A-0596

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MSCPH–522

M.Sc. PHYSICS (MSCPH)

(Memory Devices and Microprocessors)

3rd Semester Examination, Session December 2024

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. What is microprocessor ? Discuss the logical structure of a typical microprocessor.

2. What is logic family ? Discuss unipolar and bipolar logic family. How a transistor can be used as a switch ?

3. Give an overview of 8085 instruction set. Explain instruction classifications according to their size and work with suitable examples.

4. Make a circuit diagram for 1-bit memory cell using transistors. What is register, using a circuit diagram discuss a 4-bit shift register.

5. What is basic idea of memory interfacing with microprocessor ? Explain absolute and partial decoding of address lines.

Section–B

Short Answer Type Questions 4×8=32

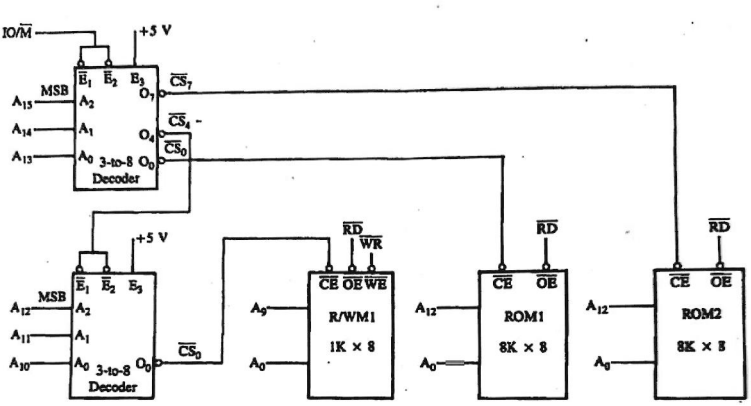
***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. What is microcomputer ? Explain the organization of CPU.

2. Write short note on CMOS logic family. Give at least two applications of CMOS.

3. Make the schematic diagram of 8085 demultiplexed address bus, data bus and generate the control signals.

4. In following figure specify the memory addresses of ROM1, ROM2 and R/WM1. Eliminate the second decoder and connect $\overline{CS}_4$ to $\overline{CE}$ of the R/WM1, and identify its memory map and foldback space :



5. Write a program in assembly language 10 hexadecimal numbers. If the summation comes larger than FFH how the result will be displayed.

6. What is counter circuit ? Make a logic diagram of 3-bit digital counter and explain its working.

7. Explain with the help of timing diagram the fetch and execution cycle of 'OUT' instruction.

8. What do you understand by computer language ? Discuss low level language and high-level language with examples.

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