



GIET UNIVERSITY, GUNUPUR - 765022
M. Tech (Second Semester) Examinations, May - 2024
MPEMD2032 - Computer Aided Design
(Machine Design)

Time: 3 Hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A**(2 x 10 = 20 Marks)**

Q.1. Answer all questions

CO#	Blooms Level
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- a. Define CAD. Write it's advantages.
- b. Describe the importance of documentation in CAD software development.
- c. Mention the role of CAD in product lifecycle management (PLM).
- d. Explain the difference between 2D and 3D CAD modeling.
- e. Explain the role of arrays in 3D modeling.
- f. Explain the importance of coordinate systems in computer graphics.
- g. Define the term "ray tracing."
- h. Explain the advantages of using NURBS over other surface representations.
- i. Explain the concept of boundary representation (B-rep).
- j. How geometric properties are evaluated in CAD models ?

CO1	K2
CO3	K2
CO3	K2
CO2	K2
CO4	K2
CO4	K2
CO4	K2
CO3	K2
CO3	K2
CO3	K2

PART – B**(10 x 5=50 Marks)**Answer **ANY FIVE** questions

Marks	CO#	Blooms Level
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2. a. Explain the role of CAD in product design and development, citing examples.
- b. Describe the principles of modular programming and how it contributes to software reliability and scalability.
- 3.a. Express the various methods of geometric modeling used in CAD software, such as wireframe, surface, and solid modelling with suitable examples.
- b. Illustrate the process of creating parametric models in CAD software and how they enable design automation.
4. a. Describe the principles of visualization and how it is used to represent data in computer graphics.
- b. Write and briefly explain the importance of layers, grids, and clipping planes in organizing and manipulating graphical elements.
- 5.a. Discuss the advantages and disadvantages of procedural modeling techniques in 3D modeling.
- b. Compare and contrast analytical surfaces and synthetic surfaces, providing examples of each and discussing their respective advantages and limitations.
6. a. How do parameters and constraints contribute to the flexibility and adaptability of parametric models? Explain with suitable example.
- b. Describe the process of creating a three-dimensional sketch in CAD software, including the role of constraints and the challenges associated with sketching

5	CO1	K2
5	CO1	K4
5	CO1	K3
5	CO2	K2
5	CO2	K2
5	CO4	K2
5	CO2	K2
5	CO3	K2
5	CO4	K2
5	CO3	K2

complex shapes.

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| 7.a. | Provide a detailed explanation of boundary representation (B-rep) and its role in CAD/CAM systems. | 5 | CO3 | K2 |
| b. | Analyze different types of feature entities in CAD modelling and their significance in product design. | 5 | CO2 | K2 |
| 8. a. | How do changes in the design affect mass properties, and how are these changes evaluated and analyzed? | 5 | CO4 | K2 |
| b. | Examine the role of product data exchange standards such as STEP and IGES in facilitating interoperability between CAD systems. What are the challenges associated with data exchange between different software packages? | 5 | CO4 | K2 |

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