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Roll Number:_____

***Thapar Institute of Engineering & Technology, Patiala***

Department of Computer Science and Engineering

**END SEMESTER EXAMINATION**

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| COEMBA (Third Year) | Course Code: UCS617<br>Course Name: Microprocessor Based Systems Design |
| Jan 27, 2021—1430 hrs | |
| Time: 2 Hours, M. Marks: 50 | Name of Faculty: Harpreet |

***Note: (1) Attempt any 5 questions with proper justification and working.***
***(2) Assume missing data, if any, suitably.***

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| Q1 | Elaborate the architecture of USART in detail. Why Transmitter and Receiver section called as double buffered system? | (7+3) |
| Q2(a) | How 8085 and 8086 microprocessors respond to the interrupts? Elaborate in steps. | (5) |
| Q2(b) | Write a program in any 8085/8086/ARM assembly language to find the factorial of given number. | (5) |
| Q3(a) | What is the difference between LHLD and SHLD instruction? Illustrate with the help of timing diagrams. | (5) |
| Q3(b) | Write a program in any 8085/8086/ARM assembly language to find the factorial of given number. | (5) |
| Q4(a) | Explain different types of Assembler Directives with the help of example. | (5) |
| Q4(b) | WAP to Generate a delay of 0.4 sec if the crystal freq is 5 MHz in 8085. | (5) |
| Q5(a) | Write a program in any 8085/8086/ARM assembly language to divide two 16-bit numbers. | (5) |
| Q5(b) | Discuss the following instructions with suitable example in 8086:<br>i. LEA<br>ii. AAM<br>iii. XLAT<br>iv. LOOP<br>v. TEST | (5) |
| Q6(a) | Explain the working of ports in different modes in Programmable Peripheral Interface. | (6) |
| Q6(b) | Write a set of instructions to set bit 4 of Port C of 8255. Assume the address of Port A is 10H. | (4) |
| Q7 | Differentiate between the following terms with example:-<br>i. Pre-Index and Post-Index Addressing in ARM<br>ii. Thumb and ARM Instructions<br>iii. CPSR and SPSR<br>iv. Little Endian and Big Endian | (2.5*4) |