Total No. of Questions: 20

Enrollment No : _____

MEDICAPS UNIVERSITY

Faculty of Engineering

End Semester Examination May 2025

ME3CO49 Computer Integrated Manufacturing

Programme	:	B.Tech.	**Branch/Specialisation**	:	ME
Duration	:	3 hours	**Maximum Marks**	:	60

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

Section 1 (Answer all question(s))

		Marks	CO	BL
Q1.	What type of information is essential for manufacturing organizations to make production-related decisions?	1	1	1

- ○ Marketing data only
- ○ Financial reports only
- ◉ Production schedules, inventory levels, and demand forecasts
- ○ None of the above

Q2.	Which system helps in integrating data across different departments in a manufacturing organization?	1	1	1

- ◉ Enterprise Resource Planning (ERP)
- ○ Customer Relationship Management (CRM)
- ○ Human Resource Management (HRM)
- ○ None of the above

Q3.	What is the primary goal of Design for Manufacturing (DFM)?	1	2	1

- ○ Increase product complexity
- ◉ Reduce manufacturing costs and improve efficiency
- ○ Increase product weight
- ○ Limit automation in production

Q4.	Which of the following is not a key principle of DFM?	1	2	1

- ○ Reducing the number of parts
- ○ Using standard components
- ○ Using standard material for the components
- ◉ Minimizing assembly difficulties

Q5.	Which NC mode is used for drilling and hole-making operations?	1	3	1

- ◉ Point-to-point (PTP)
- ○ Line contouring
- ○ 2D contouring
- ○ 3D contouring

Q6.	What is the function of a Direct Numerical Control (DNC) system?	1	3	1

- ○ It replaces CNC machines
- ◉ It controls multiple CNC machines from a central computer
- ○ It performs manual machining operations
- ○ It is used only for turning operations

Q7.	What is the primary advantage of batch production over job shop production?	1	4	1

- ○ Higher flexibility for custom products
- ◉ Lower production cost per unit due to economies of scale
- ○ Requires less planning and scheduling
- ○ Eliminates the need for material handling

Q8.	Which of the following is a characteristic of job shop production?	1	4	1

- ○ High volume, low variety production
- ○ Dedicated production lines
- ◉ Functional layout with general-purpose machines
- ○ Continuous and automated production

Q9. What is the primary goal of Rapid Prototyping (RP)? **1 5 1**

- ○ Mass production of parts
- ◉ Quick fabrication of physical models from CAD data
- ○ Manual design validation
- ○ Reducing the need for automation

Q10. Rapid prototyping primarily involves- **1 5 1**

- ○ Subtractive manufacturing
- ◉ Additive manufacturing
- ○ Conventional machining
- ○ Molding and casting

Section 2 (Answer all question(s))

Marks CO BL

Q11. Explain the role of enterprise resource planning in meeting the information needs of manufacturing firms. **4 1 2**

Rubric	Marks
1 mark for each role of ERP	4

Q12. (a) Differentiate between master production scheduling and material requirements planning. **6 1 4**

Rubric	Marks
1 marks for each diffrence	6

(OR)

(b) Draw CIM wheel and explain its major components.

Rubric	Marks
Diagram of CIM wheel	2
Major components	4

Section 3 (Answer all question(s))

Marks CO BL

Q13. What is design for manufacturing? Explain the four key principles of DFM. **4 2 2**

Rubric	Marks
What is Design for Manufacturing?	1
Explain the three key principles of DFM	3

Q14. (a) What are the major challenges in transitioning from conventional product design to a CIM-based approach? **6 2 2**

Rubric	Marks
1 marks for each challenge	6

(OR)

(b) Define computer-aided process planning. Explain its importance in modern production systems.

Rubric	Marks
Define Computer-Aided Process Planning.	2
Explain its importance in modern production system	4

Section 4 (Answer all question(s))

Marks CO BL

Q15. What is a CNC machine? Mention three advantages of CNC over conventional machines. **4 3 2**

Rubric	Marks
What is a CNC Machine?	1
Mention three advantages of CNC over conventional machine.	3

Q16. (a) What is adaptive control in CNC machining? How does it improve machining performance? **6 3 2**

Rubric	Marks
What is adaptive control in CNC machining	2
How does it improve machining performance?	4

(OR)

(b) Explain point-to-point and 2D contouring in NC machining with two examples of each.

Rubric	Marks
Explanation of Point to Point and 2D Contouring	4
Two examples of each	2

Section 5 (Answer all question(s))

Marks CO BL

Q17. What are part families? Why are they important in manufacturing? **4 4 2**

Rubric	Marks
Part Families	2
Importance in manufacturing	2

Q18. (a) What is a flexible manufacturing system? What are the key components? **6 4 2**

Rubric	Marks
Flexible Manufacturing System	2
key components	4

(OR)

(b) Explain the advantages of using robots and automated guided vehicles in material handling in manufacturing.

Rubric	Marks
Advantage of using Robots	3
Advantage of using Automated Guided Vehicle.	3

Section 6 (Answer all question(s))

Marks CO BL

Q19. What is rapid prototyping? Why is it important in modern manufacturing? **4 5 2**

Rubric	Marks
What is Rapid prototyping	2
Importance in modern manufacturing	2

Q20. (a) Explain the stereolithography process with a neat diagram. **6 5 2**

Rubric	Marks
Explain Stereolithography process	4
Neat diagram of the process	2

(OR)

(b) Explain the fused deposition modeling process with a neat diagram.

Rubric	Marks
Explain Fused Deposition Modeling process	4
Neat Diagram of the process	2

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