UG Even Semester Examination, September, 2023

COMPUTER SCIENCE

(2nd Semester)

Course No.: MCSCC-203

(Computer Organisations and Architecture)

Full Marks: 70

Pass Marks: 28

Time: 3 hours

The figures in the margin indicate full marks for the questions.

Answer any five questions, taking one from each unit.

UNIT-I

1. (a) Explain the basic functional units of a computer. 4

(b) Draw a fout bit arithmetic circuit and explain the different operations. 8

(c) What are the different shift microoperations? 2

2. (a) What do mean by register transfer language? Explain the different symbols with example. 4

(b) Explain the connections of registers and memory of a basic computer to a common bus system with the help of a diagram. 8

Turn Over

(c) How to determine the types of instruction? 2

UNIT-II

3. (a) Explain the different fields of control word of microoperation. How does the control unit encode the control word to perform a microoperation. Explain with suitable diagram. 2+6=8

   (b) Distinguish between direct addressing mode and indirect addressing mode with example. 6

4. (a) What are the different status bit used for program control? Give example of branch instruction. 3

   (b) Explain the stack organisation as a collection of registers and write down the microoperations to implement PUSH and POP operation. 4+2=6

   (c) What do you mean by control memory? Explain the configuration of a microprogrammed control. 1+4=5

UNIT-III

5. (a) Explain the hardware for signed-magnitude addition and subtraction. 6

   (b) Explain the multiplication algorithm for signed magnitude data. 8

6. (a) Explain the Booth's multiplication algorithm. 8

   (b) Draw the flow chart for addition and subtraction of floating point number. 6

UNIT-IV

7. (a) What are the different types of I/O commands? 4

   (b) Explain the circuit diagram of FIFO buffer. 6

   (c) Distinguish between interrupt initiated I/O and DMA. 4

8. (a) What do you mean by asynchronous data transfer? Explain the strobe control method. 2+4=6

   (b) Explain the architecture of DMA Controller. 6

   (c) What do you mean by priority interrupt? 2

UNIT-V

9. (a) Explain the memory hierarchy? 4

   (b) Explain the connection of primary memory to the CPU with diagram. 10

10. (a) What do you mean by set asociative cache? Distinguish between write-back and write-through. 2+2=4

    (b) Write short note on 5+5

    (i) auxiliary memory (ii) virtual memory

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