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	:	**DMX6534 / MEX6234 – Advanced Manufacturing Technology**
Academic Year	:	2019/20
Date	:	October 06, 2020
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) Briefly discuss at least (05) five benefits that can be achieved by utilizing computer integration in manufacturing.

b) Define 'Manufacturing System' and discuss its components with examples.

c) Briefly explain the steps in order involved in designing and manufacturing a product.

Question 02.

a) State why Concurrent Engineering (CE) is more successful in new manufacturing environment.

b) Explain the concept of Computer Integrated Manufacturing (CIM) and reasons for implementing.

c) What are the advantages and disadvantages in implementation of Flexible Manufacturing Systems (FMS)?

Question 03.

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

b) What are the major functions of process planning?

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

Question 04.

a) Briefly explain the major reasons for automating the manufacturing facilities.

b) Briefly discuss the principle of automating a manual process.

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

Question 05.

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

b) Describe the primary difference between a geometry represented by a solid model and a surface model.

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

Question 06.

a) State the general characteristics of products to be manufactured using CNC machines.

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

c) Discuss how to minimize and eliminate the adverse effects by employing Adaptive Control (AC) in the manufacturing process.

Question 07.

a) Why are robots used in industry and what makes an industrial robot different from other types of robots?

b) Briefly discuss basic methods of programming industrial robots.

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

Question 08.

a) Explain the significance of Reverse Engineering in modern manufacturing environment.

b) Briefly explain the following;

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

    ii)   Various material handling equipment used in FMS

    iii)   Industry 4.0