

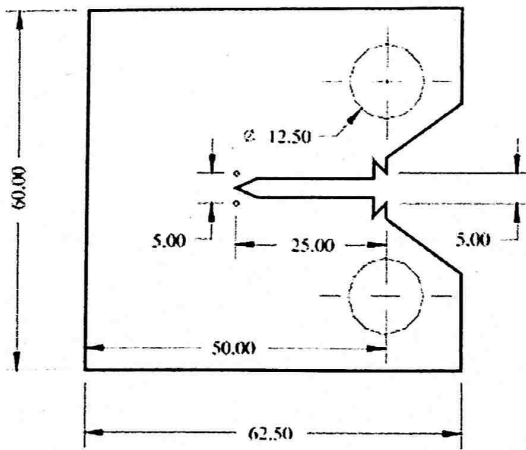
**VIT**Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.:

SCHOOL OF MECHANICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2025-2026

Programme Name & Branch : B.Tech & Mechanical
Course Code and Course Name : BMEE401L & Computer Integrated Manufacturing
Slot(s) : A1
Faculty Name(s) : Prof. Raja K, Prof. Oyyaravelu R, Prof. Deepa A,
Prof. Venkatesan S, Prof. Muralidharan B
Class Number(s) : VL2025260102218, 2209, 2206, 2207, 2208
Date of Examination : 5th October 2025
Exam Duration : 90 minutes **Maximum Marks: 50**

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes
 1. Differentiate the concepts of automation, CIM, CAD, and CAM.
 2. Develop CNC part programs.
 3. Interface real-time simulation with intelligent CNC machine tools using Digital Twins.
 4. Apply CAM software tools for solving real time component machining.
 5. Analyze the automated flow lines through FMS.
 6. Visualize the concepts of future automated factory environments to digital transformation

Q. No	Question	M	CO	BL
1.	Generate the CNC part program using suitable programming method for the component as shown in Fig. 1 (all dimensions are in mm) with cutter compensation and assume the cutter diameter suitable for the profile.  Fig. 1	10	2	3
2.	Imagine a fully autonomous CNC machining center integrated with AI and Digital Twins. Explain how real-time monitoring can predict tool failure before it occurs. Propose a framework where machine learning algorithms adaptively update machining parameters to sustain product quality.	10	3	4
3.	Compare and contrast Retrieval CAPP systems and Generative CAPP systems. Suppose a company is manufacturing custom aerospace components with frequent design changes - which approach would you recommend and why? Support your answer with a process flow example.	10	3	3



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4.	Industry is moving toward STEP-compliant systems (STEP-NC, ISO14649). Critically assess how integrating CAD, CAPP, CAM, and CNC under this framework can reduce errors and improve shop-floor control. Illustrate with a case example.	10	1	4
5.	A company producing automotive parts wants to adopt FMS. As a manufacturing engineer, design a strategy for classifying parts into families using Group Technology principles.	10	5	2
