Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Make Up Examinations – December 2025

Date: 27-12-2025 **Time:** 09:30am – 12:30pm

School: SOIS	**Program:** CSE	
Course Code : CSA2002	**Course Name:** Computer Organization	
Semester: MK	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	**CO1**	**CO2**	**CO3**
Marks	**30**	**24**	**46**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1.	State the performance Equation.	**2 Marks**	**L1**	**CO1**
2.	Identify effective address syntax for base with index and offset.	**2 Marks**	**L1**	**CO1**
3.	Select two ways that byte/word addresses can be assigned.	**2 Marks**	**L1**	**CO1**
4.	What MFC stands for?	**2 Marks**	**L1**	**CO3**
5.	Define Interrupt Service Routine.	**2 Marks**	**L1**	**CO1**
6.	Write Booth multiplier recoding for 00011011	**2 Marks**	**L1**	**CO2**
7.	What is a gate delay?	**2 Marks**	**L1**	**CO2**
8.	List common memory operations.	**2 Marks**	**L1**	**CO1**
9.	If a computer has a 16-bit address bus, what is the maximum memory it can address?	**2 Marks**	**L2**	**CO3**
10.	Write the control sequence for register movement operation: MOV R1,R2	**2 Marks**	**L1**	**CO3**

Part B

Answer the Questions. **Total Marks 80M**

11.	**a.**	Evaluate E=(A+B) x (C+D) using one address , Two-Address and Three-address instruction format	**10 Marks**	**L3**	**CO1**
	b.	A program contains 1000 instructions. Out of that 25% instructions requires 4 clock cycles, 40% instructions requires 5 clock cycles and remaining requires 3 clock cycles for execution. Calculate the total time required to execute the program running in a 1 GHz machine.	**10 Marks**	**L3**	**CO1**
		Or			
12.	**a.**	Describe the connection between the processor and memory, including the use of cache.	**10 Marks**	**L2**	**CO1**
	b.	Perform following operations on 5-bit signed numbers using 2's complement representation system. a) -9 -7 b) +7 –(-8) c) -10 – (- 13) d) (-10) +(-13)	**10 Marks**	**L3**	**CO1**

13.	**a.**	A program reads ASCII characters entered at keyboard and stores them at successive byte locations, starting at location 1000. Show how the word "COMPUTER" content are represented in Big endian and Little endian for two memory words at location 1000 and 1004.	**10 Marks**	**L3**	**CO3**
	b.	Register R1 and R2 of computer contain the decimal value 1200 and 4600. Calculate the effective address of the source operand in each of the following instructions? (Instructions are independent) (a) Load 20(R1), R5 (b) Move #60, R5 (c) Store 10(R1,R2), R5	**10 Marks**	**L3**	**CO3**
		Or			
14.	**a.**	Explain in brief cache mapping techniques. With formats	**10 Marks**	**L2**	**CO3**
	b.	Describe the Internal organization of memory chips is 16x8 configuration and find total cells and EC with diagram	**10 Marks**	**L2**	**CO3**

15.	**a.**	Describe 4 bit Ripple adders & find the gate delay of sum and carry, with diagram.	**10 Marks**	**L2**	**CO2**
	b.	Describe Booth's algorithm for multiplication and solve +15X-30.	**10 Marks**	**L3**	**CO2**
		Or			

16.	**a.**	Describe the working of Carry Lookahead Adder with the Propogate and Generate functions and equations.	**10 Marks**	**L3**	**CO2**
	b.	Calculate signed multiplication of 2's complement numbers +15x-6, using sign extension method.	**10 Marks**	**L3**	**CO2**

17.	**a.**	Determine the control sequence for executing a complete instruction in single bus organization with appropriate diagram for the instruction Mov R1, R2	**10 Marks**	**L3**	**CO3**
	b.	Illustrate the operation of multiple bus organization and it's advantages and disadvantages with diagram	**10 Marks**	**L3**	**CO3**
		Or			
18.	**a.**	Determine the control sequence for executing a complete instruction in multiple bus organization with appropriate diagram for the instruction ADD,R1,R2,R3	**10 Marks**	**L3**	**CO3**
	b.	Illustrate the concept of pipelining and explain the different types of hazards in pipelining.	**10 Marks**	**L3**	**CO3**