

Study Programme	: Bachelor of Science Honours in Engineering
Name of the Examination	: Final Examination
Course Code and Title	DMX5212 – Computer Aided Design and Manufacturing
Academic Year	: 2023/24
Date	: March 16, 2025
Time	: 13:30 hrs. – 16:30 hrs.
Duration	: 3 hours

General instructions

- 1) Read all instructions carefully before answering the questions
 - 2) This question paper consists of 05 questions. All questions carry equal marks.
 - 3) Answers all questions.
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Question 01.

- a) Define Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM).
- b) Describe how CAD and CAM systems are integrated in modern manufacturing environments.
- c) Briefly explain three (03) functions included within the scope of manufacturing support systems.

Question 02.

- a) Explain the key principles of computer graphics, including raster and vector graphics.
- b) Discuss the differences between 2D and 3D graphics.
- c) Describe how rendering techniques contribute to realism in visual representation.

Question 03

- a) Explain the primary difference between geometry represented by a solid model and a surface model.
- b) Compare and contrast different solid modeling techniques. Explain advantages and limitations of each approach in the design and manufacturing process.
- c) Explain how Computer Aided Engineering (CAE) aids in design validation and analysis. Provide examples of analysis tools within CAD software.

Question 04.

- Discuss design optimization methods available in modern CAD packages for structural components.
- Briefly explain the term "Rapid Prototyping". Discuss the limitations and challenges associated with Rapid prototyping.
- Explain the significance of Reverse Engineering in modern manufacturing environment and provide an example of its application.

Question 05.

- Enumerate the disadvantages of manual part programming over the computer assisted part programming.
- Define the term Computer Numerical Control (CNC) and explain why this technology has gain popularity in modern manufacturing industry.
- Write a manual part program to mill the profile and the slot of the component shown in *Figure 01*.

Work material : 10mm mild steel

Speed : 1000 r.p.m.

Feed : 300 mm/min

Sensibly assume any other data.

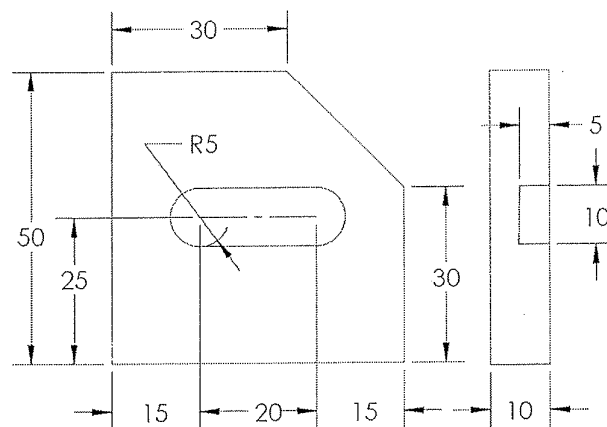


Figure 01

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