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Question Paper Code: 1043117

B.E. / B.Tech. DEGREE EXAMINATIONS, NOV/ DEC 2024
Third Semester
Computer Science and Engineering
U20CS302 / U20AI302 - COMPUTER ORGANIZATION AND ARCHITECTURE
(Regulation 2020)
(Common to Artificial Intelligence and Data Science)

Time: Three Hours | Maximum: 100 Marks

Answer ALL questions

PART – A (10 x 2 = 20 Marks)

1. List the eight great ideas invented by computer architects.

2. Define power wall**.**

3. Subtract $(10011)_2$-$(10110)_2$ using 1's Complement and 2's Complement method.

4. Outline sub word parallelism.

5. What is a data path?

6. Why is branch prediction algorithm needed? Differentiate between static and dynamic technique.

7. Define Multithreading.

8. Compare UMA and NUMA Multiprocessors.

9. Define cache memory.

10. What is meant by Co-processors and multi-processor?

PART – B (5 x 16 = 80 Marks)

11. (a) Explain in details the various components of computer system with neat diagram. (16)

(OR)

(b) What is an addressing mode? Explain the various addressing modes with suitable examples. (16)

12. (a) Explain in detail about Binary addition and Subtraction. (16)

(OR)

(b) Explain Booth multiplication algorithm with suitable example. (16)

13. (a) What is pipelining? Discuss about pipelined data path and control. (16)

(OR)

(b) Briefly explain about various categories of hazards with examples. (16)

14. (a) Explain in detail about SISD, MIMD, SIMD & vector systems. (16)

(OR)

(b) Explain the Hardware Multithreading in detail. (16)

15. (a) With necessary diagrams explain it detail about Memory Hierarchy and Memory technologies**.** (16)

(OR)

(b) What is virtual memory? Explain the steps involved in virtual memory address translation with neat diagram. (16)

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