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The Open University of Sri Lanka
Faculty of Engineering Technology

Study Programme	:	Bachelor of Technology Honours in Engineering
Name of the Examination	:	Final Examination
Course Code and Title	:	**MEX6234 – Advanced Manufacturing Technology**
Academic Year	:	2016/17
Date	:	November 13, 2017
Time	:	1330 hrs. – 1630 hrs.
Duration	:	3 hours

General instructions

1) Read all instructions carefully before answering the questions
2) This question paper consists of 08 questions. All questions carry equal marks.
3) Answers any 05 questions only.

Question 01.

a) What are the essential components of a manufacturing system?

b) Explain the concept of Computer Integrated Manufacturing (CIM) and discuss three (03) economic benefits of CIM.

c) Define the term 'Computer Aided Engineering'. Discuss its major functional areas with a suitable example.

Question 02.

a) Distinguish between cellular manufacturing and flexible manufacturing.

b) Briefly explain three (03) objectives of Flexible Manufacturing Systems (FMS)?

c) What are the various types of layouts used in FMS. Explain them briefly.

Question 03.

a) What is a single station cell? List three reasons why single station manned cells are widely used in industry.

b) What are the differences between Group Technology and Cellular Manufacturing?

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

Question 04.

a) Briefly explain three (03) functions included within the scope of manufacturing support systems.

b) Describe the purpose of process planning. Explain how computers are used in such planning and advantages of a CAPP system.

c) Distinguish between "hard" and "soft" automation. Elaborate your answer by giving suitable examples.

Question 05.

a) Briefly explain the difference between CAD/CAM and CIM.

b) Describe two (02) commonly used techniques for creating a solid model in relation to CAD.

c) What are the benefits of using finite element analysis (FEA) in designing components?

Question 06.

d) Briefly explain the terms numerical control (NC), computer numerical control (CNC), and direct or distributed numerical control (DNC) systems with regard to computer control of machine tools.

e) Discuss three (03) disadvantages of implementing NC technology in manufacturing industries.

f) Discuss the applicability of Adaptive Control (AC) in relation to material removal process using CNC technology.

Question 07.

a) Briefly explain four (04) general characteristics that should be considered when selecting industrial robot for a material handling system.

b) Briefly discuss basic methods of programming industrial robots.

c) Discuss the role of Automated Guided Vehicles (AGV) in the context of FMS.

Question 08.

a) Briefly explain what is Reverse Engineering with reference to the development of a product.

b) Briefly explain the following;

i) Reasons for development of Rapid prototyping technologies.

ii) Role of Production Activity Control (PAC).

iii) Various G and M codes used in part programming.

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