Velammal College of Engineering and Technology
Viraganoor, Madurai – 625 009
(Autonomous)

B.E./B.Tech. End Semester Examinations November 2024

Third Semester
Time : 3 Hours

Regulation 2021
Max. Marks 100

21CS201 – Computer Organization and Architecture
(Common to CSE and IT branches)

Answer ALL Questions
PART-A (10 x 2 = 20 Marks)

1. Write the 2's complement of 1011011

2. What is the role of MAR and MDR?

3. When performing signed division, the sign of the remainder should be the same as the sign of the dividend. Why?

4. Specify the sequence of operation involved when an instruction is executed.

5. Define hazard. Give an example for data hazard.

6. Distinguish Sign Extend and Vector interrupts.

7. Compare SMT and hardware multithreading.

8. Differentiate fine grained multithreading and coarse-grained multithreading.

9. Distinguish the types of locality of references.

10. List the various block placement schemes in cache memory

Part – B (5 x 13 = 65 marks)

11. a) Explain the various components of computer system with neat diagram

OR

b) What is an addressing mode in a computer? Describe the MIPS addressing modes with suitable examples.

12. a) Draw the flowchart and explain about booths algorithm and Multiply 100111 with 11011 using booths algorithm

<center>OR</center>

b) Explain how floating-point addition is carried out in a computer system and give an example for a binary floating-point addition.

13. a) Describe the approaches used to handle exceptions in MIPS.

<center>OR</center>

b) Design and develop an instruction pipeline working under various situations of pipeline stall.

14. a) Formulate the ideas of Flynn's classification in detail.

<center>OR</center>

b) Explain in detail about hardware multithreading.

15. a) Describe the methods used to reduce cache misses.

<center>OR</center>

b) Discuss virtual memory address translation in detail with necessary diagram.

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Part – C (1 x 15 marks)

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16. a) Analyze how Bit Pair Recoding can influence the design of arithmetic units and provide examples of scenarios where its application would be particularly beneficial.

<center>OR</center>

b) Analyze the restoring division algorithm, its time complexity, and the conditions under which this algorithm is preferred over others. Provide examples to illustrate its advantages and disadvantages.