



Continuous Assessment Test (CAT) – II - OCTOBER 2025

Programme	: B.Tech(ECE,ECM) & B.Tech (EE-VLSI)	Semester	: FS2025-26
Course Code & Course Title	: BECE204L, Microprocessors and Microcontrollers	Class Number	: CH2025260100476 CH2025260100478 CH2025260100480 CH2025260100482
Faculty	: Dr. Muthulakshmi S Dr. Gugapriya G Dr. Abraham Sudharson Ponraj Dr. Chanthini Baskar	Slot	: D1+TD1
Duration	: 90 Minutes	Max. Mark	: 50 Marks

General Instructions:

- Write only your registration number on the question paper in the box provided and do not write other information
- Only non-programmable calculator without storage is permitted

Answer all questions

Q. No	Sub Sec.	Description	Marks	CO	Level																								
1		<p>The contents of different registers are given below. For the given instructions, obtain the physical address and specify the addressing mode of each instruction. [4x2.5marks]</p> <p>AX=1000H, BX=2F00H, SI=6000H, DI=4000H, BP=5000H, SP=2000H, CS=0000H, DS=1000H, SS=3000H, IP=7000H</p> <p>i.) MOV AX, 5000[BX] ii.) MOV AX, 500[BX+80h] [SI] iii.) MOV AX, 50[BP] [SI+08h] iv.) MOV AX, [SI+98h]</p>	[10]	2	K2																								
2		<p>Ravi invited his friends to a restaurant to celebrate his birthday and they ordered food items as shown in Table 1. Help Ravi to calculate the expected total expenditure through 8086 assembly language program for this party.</p> <p style="text-align: center;">Table .1</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Sl No</th> <th>Items</th> <th>Quantity</th> <th>Price per unit(INR)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Chicken-65</td> <td>5</td> <td>45</td> </tr> <tr> <td>2</td> <td>Biryani</td> <td>4</td> <td>80</td> </tr> <tr> <td>3</td> <td>Ice cream</td> <td>4</td> <td>65</td> </tr> <tr> <td>4</td> <td>Mutton Curry</td> <td>2</td> <td>75</td> </tr> <tr> <td>5</td> <td>Meals</td> <td>1</td> <td>50</td> </tr> </tbody> </table>	Sl No	Items	Quantity	Price per unit(INR)	1	Chicken-65	5	45	2	Biryani	4	80	3	Ice cream	4	65	4	Mutton Curry	2	75	5	Meals	1	50	[10]	2	K1
Sl No	Items	Quantity	Price per unit(INR)																										
1	Chicken-65	5	45																										
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		Assume all the values mentioned here are in hexadecimal. Store the Quantity in the offset location 2000H and Price per unit in the offset location 3000H. Use appropriate assembler directives.			
3		Consider 8 LEDs are interfaced with 8086 using 8255 in BSR mode. Write an 8086 assembly language program to produce a running display (one LED at a time from right to left). Assume the base address of 8255 is 8080h.	[10]	2	K3
4		Design an 8051-based bus ticketing system with the following hardware and functionality: Hardware setup: <ul style="list-style-type: none"> • 2×2 matrix keypad: rows → P1.0, P1.1; columns → P0.0, P0.1. • Character LCD: data lines D0–D7 → P2; RS → P3.7; R/W → P3.6; E → P3.5. Operation: <ul style="list-style-type: none"> • Key mapping: <ul style="list-style-type: none"> ○ Key 1 → Route 1 — Fare: Rs 50 ○ Key 2 → Route 2 — Fare: Rs 30 ○ Key 3 → Route 3 — Fare: Rs 25 ○ Key 4 → Route 4 — Fare: Rs 40 • When a key (1–4) on the keypad is pressed the system displays the selected route on the first line of the LCD and the corresponding fare on the second line. Produce a clear interfacing diagram showing the 8051 MCU connections to the 2×2 keypad and the character LCD. Indicate the port pins used. (5 marks)	[5]	4	K4
5		Use the same configuration of Question 4 and write a complete 8051 Assembly Language Program (ALP) that: <ol style="list-style-type: none"> 1. Scans the 2×2 keypad and detects single key presses (with debounce and key-release handling). 2. Maps each key (1–4) to the correct route and fare strings. 3. Displays the route on LCD line 1 and the fare on LCD line 2. 	[15]	4	K4

*****All the best *****

Faculty Signature