

CBCS SCHEME

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15CS34

Third Semester B.E. Degree Examination, Aug./Sept. 2020 Computer Organization

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. How to measure the performance of a computer? Explain. (05 Marks)
b. What are the four types operations required by the instruction to be performed by the computer? Explain the basic instruction types with an example. (06 Marks)
c. Explain the concept of stack frames when subroutines are nested. (05 Marks)

OR

- 2 a. What is performance measurement? Explain the SPEC rating for the computer in a program. (07 Marks)
b. Explain with examples, any three generic addressing modes with assembler syntax. (09 Marks)

Module-2

- 3 a. Discuss the interrupt priority with daisy chain and in the priority groups. (05 Marks)
b. With the typical block diagram of a DMA controller and explain how it is used of direct data transfer between memory and peripherals. (06 Marks)
c. With a neat figure, explain a general 8 bit parallel interface circuit. (05 Marks)

OR

- 4 a. Explain neatly the bus arbitration methods. (05 Marks)
b. Show how DMA transfer is accomplished with a neat sketch. (06 Marks)
c. Explain SCSI bus data transfer in a computer system. (05 Marks)

Module-3

- 5 a. Explain the organization of $1K \times 1$ memory chip. (05 Marks)
b. Illustrate cache memory mapping functions. (06 Marks)
c. Explain Virtual memory address translations. (05 Marks)

OR

- 6 a. Explain the direct mapped cache in mapping functions with a neat diagram. (08 Marks)
b. What is memory interleaving? Explain with a suitable example. (08 Marks)

Module-4

- 7 a. Explain 4-bit carry-look ahead adder with a neat diagram. (06 Marks)
b. Perform the addition and subtraction of following signed number (Any two)
i) +2 and +3 (Addition)
ii) -7 and -5 (Subtraction)
iii) +4 and -6 (Addition)
iv) +7 and -3 (Addition) (04 Marks)
c. Perform bit pair recoding for -11 and +27 [(-11) multiplicand and (+27) multiplier]. (06 Marks)

OR

- 8 a. Perform Booth's algorithm for (+15) and (-6) [(+15) Multiplicand (-6) Multiplier] (08 Marks)
b. Perform $1100 \div 11$ using non restoring algorithm. (08 Marks)

Module-5

- 9 a. Explain the Three bus organization of processor. (08 Marks)
b. Show with a block diagram an embedded processor and briefly explain. (08 Marks)

OR

- 10 a. Compare and contrast the following :
i) Harwired control (08 Marks)
ii) Microprogrammed control
b. Explain the sequence of steps required to execute the following instruction ADD (R3), R₁. (08 Marks)
