



	InSem Examination-II Summer 2024		
	Exam Seat No.:		
	Academic Year: 2023-2024	Semester: IV	
	Name of Programme: S.Y. B.Tech (Electrical Engineering)	Pattern: 2022	
	Name of Course: Microcontroller and Embedded Systems	Course Code: ELE222012	
	Max. Marks: 30	Duration: 1 hr	
	Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use. 1. This question paper contains 2 page(s). 2. Answer to each new question is to be started on a new page. 3. Assume suitable data wherever required, but justify it. 4. Draw the neat labelled diagrams, wherever necessary. 5. The last column indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.		

Question No. 1 Attempt following Question

- a) With the neat diagram, explain the pin diagram of 8051. (7) CO1

OR

- b) With the neat diagram, demonstrate the role of different bits of timer control (TCON) SFR of 8051. (7) CO1

- c) With the neat diagram, explain the structure of external architecture of the microcontroller 8051. (8) CO1

OR

- d) With the neat diagram, demonstrate the role of different bits of timer mode (TMOD) SFR of 8051. (8) CO1

Question No. 2 Attempt following Question

- a) Justify the output of the given program while interpreting the content of A register for different steps. (7) CO2

MOV A, #27H

MOV R0, #03H

MOV R1, #15H

MOV B, R0

MUL AB

ADD A,R1
SWAP A
MOV R2,A
MOV R3,B

OR

- b) Justify the output of the given program while interpreting the content of stack and A register for different steps when stack pointer was initially at 40H. (7) CO2

MOV R0, #05H
MOV R1, #5CH
PUSH 00
PUSH 01
MOV A, R0
SWAP A
MOV R2, A
POP 05
PUSH 02
ADD A,R1
POP 07

- c) Sketch the assembly level program (ALP) to generate a square wave of 10 kHz frequency on pin 2.3 when the oscillator frequency will be 12 MHz and the timer 1 is to be operated in mode 1 (8) CO2

OR

- d) Sketch the assembly level program (ALP) to determine the simple interest where the principal (P), annual rate of interest (R) and time (T) (in years) are stored in 6000H, 6001H and 6002H respectively and store the result in 6005H. Interpret the output where P = 100, R = 10 and T = 4 are given in decimals. (8) CO2

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