


VIT

Vellore Institute of Technology

Final Assessment Test – November 2025

Course: BMEE401L - Computer Integrated Manufacturing

Class NBR(s): 2206 / 2207 / 2208 / 2209 / 2218

Slot: A1+TA1

Time: Three Hours

Max. Marks: 100

- KEEPING MOBILE PHONE/ANY ELECTRONIC GADGETS, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
- DON'T WRITE ANYTHING ON THE QUESTION PAPER

COs	CO Statements
CO1	Differentiate the concepts of automation, CIM, CAD, and CAM.
CO2	Develop CNC part programs.
CO3	Interface real-time simulation with intelligent CNC machine tools using Digital Twins.
CO4	Apply CAM software tools for solving real time component machining.
CO5	Analyze the automated flow lines through FMS.
CO6	Visualize the concepts of future automated factory environments to digital transformation

BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)

 Answer ALL Questions

(10 X 10 = 100 Marks)

1. Suggest how you would select the right level of automation for a small-scale forging industry? Explain implementation of automation. CO1 BL3
 2. Critically evaluate the effectiveness of PLM in reducing product development cycle time. CO1 BL5
 3. Discuss benefits and limitations of multitasking CNC machines in aerospace component manufacturing. CO2 BL1
 4. Apply the axis designation rules to a 5-axis vertical milling machine and explain tool motion. CO2 BL3
 5. Develop a CAM strategy for machining a 3D turbine blade with freeform surfaces. CO3 BL2
 6. Critically describe the role of machine learning in achieving autonomous CNC machining. CO3 BL5
 7. Describe how digital twins can enhance real-time monitoring in smart factories? CO4 BL1
 8. Compare retrieval and generative CAPP systems in terms of flexibility and scalability. CO5 BL4
 - 9.a) Evaluate the impact of implementing FMS in a medium-sized manufacturing industry. CO5 BL5
- OR**
- 9.b) Analyze the role of automated material handling systems in the performance of FMS. CO5 BL5
 - 10.a) Design a conceptual cyber-physical smart factory integrating IoT, AI, and blockchain for manufacturing/ fabricating car door assembly. CO6 BL6
- OR**
- 10.b) Analyze the challenges of adopting Industry 4.0 technologies in small-scale industries. CO6 BL6