The Open University of Sri Lanka

Faculty of Engineering Technology

0047

Study Programme	:	Bachelor of Technology (Honours in Engineering)
Name of the Examination	:	Final Examination
Course Code and Title	:	**MEX6234/MEX6334 – Advanced Manufacturing Technology**
Academic Year	:	2015/2016
Date	:	21 November 2016
Time	:	9:30 – 12:30
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) What are the advantages in viewing manufacturing as a system?

b) Briefly discuss the classification of industry in relation to modern industrial environment.

c) Briefly discuss four economic benefits of utilizing computer integration in manufacturing.

Question 02

a) What are the objectives of Flexible Manufacturing System (FMS)? List three types of flexible manufacturing systems and compare each with respect to flexibility

b) Explain and compare the main types of discrete manufacturing industries found in industrial plants.

c) Distinguish between single-station manned cells and single-station automated cells. Explain reasons why single station manned cells are so widely used in industry?

Question 03

a) Explain why group technology (GT) is important in the context of present day manufacturing industry.

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

c) State the advantages that could be achieved when applying Computer Aided Process Planning (CAPP) over the traditional process planning procedure.

Question 04

a) What are the advantages of using Computer Aided Design (CAD) systems over traditional methods of design?

b) Briefly explain different stages consist in a design process of a CAD system.

c) What are the known types of geometric representation systems used in CAD? Explain their pro's and con's.

Question 05

a) Distinguish between CAD/CAM and CAE. Explain how these systems work together.

b) 'FEA applications have become a vital component in CAD environment'. However, it has some inherent drawbacks when analyzing, especially giving rise to unreliable data out-put. What are the causes for this drawback?

c) Enumerate the disadvantages of manual part programming over the computer assisted part programming.

Question 06

a) Describe the advantages of CNC over NC machine tools and explain clearly the different types of CNC machines based on functions of the machine tool control.

b) State the general characteristics of products to be manufactured using NC machines.

c) What are the potential benefits that can be derived when adaptive control (AC) is appropriately employed in CNC machining?

Question 07

a) What makes an industrial robot different from other forms of automated equipment used in manufacturing industries? Elaborate by taking a suitable example.

b) Explain the basic types of robot configurations, commonly used in manufacturing industries.

c) Explain the technical features that are to be taken into consideration when selecting a robot for a particular application. Elaborate by taking a suitable example.

Question 08

a) Briefly discuss the following;
   i. Applications of FMS
   ii. Role of Automated Guided Vehicles (AVG) associated with FMS
   iii. Methods adopted to group the parts into part families in GT
   iv. Characteristics features of Programmable Automation
   v. Various G and M codes used in part programming

End