2022
B.A./B.Sc.
First Semester
CORE – 2
COMPUTER SCIENCE
Course Code: CSC 1.21
(Computer System Architecture)

Total Mark: 70   *Pass Mark: 28*
Time: 3 hours

Answer <u>five</u> questions, taking <u>one</u> from each unit.

UNIT–I

1. (a) Explain digital computer with a block diagram.   3
   (b) Draw circuit diagram for $A + B'.(C.D)'$ using only NAND gate.   2
   (c) What are encoder and decoder?   2
   (d) Express $(w' + x).(y' + z)$ to its canonical form.   2
   (e) What are flip flops? List and explain the various types of flip flops.
                           1+4=5

2. (a) What do you mean by computer design, organisation and architecture?   3
   (b) Write a note on the XOR and XNOR gates.   2
   (c) Explain half adder and full adder.   4
   (d) Simplify $F(w, x, y, z) = \sum(0,1,2,3,5,6,7,9,11,14,15)$ using K-map.   5

UNIT–II

3. (a) Subtract 110111_2 from 1111101_2 using 1's complement.   2
   (b) Explain in detail the various number system.   6
   (c) Convert 51.7_8 to its equivalent binary, decimal, and hexadecimal number.   6

4. (a) Explain hexadecimal number system.   2
   (b) Write the 1's complement of 11101. Add 111101_2 with 111110_2
                                  1+2=3

(c) Subtract 1110111_2 from 111111_2 using 2's complement.   3

(d) Convert $45.A_{16} = (\underline{\quad})_2 = (\underline{\quad})_8 = (\underline{\quad})_{10}$ 6

UNIT–III

5. (a) Define instruction code and operation code.   2

   (b) What is an instruction? Explain the life cycle of an instruction.   1+5=6

   (c) Explain bus system in computer.   6

6. (a) What is a register? List and explain the various types of registers.   1+6=7

   (b) What do you mean by interconnected structure? List and explain the types of interconnection structures.   1+6=7

UNIT–IV

7. (a) Explain stack and stack pointer? Explain the operations on stack.   2+2=4

   (b) What is an interrupt? List and explain the types of interrupts.   1+3=4

   (c) Explain RISC and CISC in detail.   6

8. (a) What is an addressing mode?   2

   (b) Explain machine language and assembly language.   4

   (c) Convert the infix expression: $a + b * c - d/e$ to postfix expression.   8

UNIT–V

9. (a) What do you understand by input and output?   2

   (b) Explain RAM and ROM in detail.   6

   (c) Explain the modes of data transfer in peripherals.   6

10. (a) What is an input-output interface?   2

    (b) Write a note on magnetic disk and magnetic tape.   6

    (c) Explain direct access memory in detail.   6

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