



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

REG. NO.:

**SCHOOL OF ADVANCED SCIENCES
CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2025-2026**

SLOT: E2+TE2

Programme Name & Branch : **B. Tech. and SELECT**
Course Name and Course Code : **Chemistry for Electrical and Electronics Engineering, BACHY106**
Faculty Name(s) : **Dr. Akella S and Dr. Barnali Maiti**
Class Number(s) : **VL2025260504703; VL2025260505620**
Date of Examination : **20/3/2026 (9.30 AM-11.00AM)**
Exam Duration : **90 minutes** Maximum Marks: **50**

General instruction(s):

- 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:
CO-2: Apply the concepts of thermodynamics, chemical kinetics, diffraction and microscopic techniques.
CO-3: Explain the concepts of functional materials and deposition techniques.
CO-4: Apply electrochemical approaches in sensors and energy storage devices.

QN	Question	M	CO	BL
1.	"Achieving 100% efficiency in a heat engine is considered practically impossible" Justify. What would be the fate of a Carnot engine in a universe that has reached thermodynamic heat death?	10	CO-2	BL3
2.	Compare the functioning, efficiency, advantages and limitations of homogeneous, heterogeneous and biocatalysts. According to you, which of them display high product selectivity?	10	CO-2	BL3
3.	(a) An ideal gas (7 moles) expands isothermally and reversibly at 300 K from 5 L to 25 L. Find: (i) Work done (ii) Heat absorbed (iii) Change in internal energy.	5	CO-2	BL3
	(b) If 5.0 g of substance 'A' decomposes for 46 minutes the mass of unreacted 'A' remaining is found to be 0.675 g. What is the half-life of this reaction if it follows first-order kinetics?	5	CO-2	BL3
4.	You are asked to deposit a uniform TiN coating inside a deep trench structure for microelectronics. Which technique method would you select and why? Discuss the methods in details.	10	CO-3	BL2
5.	Suggest the working mechanism of an energy device for power generation without rechargeability that has wide application in space vehicles and explain its "pros and cons". How is this different from the conventional energy devices?	10	CO-4	BL3