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Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 21110 Roll No.

B. C. A. Examination 2021-22

(Even Semester)

COMPUTER ORGANIZATION & ARCHITECTURE

Time : Three Hours] *[Maximum Marks : 60*

Note :– Attempt all questions.

SECTION – A

1. Attempt all parts of the following: $1 \times 8 = 8$

   (a) What is the use of program counter register?

   (b) How logical shift left in register is applied?

   (c) Give one instruction of two address instruction.

   (d) Define priority interrupt.

   (e) Differentiate between Mole and MUI mnemonics.

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(f) Write the highest priorty interrupt in 8085 up.

(g) If the size of RAM is 1024×32. Write number of data lines and address lines in data bus and address bus respectively.

(h) What is the use of AIE pin in 0.85 up?

SECTION – B

2. Attempt any two parts of the following: $2 \times 6 = 12$

(a) What do you know by micro operations? List all categories of microoperation with proper example.

(b) Convert the following expression in reverse polish notations and then write program to evaluate the expression using zero address instruction

A* B + C * D +E * F + G

(c) What do you know by asynchronous data transfer? Explain the working of handsharing communication.

(d) A computer employes RAM chips of 256×8 and ROM chips of 1024×8. The computer system needs 2k bytes of RAM, 4k Bytes of ROM and four interface units, each with four registers. A memory mapped configuration is used. The two highest under bits of address bus are assigned 00 for RAM 01 for ROM and 10 for interface registers.

(i) How many RAM and ROM chips are needed?

(ii) Draw a memory address map for the system.

(iii) Give the address range in hexadecimal for RAM, ROM and interface.

SECTION – C

3. Attempt any two parts from each question. Each part carry equal marks. $5 \times 8 = 40$

(a) Write the difference between hard wired control and micro programmed control? What are the advantages and disadvantages in each control?

(b) What are the basic differences between a branch instruction, a call subroutine instruction and program interrupt?

(c) Resister a holds 8-bit binary 11011001. Determine the B operand and logic micro-operation to be performed in order to change the value in A to

(i) 01101101

(ii) 11111101

4. (a) What is the significance of addressing modes? Describe various addressing modes with suitable examples.

(b) Write short notes on :

(i) Stock organization

(ii) Serial communication

(c) Why I/O interface is required? Describe various methods for I/O interface together with thus merits and demerits.

5. (a) Write short notes on any two of the following:

(i) Memory hierarchy

(ii) Cache memory

(iii) Associative memory

(b) How we can measure the performance of cache memory? Explain direct mapping with suitable example.

(c) Give block diagram of DMA controller. Why read and write control lines in DMA controller bidireactional?

6. (a) Write notes on the following :

(i) Flyn's classification

(ii) Instruction pipelinking

(b) Write a program in assembly 8085 to add two 8-bit data and result may be more than 8-bit long.

(c) How many interrupts are found in 8085 micro processor? List them and explain all, also discuss multiplexing of data and address pin in 8085 microprocessor pin diagram.

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