

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
 [AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
 Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 8016

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024

Sixth Semester

Electrical and Electronics Engineering

U19EEV32 – COMPUTER ARCHITECTURE

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Identify the instruction to calculate the CPU execution time.	2	K1	CO1
2.	What are the field in an MIPS instruction?	2	K1	CO1
3.	Define Guard and Round function.	2	K1	CO2
4.	Is overflow occur in addition? Why?	2	K2	CO2
5.	What are the exceptions and interrupts?	2	K2	CO3
6.	What do you mean by pipelining?	2	K2	CO3
7.	What is Flynn's Classification?	2	K1	CO4
8.	Sate loop unrolling.	2	K1	CO4
9.	Distinguish between cache hit and cache miss.	2	K2	CO5
10.	What is the use of translation lookaside buffer?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	i. Explain the eight ideas in computer architecture.	6	K2	CO1
	ii. Explain various control operations with examples.	7	K2	CO1

(OR)

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| b) | i. | Write the CPU performance equation and discuss the factors that affect its performance. | 7 | K2 | CO1 |
| | ii. | Illustrate the relationship between uniprocessors to multiprocessors. | 6 | K2 | CO1 |
| 12. | a) | Explain how to develop the multiplication algorithm with suitable examples and diagrams. | 13 | K2 | CO2 |

(OR)

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| b) | Develop Restoring and Non-Restoring type division algorithm for divide $(12)_{10}$ by $(3)_{10}$ with step-by-step intermediate results. | 13 | K5 | CO2 | |
| 13. | a) | Explain how to build data path and to control data path. | 13 | K2 | CO3 |

(OR)

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| b) | Explain the basic MIPS implementation with necessary multiplexers and control lines. | 13 | K2 | CO3 | |
| 14. | a) | What is hardware multithreading? Compare and contrast fine grained multithreading and coarse-grained multi-threading. | 13 | K3 | CO4 |

(OR)

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| b) | Explain about multicore Processors with necessary diagrams. | 13 | K2 | CO4 | |
| 15. | a) | Draw different memory access layouts and brief about the techniques used to increase the average rate of fetching words from the main memory. | 13 | K3 | CO5 |

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| b) | Explain the bus arbitration techniques in Direct Memory Access. | 13 | K2 | CO5 |
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PART – C

(1 x 15 = 15 Marks)

- | Q.No. | Questions | Marks | KL | CO | |
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| 16. | a) | Justify the need for addressing in a computer system? Explain the different addressing modes with suitable examples. | 15 | K2 | CO1 |
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| | b) | Explain how the instruction pipeline works. Illustrate the various situations where an instruction can stall, explain with an example. | 15 | K3 | CO3 |