



VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of U.P.A. Act 1956)

REG.NO.:

**SCHOOL OF ELECTRONICS ENGINEERING
CONTINUOUS ASSESSMENT TEST - 2
WINTER SEMESTER 2025-2026**

SLOT: C1+TC1

Programme Name & Branch : B.TECH CSE
Course Code and Course Name : BECE204L- MICROPROCESSORS & MICRCONTROLLERS
Faculty Name(s) : DR. NAUSHAD MANZOOR LASKAR (COURSE COORDINATOR)
Class Number(s) : VL2025260501053/1014/1018/1022/1055/1024/1020/
 1035/1057/1039/1028/1059/1043/1030/1046/1061/1064/1033/1068/1070/1072/1066/
 1074/1076/1049/1078
Date of Examination : 17/3/2026
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 (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)
- CO4: Demonstrate the functionality and interfacing of peripherals.

Q. No	Question	M	CO	BL
1.	<p>In a smart home LED controller using an 8051 microcontroller with XTAL frequency 11.0592 MHz, pin P1.2 is connected to a wall switch (SW). Monitor the SW continuously and develop an Assembly Language Program (ALP) to perform the following tasks:</p> <ul style="list-style-type: none"> • If SW = 0, Timer 1 operating in Mode 1 should be used to generate a 50% duty cycle square wave with a 10 ms period on the LED connected to pin P0.3. • If SW = 1, Timer 0 should be configured in Mode 2 to count the clock pulses applied at the T0 pin, and the count should be sent to Port 2, where 8-LEDs are connected. 	10	4	3
2.	<p>In a real-time embedded system, two switches are connected to the MSB and LSB of Port 1 of an 8051 microcontroller. Analyze the input combinations and develop an Assembly Language Program (ALP) that continuously monitors these pins and performs the required operations as follows:</p> <ul style="list-style-type: none"> • When MSB = 1 and LSB = 1, continuously transmit the character "CSE" a baud rate of 9600. • When MSB = 0 and LSB = 0, continuously receive the character "VIT" at a baud rate of 1200. <p>Given XTAL = 11.0592 MHz, SMOD=1, 8-bit data, and 1 stop bit.</p>	10	4	4
3.	<p>In a real-time embedded alert system, a pulse generator is connected to P3.2 and a switch is connected to P3.3 of the 8051 microcontroller, which remains normally high. A buzzer is interfaced with P1.1 to provide an audible alert, while an LED is connected to P2.2 to provide a visual indication. Analyze and design an 8051 Assembly Language Program (ALP) to accomplish the following operations: when a falling edge signal is detected at P3.2, the buzzer connected to P1.1 should be activated for 10 msec. Additionally, if the switch connected to P3.3 becomes low, the system should generate a 50 Hz square wave on P1.2 to turn the LED ON and OFF periodically. The program must ensure that the LED indication is triggered first, followed by the buzzer operation. Assume a crystal frequency of 12 MHz and clearly justify the interrupt configuration, timer calculations, and priority settings.</p>	10	4	4



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4.	In a smart air conditioning control system using an 8051 microcontroller, Port 2 is connected to a common cathode 7-segment display. Design an 8051 Assembly Language Program (ALP) to display the status "COOLING" sequentially on the 7-segment display to indicate cooling operation. Each character should be displayed for 1 second before moving to the next character, and the sequence must repeat continuously in real time. Assume XTAL = 11.0592 MHz and use Timer 0 in Mode 1 to generate the delay.	10	4	3
5.	In the Riviera 2026 technical festival organized by VIT Vellore, participant event badges use AT89C51 microcontrollers with 16x2 LCD (data lines port P1, control lines port P2) to display the event string "RIVIERA" in reverse order starting from 2 nd row, last position as an interactive icebreaker animation during registration check-in. The program should display each character for a fraction of delay before the next number is displayed to engage students while verifying badge functionality.	10	4	3
