Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - OCT 2023

Semester : Semester III - 2022
Course Code : CSE2009
Course Name : Sem III - CSE2009 - Computer Organization and Architecture
Program : B. TECH

Date : 30-OCT-2023
Time : 2:00PM - 3:30PI
Max Marks : 50
Weightage : 25%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **(5 X 2 = 10M)**

1. List the different types of registers inside the processor of a Computer System.
(CO1) [Knowledge]
2. List out the methods used to improve system performance.
(CO1) [Knowledge]
3. What is Byte Addressability?
(CO1) [Knowledge]
4. Assume that the value stored at LocA is 3500, mention the Effective Address and the addressing modes of the operands of instruction, ADD 20(LocA), R1.
(CO1) [Knowledge]
5. Define word in memory. What is the word length of 32-bit machine.
(CO1) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(4 X 5 = 20M)**

6. Explain with neat diagram different functional units of computer?
(CO1) [Comprehension]
7. Explain Big Endian and Little Endian with neat Diagram.
(CO1) [Comprehension]
8. What is a stack? Explain the stack operations using instructions.
(CO1) [Comprehension]

9. What are Addressing Modes? Explain any two addressing Modes with example.

(CO1) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION **(1 X 20 = 20M)**

10. A) A program contains 1 billion instructions and is executed on a processor running at 2 GHz. If 25% instructions requires 4 clock cycles, 40% instructions requires 5 clock cycles and remaining requires 3 clock cycles for execution. Find the total time required to execute the program.
B) In a 16-bit machine, a Stack is stored from memory address 2300 to 1500. Initially, the stack is empty, and the stack pointer (SP) points to the top of the stack. Determine the address of stack pointer, after the following operations –

- Push the value ‘A’ onto the stack
- Push the value ‘B’ onto the stack
- Pop a value from the stack
- Push the value ‘C’ onto the stack
- Push the value ‘D’ onto the stack
- Pop a value from the stack

(CO1) [Application]