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Roll No. .....

TMC–102

M. C. A. (FIRST SEMESTER)

MID SEMESTER

EXAMINATION, Nov., 2022

COMPUTER ORGANIZATION AND ARCHITECTURE

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer **all** the questions by choosing any ***one*** of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) Define the importance of logic gate in digital circuits. Explain any *four* logic gates with diagram, working, and truth table. (CO1)

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OR

(b) How information is represented in a computer ? Define computer hardware generation. (CO1)

2. (a) Write a short note on K-Map. In which situation K-Map is not useful ? Clarify the following with respect to K-Map : (CO2)

(i) Pair

(ii) Quad

(iii) Octet

(iv) Rolling

(v) Overlapping

OR

(b) In your opinion, which circuit is useful for adding 3 binary digits ? Explain the related circuit diagram with its truth table and working. Explain half subtractor. (CO2)

3. (a) What do you mean multiplexer and encoder ? Explain 4 × 1 Mux and Octal to Binary encoder. (CO1)

OR

(b) Write a short note on Von Neumann Machine and Register Transfer Language. (CO1)

4. (a) Discuss the importance of Hardwired and micro programmed control unit. (CO1)

OR

(b) Explain Instruction Cycle. Draw the flow-chart of Fetch, and Decode instruction. (CO1)

5. (a) Discuss Booth multiplication algorithm. Draw and explain the flowchart to support your answer. (CO2)

OR

(b) Implement following circuits using Decoder : (CO2)

(i) Full adder

(ii) Full Subtractor

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