

<b>Name:</b>	 <b>UPES</b> UNIVERSITY WITH A PURPOSE
<b>Enrolment No:</b>	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, Dec 2021**

<b>Course: Embedded System</b> <b>Program: B.Tech Aerospace Engineering (Avionics)</b> <b>Course Code: ECEG-3039</b> <b>Instructions:</b>	<b>Semester: V</b> <b>Time: 03 hrs.</b> <b>Max. Marks: 100</b>
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1. All questions are compulsory in Section A and B.
2. Attempt any two question in section C

**SECTION A (5\*4)**  
**All questions are compulsory in Section A**

S. No.	Question	Marks	CO
Q 1	Draw the pin diagram of 8051 microcontroller.	4	CO1
Q 2	Explain the role of DMA controller in 8085 microprocessor.	4	CO2
Q 3	Explain the term addressing mode. Also, write down the various addressing modes of 8051 with examples?	4	CO2
Q 4	Convert the following. (i) $(7.FD6)_{16} = (?)_8$ (ii) $(10010)_2 = (?)_8$ (iii) $(10AF)_{16} = (?)_2$ (iv) $(1234)_{10} = (?)_{16}$	4	CO1
Q 5	What do you understand by RISC and CISC?	4	CO3

**SECTION B (4\*10)**  
**Choice in Question 9**

Q 6	Draw the interfacing circuit of seven segment display unit with 8051 microcontroller. Also, write down a program for the same using embedded C/Assembly language.	10	CO2
Q 7	Define embedded system and describe their classifications. Also, discuss the future trends in embedded system.	10	CO2
Q 8	Write down a AVR program for the following: a. Create a square wave of 50% duty cycle on bit 0 of Port C. b. Create a square wave of 66% duty cycle on bit 3 of Port C.	10	CO4
Q 9	Explain branch instructions and loop instruction of AVR-Atmega16 with example. <p style="text-align: center;">OR</p> Explain branch instructions and loop instruction of 8051 microcontroller with examples.	10	CO3

**SECTION-C (2\*20)**  
**Attempt any two questions**

Q 10	a) What do you understand by “serializing data”. Also, write down a program to transfer the value 41H serially via pin PB1. Put one high at the start and end of the data. Send LSB first.	10+10	CO4
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	b) Draw and explain the importance of flag register of 8085 microprocessor with example.		
Q 11	Highlight the importance of CGRAM, DDRAM memories while interfacing LCD with 8051. Also comment on the usage and working of RS and E pin of LCD. Interface the LCD to 8051 microcontroller and write the program to display on 16 x 2 LCD “I LOVE UPES”	<b>20</b>	<b>CO3</b>
Q12	<ul style="list-style-type: none"> <li>a. List down the necessary steps for ADC programming using polling.</li> <li>b. Write down the program in assembly language to get data from channel 0 (ADC0) of ADC and displays the result on Port C and D.</li> <li>c. Draw the ADC connection diagram for the above program.</li> </ul>	<b>5+10+5</b>	<b>CO3</b>