

Exam.Code:0976
Sub. Code: 7115

2054
M. Tech. (Microelectronics)
Second Semester
MIC-204: Advanced Memory Technology and Design

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Answer the following:-

- a) Why CMOS technology is most suitable for memory circuits?
- b) Explain Hierarchical Memory Systems.
- c) Write note on Hot-electron Injection.
- d) What are Design Approaches in memory chip design?
- e) Briefly discuss significance of S/N ratio in memory design. (5x2)

UNIT - I

- II. a) Explain the basic operation of 1-T cell.
b) Explain working of any NMOS dynamic logic circuit. (2x5)

- III. Write notes on the following
- a) Scaling Law (4)
 - b) Bootstrap Driver (3)
 - c) CMOS Latch-Up (3)

- IV. Describe the role of V_{BB} generator and reasons why its needed. (10)

UNIT -II

- V. a) List different redundancy techniques used to realize fault tolerance in memory organizations. Discuss any one technique in detail.

- b) What is Address Multiplexing and its basic operation? (2x5)

P.T.O.

(2)

VI. Write a short note on following:

- a) Multi-divided data line
- b) On-chip testing circuits
- c) The address buffer
- d) Refresh-Relevant Circuits
- e) Word divider

(5x2)

VII. Explain the Standard DRAM with block diagram and read-write cycle.

(10)

x-x-x