Question Paper

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH SEMESTER B.TECH. (INFORMATION TECHNOLOGY) DEGREE EXAMINATIONS - JUNE/JULY 2023
SUBJECT: ICT 2256/IT-2256 COMPUTER ORGANIZATION & MICROPROCESSOR SYSTEMS

Marks: 50   **Duration: 180 mins.**

Answer all the questions.

1A)	Explain the execution unit of 8086 with the help of a neat diagram.	(5)
1B)	The 8254 IC is connected to 8MHZ 8086 microprocessor. Write a procedure to generate a 100kHz square wave at OUT0.	(3)
1C)	A four bit carry save adder is faster than carry look ahead adder. TRUE/FALSE. Justify with an example.	(2)
2A)	Explain the direct, register indirect and immediate addressing modes. Categorize the following instructions according to the source addressing mode used.	(5)

- MOV [BX], AX
- MOV SI, 0245H
- MOV CX, DS:002
- MOV CL,BL

2B)	Write the advantage and disadvantages of daisy chain based multiple interrupt handling techniques over polling.	(3)
2C)	Write an assembly language program to set the trap flag. Trap flag is the 8th bit in the flag register with least significant bit at 0th position.	(2)
3A)	Design processing section for 4 - bit X 4 - bit Booth's multiplier. Show all the sequence of steps.	(5)
3B)	Explain what 8086 does when it encounters divide by zero and INTR interrupts at the same time.	(3)
3C)	Write an assembly language program to accept a 2 - digit decimal number and display the reversed number.	(2)
4A)	Write an assembly language program in 8086 microprocessor to convert an 8 bit BCD number into hexadecimal number.	(5)
4B)	Write an assembly language program to display a string using the following: i) Macro ii) Procedure	(3)
4C)	Design a 4-bit general purpose register, according to the truth table given below:	(2)

Control inputs		Operation
S1	S0	
0	0	Right shift once
0	1	Left shift once
1	0	Right shift twice
1	1	Left shift twice

5A)   Perform the multiplication of $(15)_{10}$ by $(-12)_{10}$ using Booth Multiplication method.   (5)

5B)   Explain the following pins in 8086 processor in detail: (3)
      i) HOLD
      ii) HLDA
      iii) BHE

5C)   Explain the following 8086 assembler directive: (2)
      i) ORG
      ii) DUP
      iii) STACK
      iv) NEAR

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