

**SET-1**

<b>Name:</b> <b>Enrolment No:</b>	
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**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**

**End Semester Examination, May 2019**

**Course:** Advanced Microprocessor and Embedded Systems

**Semester:** VI

**Program:** B. Tech EE

**Time** 03 hrs.

**Course Code:** ELEG365

**Max. Marks:** 100

**Instructions:** Read and understand the questions before answering

**SECTION A**

Q.No.	Answer all the questions	Marks	CO
1	In 8086 microprocessor all registers are of 16-bit but size of address bus is 20-bit, explain with an example how to convert 16-bit address to 20-bit address	4	CO1
2	In 8051 microcontroller what is the use RS0 and RS1 flags?	4	CO4
3	In microprocessor and microcontrollers why pull-up and pull-down resistors are used?	4	CO1
4	In the following embedded systems what should be the data bus size of processor i) DVD Player ii) Set Top Box iii) Car Seat belt detection iv) Robots	4	CO3
5	In 8086 microprocessor why the size of queue is limited to 6 bytes	4	CO2

**SECTION B**

Q.No.	Question 6, 7 and 8 are compulsory. Choice is there in question no 9.	Marks	CO4
6	Using 8086 microprocessor assembly language programming write a program along with algorithm to find the factorial of 16-bit number stored in memory.	10	CO2
7	In 8051 microcontroller assume that multiplexed 2-digit seven segment is connected at PORT1, write a C code along with its algorithm for displaying 00 to 99 seven segments. Consider multiplexing technique.	10	CO4
8	Draw the architecture of 8051 microcontroller and explain the function of each block	10	CO4
9	Interface 32kB of EPROM and 32kB of RAM using 16kB of EPROM and 16kB of RAM with 8086 microprocessor.	10	CO3
	<b>(OR)</b> Write an assembly language program along with algorithm to display the string "UPES \$ DEHRADUN" in reverse order. Comment on the output obtained.		

**SECTION-C**

	Question 10 is compulsory. Choice is there in question no 11.	Marks	CO5
10	Design an 8 LED display system using 8051 microcontroller. Connect the LEDs to P1 of 8051. Write a C code to i) Switch all the LEDs ON and OFF with a delay of 100ms between each switch	20	CO4

	<p>ii) Switch one LED on and then apply right shift and left shift pattern with a delay of 100ms</p> <p>iii) Implement a counter to count from 0 to 100.</p> <p>iv) Implement a converge and diverge pattern without overlap</p> <p>Write C code for each option separately along with its algorithm</p>		
11	<p>Design a LCM finder with 8086 microprocessor. Consider two decimal numbers 22 and 8 for the same. Explain the algorithm used and also write its assembly language program and draw the flow chart. At the end compare the result obtained by the program with that of traditional method.</p> <p style="text-align: center;"><b>(OR)</b></p> <p>Design a Digital-to-analog interface system for 8086 processor for the following specifications</p> <p><b>i)</b> Generate a square wave of 5volts and 1KHz frequency</p> <p><b>ii)</b> Generate rectangular wave of 4volts, with duty cycle of 25% and frequency of 500Hz</p> <p>Write the assembly language program and show the calculations.</p>	20	CO3

**SET-2**

Name: Enrolment No:	 <b>UPES</b> <small>UNIVERSITY WITH A PURPOSE</small>
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**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, May 2019**

**Course:** Advanced Microprocessor and Embedded Systems

**Semester:** VI

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**Instructions:** Read and understand the questions before answering

**SECTION A**

Q.No.	Answer all the questions	Marks	CO
1	In an LCD what is the use of E and RS pins?	4	CO4
2	What is the size of internal RAM of 8051? Into how many sections the RAM of 8051 controller is divided and what is the size of each section.	4	CO4
3	In C language how the main function will behave if while (1) loop is replaced by a for loop with syntax for { ; ; }.	4	CO3
4	What is the difference between microprocessors and microcontrollers?	4	CO1
5	How many segment registers are present in 8086 processor?	4	CO2

**SECTION B**

Q.No.	Question 6, 7 and 8 are compulsory. Choice is there in question no 9.	Marks	CO4
6	Into how many groups the instruction set of 8086 processor is divided. Explain each with an example.	10	CO2
7	What is the function of following pins of 8051 microcontroller i) $\overline{PSEN}$ ii) $\overline{EA}$ iii) ALE    iv) RxD, TxD    v) XTAL1, XTAL2	10	CO4
8	In 8086 write an assembly language program along with its algorithm to add two 32-bit numbers stored in memory.	10	CO3
9	Draw and explain the format of flag register of 8051. <b>(OR)</b> What are the alternate functions of input/output ports of 8051 microcontroller?	10	CO4

**SECTION-C**

	Question 10 is compulsory. Choice is there in question no 11.	Marks	CO5
10	Design a memory interfacing system for 8086 microprocessor to interface 16Kx8 of EPROM using 4Kx8 EPROM and 4Kx8 of RAM using 2Kx8 of RAM.	20	CO3
11	While designing of architecture of 8086, into how many units you will divide the architecture and why? Explain the function of each block you will use in the architecture <b>(OR)</b> Design a sorting system with 8086 processor to arrange 10 numbers stored in memory in ascending order. Out of the 10, 3 numbers should be greater than 80 and one should be zero. Write the complete algorithm used and also its assembly language program. Explain why the numbers which are greater than 80 be arranged	20	CO3

	before zero in the result.		
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