CBCS SCHEME

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17EC46

Fourth Semester B.E. Degree Examination, Dec.2023/Jan.2024
Microprocessors

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain in brief the internal architecture of 8086 microprocessor with a neat diagram along with functions of each block. **(10 Marks)**

b. Explain the advantages of the segmented memory scheme. **(05 Marks)**

c. If DS = AB30h, CS = 8920h, SS = 3B01h, BP = 2D45h, SP = 0130h, S1 = 1234h, D1 = 4356h, then determine the physical address of the following instructions:
i) MOV [BP + D1 + 5), AH ii) MOV AL, [5036H]. **(05 Marks)**

OR

2 a. Explain with example, the following addressing modes in 8086.
i) Register addressing mode
ii) Base plus index addressing mode
iii) Variable port addressing mode
iv) Stack addressing mode. **(08 Marks)**

b. What is wrong with the following instructions: i) POP CS ii) MOV [AX], 20h iii) MOV SS, DS iv) MOV BL, S1. **(04 Marks)**

c. Given the opcode 8907h, explain how these two bytes are interpreted in machine language. What is the resulting instruction? **(08 Marks)**

Module-2

3 a. What are assembler directives? Explain the action performed by the following directives:
i) Price db(?)
ii) Proc …… ENDP
iii) ALIGN 16
iv) ASSUME
v) EXTRN **(06 Marks)**

b. Write an ALP to add 'N' one byte BCD numbers and store result in memory location. **(08 Marks)**

c. Explain the use of REP prefix for MOVS and STOS instructions. **(06 Marks)**

OR

4 a. Write a program that convert an 8 bit binary number into equivalent gray code. **(06 Marks)**

b. Write a program to find out the number of positive and negative numbers from a given series of signed numbers. **(06 Marks)**

c. Explain the flag manipulation and processor control instructions. **(08 Marks)**

Module-3

5 a. Define stack. Illustrate with diagram, how stack top address calculation will be calculate with push and pop instructions. Assume SS = 5000h and SP = 3500h. **(06 Marks)**

b. Bring out the differences between MACRO and procedure. **(04 Marks)**

c. Illustrate with example, the various parameter passing techniques to a procedure. **(10 Marks)**

OR

6 a. Describe the purpose of interrupt vector table and conditions which causes the processor to perform the following types of interrupts type 0, type 1, type 2, type 3 and type 4. **(06 Marks)**

b. Write an interrupt procedure that sets trap flag to enable trap. **(04 Marks)**

c. Write a program to generate a delay of 100ms using an 8086 system that runs at 10MHz frequency. **(10 Marks)**

Module-4

7 a. Show the timing diagram to execute a memory write operation in 8086 in minimum mode. **(10 Marks)**

b. Explain with neat diagram, I/O addressing capability of 8086. **(10 Marks)**

OR

8 a. Interface two 4K × 8 EPROMS and two 4K × 8 RAM chips with 8086. Select suitable address maps. **(10 Marks)**

b. Explain the programmable peripheral interface (PP1) with command bytes of command register. **(10 Marks)**

Module-5

9 a. Interface DAC with 8086 CPU running at 8MHz. Write an ALP (Assembly Language Program) to generate a triangular wave for frequency 500Hz. **(10 Marks)**

b. Interface 0808 ADC to 8086 using 8255 port A and port C. **(10 Marks)**

OR

10 a. Write a short note on:

i) RISC and CISC CPU architecture

ii) With block diagram, explain the internal block diagram of 8254 (timer). **(10 Marks)**

b. Explain the following DOS system call INT21h function:

i) INT21H, Function 01h

ii) INT21H, Function 08h

iii) INT21H, Function 0Ah

iv) INT21H, 2Bh

v) INT2h, Fun 2Dh **(10 Marks)**

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