[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2125)

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MCA 2nd Semester Examination

Computer Architecture (NS)

MCA-204

Time : 3 Hours **Max. Marks : 60**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C and D of the question paper and all the subparts of the question in section E.

SECTION - A

1. Define the following:

   a. Decoders

   b. Multiplexers

   c. Registers

   d. Binary counters (4×3=12)

2. Draw and explain the logic diagram for a common bus system for four registers, where each register has eight bits. (12)

SECTION - B

3. Explain the various characteristics of RISC architecture and also explain how overlapped windows are used in procedure calls. (12)

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4. Explain the various instruction formats for expression evaluation, using the following expression: A+B*C+D. (12)

SECTION - C

5. Define and distinguish between parallel and vector processing. (12)

6. Design a 3-bit carry lookahead adder and determine the maximum number of gates between any input and each of the four outputs (3 sum bits and a carry). (12)

SECTION - D

7. What do you mean by peripheral devices? Discuss briefly the purpose of any five peripheral devices. (12)

8. Discuss in detail the different modes of data transfer. (12)

SECTION - E

9. Attempt all questions

   (a) What is a high impedance state?

   (b) Define Micro-programmed control.

   (c) What do you mean by address masking?

   (d) What is the transfer rate of an eight track magnetic tape whose speed is 120 inches per second and whose density is 1600 bits per inch?

   (e) What is a tristate logic?

   (f) What do you mean by interrupt cycle?

   (g) What additional login is required to give a no match result for a word in an associative memory when all key bits are zeros?

(h) What do you mean by address interleaving?

(i) Determine the number of clock cycles that it takes to process 200 tasks in a six segment pipeline.

(j) What is the difference between Hand Shaking and Strobe control?

(k) What do you mean by Daisy Chaining priority?

(l) What is the transfer rate of an eight track magnetic tape whose speed is 120 inches per second and whose density is 1600 bits per inch? (1×12=12)