



# VIT\*

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

REG.NO.: 240450194

SCHOOL OF ELECTRONICS ENGINEERING  
CONTINUOUS ASSESSMENT TEST - I  
WINTER SEMESTER 2025-2026

SLOT: C2+TC2

**Programme Name & Branch** : B.Tech ECE  
**Course Code and Course Name** : BECE204L- Microprocessors and Microcontrollers  
**Faculty Name(s)** : Dr. Padmini, Dr. Prakash, Dr. Boopalan, Dr. Gopinath, Dr. Goutham, Dr. Mythili, Dr. Nisha  
**Class Number(s)** : VL2025260500878/0880/0886/0884/0882/0875/6665  
**Date of Examination** : 29-01-2026  
**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

CO1 Describe the different generations of microprocessors.

CO3 Apply 8051 microcontroller instructions to write assembly language programs.

CO4 Demonstrate the functionality and interfacing of 8051 peripherals.

Q. No	Question	M	CO	BL
1.	(a) What are the main components of a microprocessor? Explain with suitable diagram. (b) Describe the functions of the address bus, data bus, and control bus in a microprocessor-based system. For each bus, indicate the direction of information flow and justify the need for such directionality in a typical system architecture.	10	1	2
2.	(a) Indicate the addressing modes for the following 8051 instructions (i) MOV A, 25H (ii) MOVC A, @A+PC (iii) MOV 38H, #20H (iv) INC A (v) ADD A, @R0 (b) Identify if the following 8051 instruction have any error, if so give the correct instructions (i) MOV A, #123 (ii) DIV A,B (iii) MOV C,05H (iv) MOV A,@R2 (v) ADD R0,A	10	3	2
3.	Write an 8051 assembly language program to copy 10 numbers from ROM starting at 300H to RAM starting at 40H. Before copying each number in RAM, increment the value by 1 if it is odd; leave it unchanged if it is even. Assume the data stored in ROM location at 300H as follows,  3EH, 4AH, 9BH, 47H, 82H, B5H, A2H, 7EH, 54H, 69H.  (Programs should be written with comments).	10	3	3



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4.	<p>Interpret the following 8051 assembly program and specify the data in the RAM as given in the table below. What is the value stored in register A, stack pointer [SP] and the status of flags after execution of the program.</p> <p><b>ORG 000H</b></p> <table border="1"> <thead> <tr> <th>Address(H)</th> <th>Data(H)</th> </tr> </thead> <tbody> <tr><td>43</td><td></td></tr> <tr><td>42</td><td></td></tr> <tr><td>41</td><td></td></tr> <tr><td>40</td><td></td></tr> <tr><td>10</td><td></td></tr> <tr><td>0F</td><td></td></tr> <tr><td>0E</td><td></td></tr> <tr><td>0D</td><td></td></tr> <tr><td>05</td><td></td></tr> <tr><td>04</td><td></td></tr> <tr><td>03</td><td></td></tr> <tr><td>02</td><td></td></tr> <tr><td>01</td><td></td></tr> </tbody> </table> <p><b>MOV SP, #40H</b></p> <p><b>MOV R5, #0F3H</b></p> <p><b>MOV R3, #0DEH</b></p> <p><b>MOV R2, #0FFH</b></p> <p><b>PUSH 02</b></p> <p><b>PUSH 03</b></p> <p><b>PUSH 05</b></p> <p><b>ADD A,05H</b></p> <p><b>ADD A,03H</b></p> <p><b>POP 0DH</b></p> <p><b>POP 0FH</b></p> <p><b>POP 10H</b></p> <p><b>Q1:SJMP Q1</b></p> <p><b>END</b></p>	Address(H)	Data(H)	43		42		41		40		10		0F		0E		0D		05		04		03		02		01		10	3	2
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5.	<p>Develop an 8051 assembly language program to monitor the pin P1.0 connected to switch. If the switch is closed (logic HIGH), generate a square wave of frequency 1 KHz in pin P2.0 otherwise generate a square wave of frequency 2 KHz in pin P2.1. Use Timer 1 in 8051 for time delay operation. (Programs should be written with comments).</p>	10	4	3																												

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