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Question Paper Code: U4425

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

Fourth Semester

Computer Science and Engineering

21UEC425-MICROPROCESSORS AND MICROCONTROLLERS

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5Marks)

- Which of the following is a 16 bit register? CO1-U
(a) AL (b) AH (c) AX (d) All the above
- How much time period is necessary for the slave to receive the interrupt and transfer the data? CO1-U
(a) 4 clock time period (b) 8 clock time period
(c) 16 clock time period (d) 64 clock time period
- In 8051, which interrupt has highest priority? CO1-U
(a) IE1 (b) TF0 (c) IE0 (d) TF1
- How can we control the speed of a stepper motor? CO1-U
(a) by controlling its switching rate (b) by controlling its torque
(c) by controlling its wave drive 4 step sequence (d) can't be controlled
- How many clock pulses are confined by each machine cycle of Peripheral-Interface Controllers? CO1 U
(a) 4 (b) 8 (c) 12 (d) 16

PART – B (5 x 3= 15Marks)

- If the stack segment register contains 3000H and the stack pointer register contains 8434H, what is the physical address of the top of the stack? CO2 -App
- How the internal operation frequency of 8279 is derive from available clock signal? CO1-U

8. Calculate the time duration for one state and one machine cycle if a 6 MHz crystal is connected to 8051. CO2 -App
9. Generate staircase wave using DAC. CO1- U
10. Differentiate RISC & CISC. CO1- U

PART – C (5 x 16= 80Marks)

11. (a) Describe the internal architecture of 8086 microprocessor with neat diagram. CO1- U (16)
- Or
- (b) Explain about different addressing modes with suitable examples. CO1- U (16)
12. (a) Design an interface between 8086 CPU and two chips of 16K X 8 EPROM and 32K X 8 RAM. Select the starting address of EPROM suitably. The RAM address must start at 00000H CO3-App (16)
- Or
- (b) Design a Programmable counter using 8254 and 8086. Interface 8254 at an address 0040H for counter 0. The 8086 and 8254 run at 6 MHz and 1.5 MHz respectively. Develop the ALP for the following. CO5- App (16)
- i) To generate a square wave of period 1ms
- ii) To interrupt the processor after 10 ms.
13. (a) Explain about the memory organization and special function registers in 8051 microcontroller. CO1-U (16)
- Or
- (b) Explain about different instruction set associated with 8051 microcontroller. CO1 -U (16)
14. (a) With neat circuit diagram, explain how 4x4 keyboards is interfaced with 8051 microcontroller. CO1-U (16)
- Or
- (b) Draw the schematic diagram for interfacing a stepper motor with 8051 microcontroller and explain it. CO1 -U (16)
15. (a) With a neat diagram explain in detail about the architecture of aurdino microcontroller. CO4-App (16)
- Or
- (b) Explain about the various addressing modes of aurdino microcontroller. CO4 -App (16)