Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020

Course: Microcontroller and embedded system……. **Semester: 6th**
Program: B.Tech electronics and communication engineering **Time 03 hrs.**

Course Code: ECEG 3006 **Max. Marks: 100**

Instructions:

1. **Attempt all the questions (Theory, Numerical, Case study etc.) on A4 size blank sheets.**
2. **Attempt all questions serially as per question paper.**
3. **Answer should be neat and clean. Draw a free hand sketch for circuits/tables/schematics wherever required.**
4. **Scan the whole answer script and check the resolution carefully before upload on the blackboard. Note that answer scripts will be considered for evaluation only through Blackboard. No other mode of submission is acceptable.**
5. **You are expected to be honest about each attempt which you make to progress in life**

SECTION A [Case Based Study/design] 40 Marks

S. No.		Marks	CO
Q 1	Design a circuit for driving a stepper motor with a motor driver. Interface with atmega microcontroller to run the stepper motor	20	CO3/CO4
Q 2	Design a +5 V power supply. Take a LCD of your choice . interface with atmega microcontoller for graphic message display. Draw the detailed circuit diagram	20	CO 3/CO4
SECTION B [Numerical and Short/broad Answers] 60 Marks			
Q 4	Describe with the help of block diagram the internal architecture of an ARM 7 processor	10	CO4
Q5	In RTOS, define a task and along with its state diagram mention the different states of task and explain the task switching.	10	CO3
Q 6	Define embedded systems. With practical example from day to day life for each, list and explain the different types of embedded systems.	10	CO 3

NOTE : The submission time of the Question Paper Answer Sheet is 24 Hhrs from the scheduled time (*exceptional provision due to extraordinary circumstance due to COVID-19 and due to internet connectivity issues in the far-flung areas*).
No Submission will be entertained after 24 Hrs

Q 7	A door sensor is connected to bit 1 of port B of Atmega microcontroller, and an LED is connected to bit 7 of port C of the Atmega. Write an AVR C program to monitor the door sensor and, when it opens, turn on the LED	**10**	**CO4**
Q 8	The data pins of an LCD are connected to port B of Atmega. The information is latched into the LCD whenever its enable pin goes from high to low. The enable pin is connected to pin 5 of port C of atmega . write a C program to send "the earth is but one country" to this LCD	**10**	**CO2**
Q 9	Draw the block diagram of an AVR microcontroller and explain its operation. Show the status of the C,H, and Z flags after the addition of 0x38 and 0x2F	**10**	**CO 1/CO2**

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No Submission will be entertained after 24 Hrs