAPP)? State the advantages of CAPP systems over the traditional methods in process planning.

(b) Briefly explain the role of Production Activity Control (PAC) in computer integrated manufacturing.

(c) What are the benefits that can be achieved in implementing Group Technology (GT) in a manufacturing organization? Explain how GT help manufacturing organizations create families of parts.

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Question 04

(a) Briefly describe the role of graphics software in CAD systems.

(b) What are the basic 3D modeling techniques available in modern CAD/CAM systems? How would you select an appropriate modeling technique for your organization? Justify your answer.

(a) Explain with suitable examples, how a solid model is generated by using boundary representation.

Question 05

(a) What are the benefits and essential stages of using Finite Element Analysis (FEA) in designing components?

(b) Describe the sequential steps to be carried out in order to manufacture a product in an integrated CAD and CAM system.

(c) Discuss the pros and cons of manual part programming over computer aided part programming.

Question 06

(a) What are the basic components in a CNC/ NC system? Explain the function of each component.

(b) What is a DNC system and how does it differ from a CNC system?

(c) Describe the principle and the purpose of adaptive control (AC). Give some examples of present applications in manufacturing that you think AC can be implemented.

Question 07

(a) Discuss the benefits and applications of Flexible Manufacturing Systems (FMS). Briefly explain types of flexibility that are encountered in manufacturing.

(b) What are the various material handling equipment employed in FMS?

(c) Discuss the importance of automated guided vehicles (AGV) in the modern factory scenario. What are different types of vehicle guidance methods used in AGV systems?

Question 08

(a) What makes an industrial robot different from other forms of automated equipment used in manufacturing industries? Discuss the applicability of industrial robots in the context of CIM.

(b) Explain how you would select an industrial robot for a particular application. Elaborate by taking a suitable example.

(c) Explain the three types of motion used in manipulator path control. Discuss the applicability of each of the motion types mentioned above.

END