

Code No. 2282 / CORE

FACULTY OF SCIENCE
M. Sc. III – Semester Examination, January 2018

Subject : Physics
(Specialization: Electronics Instrumentation)

Paper – IV (A)
Digital Logic Circuits

Time : 3 Hours

Max. Marks: 80

Note : Answer all questions from Part–A and Part–B. Each question carries 4 marks in Part–A and 12 marks in Part – B.

PART – A (8 x 4 = 32 Marks)
(Short Answer Type)

- 1 Simplify the following Boolean function in product of sums.
 $F(A, B, C, D) = \Sigma (0, 1, 2, 5, 8, 9, 10)$
- 2 Explain the binary subtraction process with an example.
- 3 Draw the circuit of NOR gate latch and explain.
- 4 Explain the decoding of a counter.
- 5 What are the TTL characteristics?
- 6 Draw the circuit of 8 to 1 multiplexer and explain.
- 7 Describe dynamic RAM structure and its operation.
- 8 Explain the significance of VHDL.

PART – B (4 x 12 = 48 Marks)
(Essay Answer Type)

- 9 (a) Discuss the simplification of Boolean function using four variable karnaugh map with an example.
OR
(b) Draw the circuit diagram of a BCD adder and explain its operation.
- 10 (a) Draw the logic diagram of a left to right shift register and explain.
OR
(b) Draw the logic diagram of IC asynchronous down counter and explain.
- 11 (a) Discuss the CMOS logic and its characteristics.
OR
(b) Discuss the magnitude comparator and code converter with necessary diagrams.
- 12 (a) Distinguish between static RAM and dynamic RAM. Draw the diagram of a 4 x 4 RAM and explain.
OR
(b) Explain the significance of VHDL and discuss VHDL syntaxes. Libraries and packages.