Question Paper

Exam Date & Time: 20-Jul-2022 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

IV SEMESTER B. TECH (IT)
MAKEUP EXAMINATIONS, JULY 2022
SUBJECT: [ICT 2256]

COMPUTER ORGANIZATION & MICROPROCESSOR SYSTEMS [ICT 2256]

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

A

Answer all the questions.

Answer ALL the quustions.
Missing data, if any, may be suitably assumed.

1)		Explain the following instructions with an example for each. i. IDIV ii. SAHF iii. RCR iv. POPF v. DAS	(5)
	A)		
	B)	With a neat diagram, explain the minimum mode of operation of 8086.	(3)
	C)	Explain the mechanism used in 8086 for generating the 20-bit physical address.	(2)
2)		Divide $13_{(10)}$ by $5_{(10)}$ using non restoring division algorithm indicating all the steps.	(5)
	A)		
	B)	Write an assembly language program to count the number of consonants in a string entered from the keyboard and display the count on the screen (Maximum count 99).	(3)
	C)	If SS = 1234H, DS = 2345H, ES = 569AH, CS = 2396H, IP = 0014H, DI = 0532H, SI = 0020H, SP = 8976H, find the physical address of the data referred by the instructions i) STOSB ii) PUSHF	(2)
3)		With necessary waveforms, explain various modes of operation of 8254.	(5)
	A)		
	B)	Explain the mechanism used in 8086 to access a word at an odd address with a neat diagram.	(3)
	C)	Define Addressing Mode. Explain the following addressing modes with an example for each. i. Based Indexed ii. Variable port addressing	(2)
4)		Design a microprogrammed control unit for 4 - bit x 4 - bit Booth's multiplier.	(5)
	A)		
	B)	With a neat diagram, explain how a 4x4 matrix keyboard can be interfaced to 8086.	(3)
	C)	Explain the significance of HOLD and HLDA pins of 8086.	(2)
5)		Given M = $17_{(10)}$ and Q = $-16_{(10)}$. Perform multiplication using Booth's algorithm indicating all the	(5)

steps.

A)

B) Write an assembly language program to find the LCM of two unsigned bytes available in the memory and store the result in the memory. (3)

C) With a neat diagram, explain the Mode-1 operation of 8255 for data input. (2)

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