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Question Paper Code : P 1216

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Fifth Semester

Computer Science and Engineering

CS 1304 — MICROPROCESSORS AND MICROCONTROLLERS

(Common to B.E. (Part-Time) Fourth Semester Regulation 2005)

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write an 8085 assembly language program to multiply two 8-bit numbers.

2. What are the functions of the RST 5.5 and ALE signals of 8085?

3. Write down the functions of the ASSUME and EXTRN assembler directives.

4. Define the functions of the REPEAT and LOCK prefixes.

5. Distinguish between the maximum mode and minimum mode of operation of the 8086 processor.

6. What is a coprocessor? How is it useful?

7. 8253's OUT signal is to be used as a clock input of the desired frequency to a particular device. Is it possible? How?

8. How is a memory-to-memory transfer accomplished using 8237?

9. What are the addressing modes supported by 8051?

10. Write an 8051 program to divide two 8-bit numbers.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the architecture of the 8085 processor with a neat diagram. (10)

(ii) Write an 8085 program to subtract one 4-digit decimal number from another. (6)

Or

(b) (i) Discuss the interrupts of 8085. (10)

(ii) Write an 8085 program to find the largest of a set of n 8-bit numbers. (6)

12. (a) (i) Assume that a symbol table starting at location TABLE consists of 100 entries. Each entry has 80 bytes with the first 8 bytes representing the name field and the remaining 72 bytes representing the information field. Write an 8086 program sequence to search this table for a given name of 8 characters stored in NAME. If this name is found, copy the associated information to INFO : otherwise fill INFO with null characters. (10)

(ii) Discuss about the interrupts of 8086. (6)

Or

(b) (i) Discuss the string primitives of 8086 with an example for each. (10)

(ii) Write an 8086 assembly language program using string primitives to find out whether a given byte is in a string or not. If the byte is part of the string, find the relative address of this byte from the start of the string. (6)

13. (a) A multiprocessor system consists of 2 modules with the following specifications :

Module 1 : 8086 with 8087 and a resident bus

Module 2 : 8086 with an I/O bus

Draw a detailed block diagram showing the various components required and indicate the interconnections between the various components. Explain briefly how co-ordination and communication take place between the various masters.

Or

(b) Discuss the maximum mode configuration of 8086 with a neat diagram, clearly pointing out the functions of the various signals.

14. (a) With a neat diagram discuss the various modes of operation of 8255. Show how two 8255 chip can be connected in an 8086-based system to form a 16-bit port.

Or

(b) With a neat diagram discuss the operation of a DMA controller. Show how such a controller can be connected in an 8086-based system.

15. (a) Discuss the architecture of the 8051 microcontroller with a neat diagram.

Or

(b) Show how the 8051 can be used to control the operation of an elevator system. Assume the elevator is to operate between three floors. Show the hardware interface and the required 8051 program.

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