PVP 19

Code: 19CS3401, 19IT3401

II B.Tech - II Semester – Regular Examinations – AUGUST 2021

COMPUTER ORGANIZATION AND ARCHITECTURE

(Common to CSE, IT)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
4. All parts of Question paper must be answered in one place

PART – A

1. a) Represent the following conditional control statement by two register transfer statements with control functions
If(P=1) then (R1←R2) else if (Q=1) Then (R1←R3)

b) Show the sequence of operations involved when an instruction is executed.

c) Translate the following arithmetic expressions from infix to reverse polish notation.
i) A • B + C • D + E • F
ii) A • B + A • (B • D + C • E)

d) Define Hit and Miss.

e) Write the factors considered in designing an I/O subsystem.

PART – B

UNIT – I

2. a) Explain 4-bit binary adder-subtractor with neat diagram. 6 M

   b) Demonstrate memory transfer operations with examples. 6 M

OR

3. a) Illustrate the basic symbols used in register transfer language and give its description with examples. 4 M

   b) Explain the design of ALU in detail. 8 M

UNIT – II

4. a) Discuss different basic computer instruction code formats with examples. 6 M

   b) Demonstrate the concept of input-output configuration. 6 M

OR

5. a) What is the difference between a direct and an indirect address instruction? How many references to memory are needed for such type of instruction to bring an operand into a processor register? 6 M

   b) Briefly discuss program interrupt cycle. 6 M

UNIT-III

6. a) Explain register stack organization. 6 M

   b) What are addressing modes? Explain the various addressing modes with examples. 6 M

OR

7. a) What are the different data transfer instructions? Discuss each with an example. 6 M

   b) Explain subroutine call and return. 6 M

UNIT – IV

8. a) Draw the flow chart for addition and subtraction of two signed 2's complement numbers. 6 M

   b) Multiply 100111 with 11011 using booths algorithm. 6 M

OR

9. a) Explain virtual memory. 6 M

   b) How the data is organized in the magnetic disk? Discuss. 6 M

UNIT – V

10. a) Write short notes on 6 M
      (i) Arithmetic pipeline.
      (ii) DMA based data transfer.

    b) Differentiate between synchronous and asynchronous data transfer method. 6 M

OR

11. a) What is meant by pipelining? Why do we require instruction pipelining? Explain its working procedure. 6 M

b) Discuss priority interrupt in detail. 6 M