



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Third Semester, B.E. - Computer Science and Engineering

Make-up Examination; May - 2022

Computer Organization

Time: 3 hrs

Max. Marks: 100

Course Outcomes

The Students will be able to:

CO1: Understand and analyze the machine instructions and program execution.

CO2: Understand and explain the I/O organisation.

CO3: Understand and explain the memory system.

CO4: Apply the algorithms used for performing various arithmetic operations.

CO5: Understand and Explain the Concept of Basic Input/Output.

Note: I) **PART - A** is compulsory. **Two** marks for each question.

II) **PART - B:** Answer any **Two** sub questions (from a, b, c) for a Maximum of **18 marks** from each unit.

Q. No.	Questions	Marks	BLs	COs	POs
I : PART - A		10			
I a.	Give basic performance equation defining each parameter.	2	L1	CO1	PO1
b.	Define word and word length of a computer memory.	2	L1	CO2	PO1
c.	What is source program and object program?	2	L1	CO3	PO1
d.	Explain the instructions associated with subroutines.	2	L2	CO4	PO1
e.	List the steps involved in the execution of an instruction.	2	L1	CO5	PO1
II : PART - B		90			
UNIT - I		18			
1 a.	With a block diagram, explain the basic functional units of a computer.	9	L2	CO1	PO1,2
b.	With a block diagram, explain the connectivity of a processor and memory. Explain the internal components of processor.	9	L2	CO1	PO1,2
c.	Solve the following problem by using basic performance equation. A program contains 1000 instructions. Out of that 25% instructions requires 4 clock cycles, 40% instructions requires 5 clock cycles and remaining 3 clock cycles for execution. Find the total time required to execute the program running in a 1 GZ machine.	9	L3	CO1	PO3
UNIT - II		18			
2 a.	Illustrate the concept of Byte addressability, Big Endian and Little Endian assignments with examples.	9	L2	CO2	PO2
b.	With an example, explain basic instruction types.	9	L3	CO2	PO2
c.	Define addressing mode. Explain any four addressing modes with an example to each.	9	L1,2	CO2	PO1,2

UNIT - III**18**

- 3 a. What are assembler directives? Explain the various assembler directives with an example for each. 9 L1,2 CO3 PO1,2
- b. What are the operations performed by the 'call' instruction? Illustrate the process of subroutine linkage using a link register. 9 L1,2 CO3 PO1,2
- c. Illustrate the various types of shift and rotate instructions with suitable examples. 9 L2 CO3 PO2

UNIT - IV**18**

- 4 a. With a neat diagram, explain single bus organization of the data path inside a processor. 9 L2 CO4 PO2
- b. Give differences between hardwired control unit and micro-programmed control unit. 9 L1,2 CO4 PO2
- c. Define bus master. Explain various types of bus arbitration in detail. 9 L1,2 CO4 PO1,2

UNIT - V**18**

- 5 a. Describe the following types of ROM:
 i) PROM 9 L2 CO5 PO2
 ii) EPROM
 iii) EEPROM
- b. What are different cache mapping techniques? Explain them with their tag bits. 9 L1,2 CO5 PO1,2
- c. Illustrate Booth's algorithms for signed operation multiplication. 9 L2 CO5 PO2

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