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

PAPER ID : 23210 Roll No.

B. Tech. Examination 2021-22

(Even Semester)

COMPUTER ORGANIZATION AND ARCHITECTURE

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

Note :– Attempt all questions.

SECTION–A

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

   (a) What do you understand by BUS?

   (b) Starting from an initial value of R= 11011101 determine the sequence of binary value in R after a logical shift left followed by circular shift R.

   (c) What is SIMD?

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(d) Subtract $(20)_{10}$-$(100)_{10}$ using diminishing radix complement.

(e) Define the stack using example.

(f) What is an instruction cycle?

(g) Write the two operations of stack.

(h) What do you understand by BCD code?

SECTION – B

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

(a) Discuss in brief of dairy chaining arbitration.

(b) What is floating point no. representation? Consider a floating point format with 8 bits for the biased exponent and 23 bits for the significance. Show the bit pattern of (-720).

(c) Show the multiplication process using Boot's algorithm of (-12) ×(-18).

(d) What is the differences between a virtual memory address and a physical memory address? Which is large? Why?

SECTION – C

Note:- Attempt all questions. Attempt any two parts from each questions. $5 \times 8 = 40$

3. (a) Explain the difference between vectored and non-vectored interrupt. Explain starting examples of each.

   (b) What is microprogram sequence? With block diagram, explain the working of microprogram sequence.

   (c) Explain the basic concept of hardware and software control unit with neat diagram.

4. (a) Give the block diagram of DMA controller. Why are the read and write control lines in DMA controller bidirectional?

   (b) Explain all phases of instruction cycle.

   (c) Write short note on DMA based data transfer.

5. (a) Draw a flow chart for adding and subtracting two fixed point binary numbers where negative numbers are signed is complement presentation.

(b) Discuss various types of register used in a computer system.

(c) What is the objective of paging? Discuss pros and cons of paging.

6. (a) Write short notes on $2\frac{1}{2}$ D memory organization.

(b) Explain the three of accessing I/O devices by the processor.

(c) A ROM chip of 1024×2^{10} bus has four select inputs and operates from a 5-volt power supply. How many pins are needed for the IC package? Draw a block diagram and label all input and output terminals in the ROM. Also discuss the magnetic-disk memories.

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