

Roll No.

Total No. of Pages : 2

BT-4/M11

8401

Computer Architecture & Organizations

Paper—CSE-202E

Time : Three Hours]

[Maximum Marks : 100

Note :— Attempt any **FIVE** questions in all, selecting at least **ONE** question from each Unit

UNIT—I

1. (i) Define addressing modes. Classify and explain with examples.

12

- (ii) Describe Flynn's classification of computer architecture. 8

2. (i) A program run on a 40 MHz CPU with the instruction mix and corresponding clock cycle count as given in the table. Determine :

- Effective CPI
- Execution Time
- MIPS rate for the program.

10

Instruction Type	Clock Cycle Count	Instruction Count
Integer Arithmetic	1	45000
Floating Point	2	32000
Data Transfer	2	15000
Control Transfer	2	8000

- (ii) Explain the Booth's algorithm by taking suitable example. Also draw the flow chart.

10

UNIT—II

3. (i) What do you mean by non-pipelined CPU architecture ? Is it relevant in today's scenario ? Justify your answer. 10
- (ii) Design a 4-stage instruction pipeline and show how its performance is improved over sequential execution. 10
4. (i) Write the steps followed in Fetch-Decode-Execute cycle. 10
- (ii) Differentiate between Hardwired control and Micro programmed control. 10

UNIT—III

5. A two-way set associative cache memory uses blocks of four words. The cache can accommodate a total of 2048 words from main memory. The memory size is $128\text{ K} \times 32$.
 - (i) Formulate all pertinent information required to construct the cache memory. 10
 - (ii) What is size of cache memory ? 10
6. (i) Differentiate between expansion and extension of memory. 10
- (ii) Describe organisation of a typical RAM chip. Differentiate between static RAM and dynamic RAM. 10

UNIT—IV

7. (i) Define stack with applications. show how a stack can be implemented using auto increment and auto decrement addressing modes. 10
- (ii) Write short notes on memory reference, CPU reference and I/O reference. 10
8. (i) What are instruction formats ? Explain need of various types of instruction format with example. 10
- (ii) What is the difference between a software interrupt and a subroutine call ? Give example of internal and external interrupt. 10