A–0439

Total Pages : 3   Roll No. ....

MSCPH-522

Master of Science Physics (MSCPH)

Memory Devices and Microprocessors

Examination, June 2025

Time : 2:00 Hrs.   Max. Marks : 70

Note :– This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. *Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

Section–A

Long Answer Type Questions   2×19=38

Note :– Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

1.   Explain at least five characteristics of digital IC's.

2. What are adder circuits ? Explain half adder, full adder and N-bit parallel adder.

3. What is the requirement of computer memory ? Using functional diagram discuss memory organization. Elaborate memory operations.

4. Discuss an ideal microcomputer. What is the difference between an ideal microcomputer and an actual microcomputer.

5. Explain pin configuration of 8085 microprocessor. Make the schematic diagram of 8085 demultiplexed address bus, data bus and generate the control signals.

Section–B

Short Answer Type Questions   4×8=32

Note :– Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Using resistance transistor logie discuss the generation of NOR logic.

2. What is high level language ? Explain the need of compiler in high level language.

3. What do you understand by combinational logic circuit ? Find out the truth table and draw the circuit corresponding to Boolean function $Y = \overline{A}C + \overline{A}\overline{B}$.

4. Write a program in assembly language to subtract a number stored in memory location 2100 H from the number in memory location 2101 H using addition method. The result should be stored in memory location 2102 H. If the result is negative, memory location should be loaded with 00 H.

5. What is synchronous counter ? Design a 3-bit synchronous counter using J-K flip-flop.

6. Explain the term single address instruction, two address instruction and three address instructions in brief.

7. Explain with the help of timing diagram the fetch and execution cycle of "IN" instruction.

8. Discuss computer memory and its classification. Draw a block diagram of 4-bit memory register using D-flip flop.

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