PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF INFORMATION SCIENCE
MID TERM EXAMINATION - APR 2023

Semester : Semester II - 2022   **Date :** 15-APR-2023
Course Code : CSA2002   **Time :** 9.30AM - 11AM
Course Name : Sem II - CSA2002 - Computer Organization   **Max Marks :** 50
Program : BCA&BCG   **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. Define Computer? List the types of computers?

   (CO1) [Knowledge]

2. Define a single BUS structure?

   (CO1) [Knowledge]

3. Mention the parameters affecting the performance of a computer?Write the processor performance equation?

   (CO1) [Knowledge]

4. A word length of a memory with 64 bits can store
   a)   how many 2's compliment numbers ?
   b)   how many ASCII characters?

   (CO2) [Knowledge]

5. Define Memory Access Time?

   (CO2) [Knowledge]

PART B

6. A program contains 1500 instructions. Out of that 35% instructions requires 5 clock cycles, 25% instructions requires 5 clock cycles and remaining requires 4 clock cycles for execution. Find the total time required to execute the program running in a 3 GHz machine.

    (CO1) [Comprehension]

7. Mention the types of notations used to represent the operation and operands for an instruction with exanple?

    (CO2) [Comprehension]

8. Explain CALL and RETURN instructions of a subroutine with a neat diagram?

    (CO2) [Comprehension]

9. Explain the two basic memory operations with steps?

    (CO2) [Comprehension]

PART C

10. Perform the operations on 5-bit signed numbers using 2's complement system. Also indicate whether overflow has occurred.
    A) Add the following:
    (i) (+10) and (-13)
    (ii) (-10) and (+13)
    B) Subtract the following
    (iii) (-2) and (-9)
    (iv) (-9) and (-7)
    (v) (+7) and (-8)

    (CO1) [Application]

11. Register R1 and R2 of computer contain the decimal value 500 and 1630 respectively. What is the effective address of the source/destination operand in each of the following instructions? (Assume 32 bit word length)
    a. Store 30(R1,R2), R5
    b. Add – (R2), R5
    c. Subtract (R1) +, R5
    d. Mov (R1, R2), R4
    e. ADD (R2),R4

    (CO2) [Application]