NCS4404

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

PAPER ID : 43212 Roll No. 1 2 3 0 4 3

B. Tech Examination 2024-25

(Even Semester)

COMPUTER ORGANIZATION & 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 mean by register?

   (b) Explain two difference between horizontal and vertical microprogramming.

   (c) Define the term computer architecture.

   (d) How many types of buses are there?

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(e) What is cache memory?

(f) Explain significance of DMA.

(g) Differentiate interrupts and exceptions.

(h) Write principles used in hardwired logic approach of a control unit.

SECTION – B

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

(a) Show the systemic multiplication process $20 \times (-19)$ using booth's algorithm.

(b) Explain the concept of pipeling and also explain type of pipeling.

(c) What do you mean by memory hierarchy? Why such hierarchy is required? Draw a suitable memory hierarchy block diagram with the parameters you have considered.

(d) Define interrupts. Point out and explain the various way of enabling and disabling interrupts.

SECTION – C

Note:- Attempt all questions from this section. Answer any two parts of the following. $8 \times 5 = 40$

3. (a) Define briefly the bus arbitration technique.

   (b) Draw a diagram of Bus system in which it uses three state buffers and a decoder instead of the multiplexers.

   (c) Illustrate the register transfer mechanism for $P : R_2 \leftarrow R_1$ with necessary diagram.

4. (a) What is the difference between a hardwire control design and a microprogrammed control design?

   (b) What do you mean by microinstruction sequencing?

   (c) What are the advantages and disadvantages of multiple bus organization over a single bus organization?

5. (a) Explain about stack organization used in processor. What do you understand by register stack?

(b) What are the different types of addressing modes? Explain in detail.

(c) Illustrate the mapping process involved in transformation of data from main memory to cache memory.

6. (a) (i) Discuss the design of a typical input output interface.

(ii) What are the interrupt? How are they handled?

(b) With a neat schematic diagram, explain DMA controller and it's mode of data transfer.

(c) Discuss the different modes of data transfer.

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