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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	:	**DMX5212 – Computer Aided Design and Manufacturing** **MEX6534 – Advanced Manufacturing Technology**
Academic Year	:	2020/21
Date	:	February 03, 2022
Time	:	0930 hrs. – 1230 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) Define the term 'Manufacturing System' and discuss its components with examples.

b) Briefly explain reasons for implementing computer aided design (CAD) systems.

c) Explain design and manufacturing related tasks performed by modern computers with a block diagram.

Question 02.

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

b) Explain the concept of Computer Integrated Manufacturing (CIM).

c) Enlist various application areas of computer graphics.

Question 03.

a) Enumerate basic geometric commands available in a CAD packages.

b) Briefly explain three (03) basic 3D modeling techniques employed by CAD/CAM systems.

c) Explain with suitable example, how a solid model is generated using constructive solid geometry.

Question 04.

a) Briefly explain why Finite Element Analysis (FEA) has become a vital component in CAD environment.

b) Explain the essential stages of Finite Element Analysis (FEA) in designing components with help of a block diagram.

c) What are the design optimization methods available in modern CAD packages for structural components?

Question 05.

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

b) Briefly explain the term "Rapid Prototyping" and reasons for development of Rapid prototyping technologies.

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

Question 06.

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

b) Briefly explain the term "Design for manufacturing (DFM)".

c) Why are robots used in industry and what makes an industrial robot different from?

Question 07.

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

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

c) What are the important characteristics of computer numerical control (CNC) milling machines?

Question 08.

a) Write a manual part program for the component shown in *Figure 01.*

Work material : mild steel
Speed : 800 r.p.m.
Feed : 200 mm/min
Depth of cut : 5 mm
Assume other data.

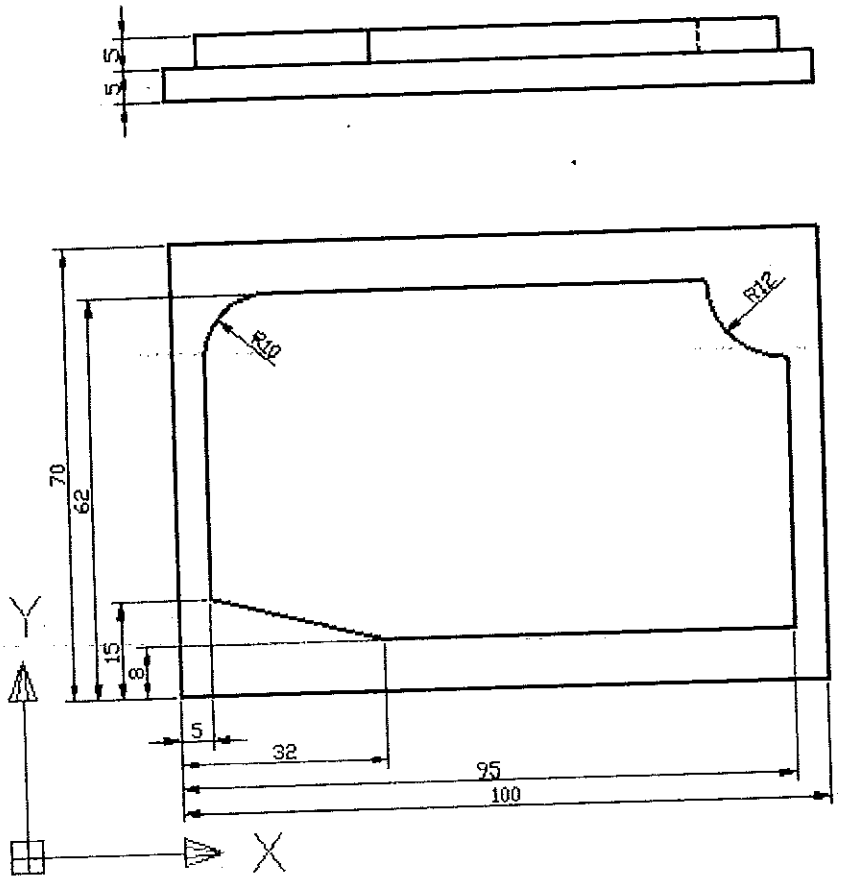

Figure 01