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NCS 4404

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

PAPER ID : 43212 Roll No. 1240[redacted]

B. Tech. Examination, 2026

(Even Semester)

COMPUTER ORGANIZATION & ARCHITECTURE

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

Note :– Attempt all questions.

SECTION–A

1. Attempt all parts of the following : 8×1=8

(a) List three types of control signals.

(b) How objective Ma many types of buses are in computer architecture?

(c) What is synchronous communication?

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(d) Differentiate interrupts and exceptions.

(e) How many bits are there in the data and address input of the memory?

(f) Explain two logical micro-operations.

(g) Right circular shift of the following data :

(i) 10101110

(ii) 01100110

(h) How many 128×8 memory chips are needed to provide a memory capacity 4096×16?

SECTION – B

2. Attempt any two parts of the following : 2×6=12

(a) Explain internal organization of 2M × 8 asynchronous DRAM chip.

(b) How many switch points are there in a gross bar switch network that connects 'p' processors to 'm' memory modules?

(c) Draw the flow chart and explain about booths algorithm. Multiply 100111 with 11011 using booths algorithm.

(d) What is the difference between hardwired control design and a microprogrammed control design?

SECTION – C

Note :– Attempt all questions. Attempt any two parts from each questions. 8×5=40

3. (a) Explain interconnection structure and its types "in computer organization and architecture.

(b) Draw and explain Von-Neumann architecture of a computer in detail.

(c) Explain various cache write policies.

What is 2D / 2.5D Memory organi ?

4. (a) What do you understand by Amdahl's law? Explain with suitable example.

(b) What are instruction pipelines? Also explain the performance of pipeline.

(c) Perform the division process of 00001111 by 0011 (use a dividend of 8 bits).

5. (a) What do you meanby interrupts? Explain different types of interrupts.

(b) Explain the mechanism involved in magnetic disk and magnetic tapes.

(c) Explain any five addressing modes with examples.

6. (a) Explain difference between synchronous and asynchronous communication along with standard communication interfaces.

(b) What is the difference between I/O interface and I/O port.

(c) Define briefly the bus arbitration technique.

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