CBCS SCHEME

USN | | | | | | | | | | |

18CS34

Third Semester B.E. Degree Examination, June/July 2025
Computer Organization

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Assume any suitable missing data.

Module-1

1 a. With a neat diagram, explain the basic operational concepts of computer. **(10 Marks)**
b. Define clock rate and explain performance measurement with equation. **(10 Marks)**

OR

2 a. What is an addressing mode? Explain any 4 types of addressing mode, with suitable example. **(10 Marks)**
b. State and explain the possibilities of encoding of machine instruction of 32 bit word. **(10 Marks)**

Module-2

3 a. Explain interrupt and interrupt hardware. **(07 Marks)**
b. Explain how I/O devices should be organized in a priority structure. **(08 Marks)**
c. Define Exception. Explain different kind of exceptions in brief. **(05 Marks)**

OR

4 a. What is DMA Arbitration? Briefly explain different bus arbitration techniques. **(10 Marks)**
b. Explain USB tree structures protocols. **(10 Marks)**

Module-3

5 a. Explain the operation of CMOS memory cell. **(05 Marks)**
b. Explain the working of static RAM memories. **(05 Marks)**
c. Draw the internal organization of a $2M \times 8$ dynamic memory chip and explain working with fast page mode. **(10 Marks)**

OR

6 a. What is cache memory? Analyze the 3 mapping functions of cache memory. **(10 Marks)**
b. Explain memory interleaving with diagram. State hit rate and penalties. **(10 Marks)**

Module-4

7 a. Explain the various types of number representation with example and draw the addition, subtraction logic unit. **(09 Marks)**
b. Explain Booth Algorithm. Perform $(+13) \times (6)$ using Booth algorithm. **(06 Marks)**
c. Subtract -5 from -7 using Two's complement subtraction. **(05 Marks)**

OR

8 a. Explain the design of carry look ahead adder circuit with suitable diagram. **(10 Marks)**

b. Draw the circuit arrangement for binary division. Perform division.
$(1000) \div (11)$ **(10 Marks)**

Module-5

9 a. With neat diagram, explain single bus organization of computer and fundamental concepts. **(10 Marks)**

b. Write a sequence of control steps execute the instructions, Add (R_3), R_4 on single bus architecture. **(10 Marks)**

OR

10 a. Explain in detail, the organization of control unit. **(10 Marks)**

b. What is pipelining? Explain 5 stage instruction pipeline with timing diagram. **(10 Marks)**

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