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Question Paper Code : 11266

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Fifth Semester

Electronics and Communication Engineering

080290030 — MICROPROCESSOR AND APPLICATIONS

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

(Programming Calculators not permitted. Assume the appropriate values wherever required)

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the internal clock frequency of 8085 microprocessor, if a crystal of 3 MHz is used?
2. What are the address spaces in 8085 microprocessor?
3. What are the advantages of having the fetch and execute overlap in the 8086 CPU?
4. In 8086 microprocessor, if a physical branch address is 5B 321 when (CS) = 5355, what will it be if the (CS) changes to 7700?
5. What is the functional difference between the instruction MOV AX, TABLE_ADDR to LEA AX, TABLE_ADDR.
6. Describe the output produced by the following 8086 program.

MOV AL, 0

REPEAT : OUT 0, AL

INC AL

DAA

JMP REPEAT

7. Name the different operating modes of (8254) programmable interval timer.
8. A 12 bit DAC (digital to analog converter) has a full-scale rating of 5.00 V. What is the 12 bit code that must be applied to this DAC to produce a 4.00 V output?
9. An 8KB RAM chip is interfaced to a computer beginning at address 2000 H. What is the address of the last byte in this memory chip?
10. What is the effect of address and data bus on memory interfacing?

PART B — (5 × 16 = 80 marks)

11. (a) Draw an architectural block diagram of an 8085 microprocessor and explain briefly about each of its blocks and write an 8085 assembly language program to add a 16 bit number stored at 0700 H through 0701 to another 16 bit number stored at 0704 through 0705 and to store the result (sum) at 0708 through 0709.

Or

- (b) Name all the addressing modes of 8085 processor and draw a timing diagram for an instruction MVI A, 32 H with various stages of timing states and labels associated.
12. (a) Draw the internal architectural structures of 8086 processor with brief explanation of each block along with the memory segmentation, physical memory organisation and address formation.

Or

- (b) Draw the block diagram based pin connection of maximum mode 8086 CPU mode and explain its function with RESET, HALT and TEST pins.
13. (a) Explain the addressing modes of 8086 microprocessor with suitable examples and also identify the addressing modes of the given instructions.
 - (i) MOV AH, 47H,
 - (ii) MOV AH, [BP + 2]
 - (iii) MOV AH, [BP + S1]
 - (iv) MOV AH, [XRAY].

Or

- (b) State the types of instruction set of 8086 microprocessor with suitable example and write an assembly language program which converts the Fahrenheit temperature to Celsius where Celsius = (Fahrenheit-32) × 5/9.

14. (a) Draw the block diagram of 8255 A (programmable peripheral interface) and explain all modes of operations along with timing and control structure.

Or

- (b) Draw the block diagram of a programmable interval timer (8254) and interface the counter 0 at an address of 0041 h to 8086 microprocessor and write assembly language. Program for the following with the assumption that 8086 runs at 6 MHz and 8253 at 1.5 MHz respectively.
- (i) To generate a square wave of period 1 ms.
 - (ii) To interrupt the process after 10 ms.
 - (iii) To drive a monoshot pulse with quasi stable duration 5 ms.
15. (a) Assume that we need a general purpose 8085 based system with 12 KB of program space, 4 KB of data ROM starts at 00004, 8KB of data RAM, 12 KB of NV-RAM starting at 80004 and one 8255 (PPI interface). Show the complete interface design, address decoder table, and vacant space range. Consider the data RAMs are available in 2 KB of size each. Discuss the design.

Or

- (b) How is the I/O interfacing designed with microprocessor and explain the function of programmed and interrupt driven I/O data transfer with suitable diagram and program.
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