UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, April/May 2018

Course: Microprocessor & Microcontroller **Semester: VI**
Program: B. Tech Electrical and PSE
Time: 03 hrs. **Max. Marks: 100**

Instructions: For every assembly and C code mention the comments of each instruction.

SECTION A

S. No.	Answer all the questions	Marks	CO
Q1	What are assembler directives in 8086? Explain with examples	4	CO1
Q2	In 8085 what is auxiliary flag? Explain with an example its use in BCD operation.	4	CO2
Q3	In 8051 write C code to form a pattern of converging and diverging without overlapping in LEDs which are connected to Port 0.	4	CO4
Q4	Generate 20-bit physical address if i) CS:IP = 2500H:5410H ii) CS:IP = 1800H:0505H.	4	CO3
Q5	Write 8085 assembly language program to subtract two 8-bit numbers C9H and 97H using only two instructions. Mention the result and status of flags.	4	CO2

SECTION B

S. No.	Answer any four questions	Marks	CO
Q6	Explain the following flags of 8086 with their use i) Direction ii) Interrupt iii) Auxiliary Carry iv) Overflow v) Trap	10	CO3
Q7	In 8086 N 8-bit numbers are stored in memory starting from 2001H. The value of N is stored in 2000H. Write an assembly language program along with algorithm to exchange these N bytes with numbers stored memory location starting from 3000H without overlapping.	10	CO3
Q8	Write 8086 ALP to move the string "UPES, BIDHOLI $ DEHRADUN" from one memory area to other memory area and display on the screen. Specify the output displayed.	10	CO3
Q9	What is 8255. Explain the different operating modes of 8255 along with the command words.	10	CO2
Q10	Explain the following assembler directives of 8086 with examples. i) SEGMENT ii) EQU iii) DT iv) DB v) DUP	10	C04

SECTION-C

S. No.	Answer any Two questions	Marks	CO
Q11	In the design of an 8086 based equation evaluator system, write an assembly language program along with algorithm to implement the following equations i) $C=\frac{5}{9}(F-32)$ ii) $V^2=U^2+2AS$	**20**	**CO3**
Q12	Using 8051 microcontroller, design a notice board system that can display the message "ELECTRICAL" in the first line and "UPES" in the second line of LCD with the following assumptions i) Connect Port 1 of 8051 to control pins of LCD ii) Connect Port 3 of 8051 to data pins of LCD Write the C program along with algorithm.	**20**	**CO4**
Q13	Design a BCD counter for 8085 processor that should start counting from 0. Once the count reaches its maximum value the counter should reset itself and start the counting again from 0. A delay of one second is a must between the counts. Use register pair HL to load the count. Assume clock frequency of 1kHZ. Also show the calculations of count.	**20**	**CO2**