10. (a) Explain program flow mechanism techniques. [7]

(b) Explain the concept of SIMD interconnection network. [7]

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Question Paper Code : 8877

BCA (Semester-III) Examination, 2021

COMPUTER ARCHITECTURE

[Paper : BCA-305]

Time : Three Hours] **[Maximum Marks : 70**

Note : Answer **any five** questions of the following. All questions carry equal marks.

1. (a) Differentiate between RISC and CISC architecture. [7]

(b) Explain with an example, how effective address is calculated in different types of addressing modes ? [7]

2. (a) Explain the concept of general register organization using proper example. [7]

(b) Explain all the phases of instruction cycle. [7]

3. (a) What is instruction-level parallelism? [7]

(b) Give the comparison between hardwired control unit and micro programmed control unit. [7]

4. (a) Draw a diagram to implement manual multiplication algorithm. Perform the 2's complement subtraction of smaller number (101011) from larger number (111001) [7]

(b) Describe in detail about associative memory. [7]

5. (a) Compare process and threads. [7]

(b) Elaborate the concept of internal forwarding and register tagging using an appropriate example.[7]

6. Consider a pipeline having 4 phases with duration 60, 50, 90 and 80 ns. Given latch delay is 10 ns. Calculate. [14]

(a) Pipeline cycle time

(b) Non-pipeline execution time

(c) Speed up ratio

(d) Pipeline time for 1000 tasks

(e) Sequential time for 1000 tasks

(f) Throughput

7. (a) Explain 4 stage pipeline structure in detail. [7]

(b) The stage delays in a 4 stage pipeline are 800, 500, 400 and 300 picoseconds. The first stage is replaced with a functionally equivalent design involving two stages with respective delays 600 and 350 picoseconds. The throughput increase of the pipeline is _____%. [7]

8. (a) Explain the concept of reservation tables. Draw the same for a static and a dynamic pipeline.[7]

(b) What are data hazards? Explain various types of data hazards using proper examples. [7]

9. Define these using proper examples :

(a) Different types of fields that are part of an instruction. [7]

(b) Types of micro-operations. [7]