QP Code: RA22BTECH427 | Reg. No | | | | | | | | | | | AR21/22

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech (Sixth Semester – Regular/Supplementary) Examinations, April 2025

21BMEPE36011/22BMEPE36011 – CAD/CAM

(Mechanical Engineering)

Time: 3 hrs | Maximum: 70 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions		CO #	Blooms Level
a.	Explain the role of problem definition in the design process.	CO1	K1
b.	Describe the use of CAD in modern product design.	CO2	K4
c.	What are the key differences between wireframe and solid modeling in computer graphics?	CO2	K2
d.	Compare raster-scan and vector-scan display technologies used in graphical terminals.	CO2	K5
e.	Define degrees of freedom in a robot.	CO4	K2

PART – B **(15 x 4 = 60 Marks)**

Answer ***all*** the questions		Marks	CO #	Blooms Level
2. a.	Explain the various stages involved in a typical engineering design process with suitable examples. Also explain how CAD will support to each stage.	8	CO1	K2
b.	Describe the components of a design workstation. How do these components contribute to the design process?	7	CO2	K5
	(OR)			
c.	Create a flowchart to illustrate the design process. Explain the role of each stage in the development of a product.	8	CO2	K6
d.	Explain the concept of graphical terminals. How are they used in design applications?	7	CO2	K5
3.a.	Evaluate the benefits of using computer-aided engineering (CAE) in the design process. How does it help in simulating and analyzing product performance?	8	CO4	K5
b.	Explain the importance of creating a manufacturing database. What are the different types of data that need to be included in the database?	7	CO4	K2
	(OR)			
c.	Create a list of different CAD software used in various industries. Compare their features and applications.	8	CO3	K4
d.	Evaluate the benefits of using a database management system (DBMS) in creating a manufacturing database. How does it improve data consistency and integrity?	7	CO3	K5
4.a.	Discuss the significance of data exchange formats in CAD. What are the different data exchange formats?	8	CO4	K3
b.	Describe the process of constructing geometry in a computer graphics environment with examples.	7	CO2	K3
	(OR)			

c.	A company wants to develop a CAD system for designing cars. Describe how they would use constraint-based modeling to ensure that the design meets specific requirements.	8	CO2	K3
d.	Translate triangle XYZ with vertices X(1, 1), Y(2, 1), and Z(1.5, 2) by (1, 0) and then scale it by a factor of 2 in the x-direction and 3 in the y-direction. Find the final coordinates.	7	CO2	K4
5.a.	Explain the concept of Numerical Control (NC) and describe the main components of a basic NC system with a block diagram.	8	CO3	K2
b.	Discuss the integration of machine tools, NC systems, AGVs, and robots in a smart manufacturing environment. How does this support Industry 4.0 goals?	7	CO4	K4
	(OR)			
c.	Discuss the APT (Automatically Programmed Tool) language and explain its structure with an example of a part program.	8	CO3	K2
d.	Describe the various configurations of robots. Which configuration is best suited for industrial welding and why?	7	CO4	K3

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