Name:
Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2019
SET-1

Course: Advanced Microcontroller for Auto Systems **Semester: VII**
Program: B. Tech ADE **Time 03 hrs.**
Course Code: ADEG434 **Max. Marks: 100**
Instructions:

SECTION A

S.No.	Answer All the questions	Marks	CO
1	Enlist the general and special purpose registers in ATmega8 AVR controller	5	CO3
2	Define embedded systems. Name the different types of embedded systems with examples.	5	CO1
3	In microcontrollers, explain the working and importance of pull-up and pull-down resistors.	5	CO2
4	Enlist the dual functions of PORTD of ATmega8 microcontroller	5	CO1

SECTION B

S.No	Answer all the questions	Marks	CO
5	Briefly explain the important features of LPC2148 ARM7 microcontroller.	10	CO2
6	With a neat sketch briefly explain a typical hardware/software co-design process used in embedded systems and enlist its main advantages	10	CO1
7	Interface 7-segment display using PORT0 of ARM7 controller to display a count of 0 to 9. After 9, the count should reset to 0 and repeat infinitely. Considering common cathode, write the C code and algorithm.	10	CO3
8	Write a C code to interface DC motor to rotate it in clockwise and counter clockwise direction with AVR microcontroller using L293D. Draw a neat sketch of the complete set-up.	10	CO4

SECTION-C

S.No	Question 9 is compulsory. Internal choice in question number 10	Marks	CO
9	In the design of embedded systems with AVR microcontroller, enlist the different clock options available and briefly explain each one.	20	CO3
10	Design a notice board system using ARM7 and 16x2 LCD. Display the characters "ADE" in the first row line 4 and "UPES" in second row and line 5. Display of first row should shift to towards left and display of second row should shift towards right continuously. Write the complete C code and its algorithm. Mention the importance of RS and E pins of LCD. **OR**	20	CO4

	In designing embedded systems with LPC2148 controller, mentioned the important blocks to be considered from its architecture. Draw the complete block diagram of the architecture and mention the function of each block.		