Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

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

Course: Microcontroller and Embedded system **Semester: V**
Program: B. Tech ECE **Time 03 hrs.**
Course Code: ECEG 3006 **Max. Marks: 100**

Instructions: Answer all the questions.
Diagrams must be neat and clean.

SECTION A

Each Question will carry 5 Marks
Instruction: Complete the statement / Select the correct answer(s)/write a few words

S. No		CO
Q 1	What is the advantage in using .EQU, ,ORG and .INCLUDE assembler directives?	CO1
Q 2	Write a program to a) load the PORTB register of atmega with the value ox55 and b) complement PORT B 700 times	CO1
Q 3	Write a program using Atmega to create a square wave of 50 percent duty cycle on bit 0 of port C	CO2
Q 4	LEDs are connected to pins of port B of atmega. Write an AVR C program that shows the count from 0 to FFh on the LEDs	CO2
Q5	An AVR is connected to the 8 MHz crystal oscillator. Calculate the ADC frequency for a) ADPS2:0=001 b) ADPS2:0=100	CO2
Q6	Describe the basic operation of an electromechanical relay.	CO3

SECTION B

Each question will carry 10 marks
Instruction: Write short / brief notes

Q 1	Explain with the help of a block diagram the operation of an embedded system	CO3
Q 2	Classify the embedded systems. Explain in brief about each one of them	CO3
Q 3	Explain with the help of a block diagram the architecture of an Real time operating systems	CO3

Q 4	What do you mean by tasks , process and thtreads with respect to real time operating systems ? Explain in brief	**CO4**
Q 5	Explain the register organization of the ARM 7 processor? Also explain the process of pipelining in ARM 7 processor	**CO4**

SECTION-C

Each Question carries 20 Marks.
Instruction: Write long answer.

Q 1	Draw the AVR connection to a unipolar stepper motor . write a code to rotate it continuously	**CO4**

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