



VIT
Vellore Institute of Technology
(Autonomous Institute of Engineering & Technology)

SLOT: D1+TD1

REG.NO.:

SCHOOL OF MECHANICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST (CAT) - I
WINTER SEMESTER 2025-2026

Programme Name & Branch : B.Tech-Mechanical Engineering B.Tech-Mechanical Engineering (Electric Vehicles), B.Tech-Mechanical Engineering (Smart Manufacturing)

Course Code : BAMEE205

Course Name : Engineering Innovation and Modelling

Faculty Name(s) : Dr. K. VENKATESAN, Dr. A VINOTH JEBARAJ, Dr. BIKASH ROUTH, Dr. SHARAN CHANDRAN M, Dr. SUYA PREM ANAND P

Class Number(s) : VL2025260502836, VL2025260502825, VL2025260502834, VL2025260502832, VL2025260502849

Date of Examination : 30/1/2026

Exam Duration : 90 minutes

Maximum Marks: 50

General Instruction(s):

- Answer **all**
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes Statements:
 - CO. 1: Practice engineering drawing standards and CAD tools to model mechanical components.
 - CO. 2: Assign appropriate dimensions and tolerances to ensure proper fit in assembly

Q. No	Question	M	CO	BL
1.	a) Explain the difference between the Single-start or multiple-start thread with neat sketch. And also compare the threads with respect to axial movement. [5 marks]. b) Distinguish the following with neat sketch: (a) metric and BSW threads, (b) left hand and right hand threads. [5 marks].	10	1	2
2.	a) List different types of mechanical springs and explain their nomenclature [5 marks] b) Sketch the following types of keys in two orthographic views, (a) hollow saddle key, (b) flat saddle key, (c) taper sunk key, (d) single headed feather key, and (e) woodruff key. [5 marks]	10	1	2
3.	Compute the limit dimensions for an interference fit on the hole basis system, for a basic size of 20 mm diameter with an maximum interference of 0.100 mm, tolerance on hole 0.25 mm, tolerance on the shaft 0.050mm. Schematically represent the type of fit with all dimensions (without scale).	10	2	2
4.	Explain the meaning of the geometrical tolerances for the component as shown in Figure1.	10	2	2



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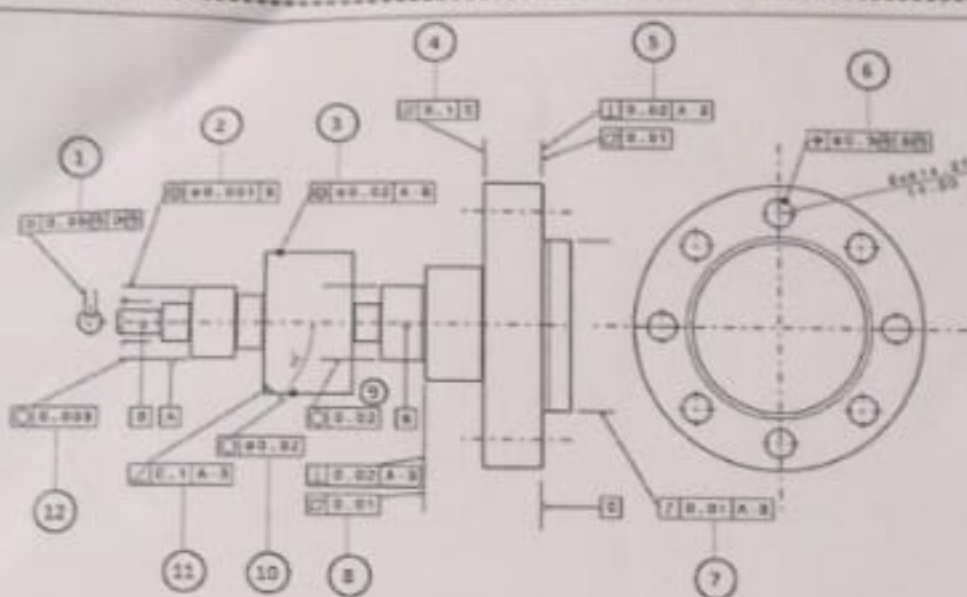


Figure 1

5.	a) Differentiate between hole basis system and shaft basis system with suitable sketch [5 marks] b) Explain and draw the schematic representation of the clearance fit and Transition fit [5 marks]	10	2	2
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