

Code No.: DS405PC

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**CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS**

**II-B.TECH-II-Semester End Examinations (Supply) - February- 2023
COMPUTER ORGANIZATION AND ARCHITECTURE
(CSD)**

[Time: 3 Hours]

[Max. Marks: 70]

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(20 Marks)

1. a) Define Computer Organization. [2M]
- b) What is the purpose of BUN instruction? [2M]
- c) What is the microoperation? [2M]
- d) What is instruction code? [2M]
- e) Write a short note on Machine language instruction formats. [2M]
- f) How the floating-point numbers are represented and used in digital arithmetic operations? [2M]
- g) What is Register Indirect Addressing mode? Give an example? [2M]
- h) What are the differences between a conventional scalar processor and a vector processor? [2M]
- i) Define Hit ratio and Miss ratio. [2M]
- j) List out the classification of multiprocessors. [2M]

PART-B

(50 Marks)

- 2.a) Build the functional diagram of a computer and explain each block. [5M]
- b) Show the construction of a bus system with four registers and explain various functions used to select registers by bus. [5M]

OR

- 3.a) Explain about Memory reference instructions with an example. [5M]
- b) What is register transfer language? Explain the basic symbols used in register transfer. [5M]

- 4.a) What are the different types of addressing Modes? Explain Register mode and Absolute Mode with examples. [5M]

- b) Explain Data transfer and manipulation instructions. [5M]

OR

- 5.a) Explain the design of micro programmed control unit in detail. [5M]
- b) Discuss the role of micro program sequencer in reading and executing micro instruction. [5M]

- 6.a) Explain the Booth's multiplication algorithm. [5M]
b) Explain about divisional algorithms. [5M]

OR

- 7.a) Solve the arithmetic operations $35 + 40$ and $-35 + (-40)$ with binary numbers in signed 2's complement representation and signed-magnitude representation. [5M]
b) Explain about Decimal arithmetic unit. [5M]

- 8.a) Compare and Contrast between Memory Mapped I/O and Isolated I/O. [5M]
b) What are handshaking signals? Explain the handshake control of data transfer during input and output operation. [5M]

OR

- 9.a) Explain about Arithmetic Pipeline and Instruction Pipeline. [5M]
b) Distinguish between the virtual memory and cache memory. Write the merits and demerits of virtual memory. [5M]
- 10.a) Explain the architecture of a shared memory multiprocessor? [5M]
b) Consider the multiplication of two 40×40 matrices using a vector processor. [5M]
i) How many product terms are there in each inner product and how many inner products must be evaluated?
ii) How many multiply add operations are needed to calculate the product matrix?

OR

- 11.a) Explain the architecture of a shared memory multiprocessor? [5M]
b) Differentiate between CISC and RISC. [5M]
