Name: Enrolment No:	UPES UNIVERSITY OF TOMORROW

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

Course: Microprocessor and Embedded system	Semester: V
Program: B.Tech-CSE-All branches	Time: 03 hrs.
Course Code: ECEG 3052	Max. Marks: 100

Instructions: Explain in short. (60-70 words)

<table>
<tr><td colspan="4" align="center">SECTION A
(5Qx4M=20Marks)</td></tr>
<tr><td>S. No.</td><td></td><td>Marks</td><td>CO</td></tr>
<tr><td>Q 1</td><td>List various type of memory subsystem. Write the role of the flag registers in 8085 microprocessor/8051 microcontroller with examples.</td><td>4</td><td>CO1</td></tr>
<tr><td>Q 2</td><td>Define Embedded System. Discuss the challenges and future trends in embedded system.</td><td>4</td><td>CO2</td></tr>
<tr><td>Q 3</td><td>What are the different states of the task? Draw the state transition diagram of task.</td><td>4</td><td>CO3</td></tr>
<tr><td>Q 4</td><td>Interface the 8051 microcontrollers with 7 segment display device and write the assembly/embedded 'C' code to display the numbers 0 to 9.</td><td>4</td><td>CO1</td></tr>
<tr><td>Q 5</td><td>What is the role of decoder (3x8) in digital and microprocessor applications? Explain its functionality with suitable logic diagram and truth table.</td><td>4</td><td>CO4</td></tr>
<tr><td colspan="4" align="center">SECTION B
(4Qx10M= 40 Marks)</td></tr>
<tr><td colspan="4">Instruction: Write brief notes. (100-150 words)</td></tr>
<tr><td>Q 6</td><td>Investigate the working of common bus system in 8085. Justify your answer with proper example and state the truth table of Control Lines</td><td>10</td><td>CO1</td></tr>
<tr><td>Q 7</td><td>Write an assembly language code for adding element into link list.
OR
Interface the 8051 microcontroller to 8 LEDs and write the Embedded 'C' code to support the functionality of the system.</td><td>10</td><td>CO4</td></tr>
<tr><td>Q 8</td><td>Deliberate the different scheduling techniques used for kernel interaction.</td><td>10</td><td>CO2</td></tr>
<tr><td>Q 9</td><td>Design the JK Flip-flop using logic gates. Devise the with truth table, characteristic table and excitation equation of the same and deduce the Boolean expression of the Q and Q(bar)
OR
Design the Mode-12 Up synchronous Counter using any flip flop. Design the simplified Boolean expression of the same.</td><td>10</td><td>CO3</td></tr>
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		SECTION-C (2Q x 20M = 40 Marks) **Instruction: Write long answer. (Up to 350 words while explaining).** **Attempt any part of question no. 10 as there is an option "a" OR "b".** **There is no choice for question no.11.**		
Q 10	(a)	What is the significance of T-state, Machine cycle and instruction cycle for 8085 microprocessor? Draw the timing diagram of MVI, 35H instruction for 8085 microprocessor and detail its functionality **OR** (b) Draw the machine cycle for 8085 for opcode fetch, memory read, memory write, I/O read, I/O write independently and write the truth table to support the timing diagram.	20	CO1
Q 11		Interface the 8051 microcontrollers with LCD (16 x 2). Detail the operation and Write the embedded 'C' / Assembly program to display "**I LOVE UPES**".	20	CO4