C 1270

FOURTH SEMESTER B.TECH. (ENGINEERING) [14 SCHEME] DEGREE EXAMINATION, APRIL 2016

EC 14 405—DIGITAL ELECTRONICS

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

I. 1 State and prove Demorgan's theorem.

2 Draw the XOR logic using only NAND gates.

3 How does a ripple carry adder work ? Give an example.

4 Explain the working of Gray Code with an example.

5 Describe the working principle of T flip-flop.

6 Enumerate the application of counters.

7 State the features of asynchronous sequential circuits.

8 What do you mean by arbiter circuit ?

9 If A and B are Boolean variables and if $A = 1$ and $A + B = 0$, Find B ?

10 Differentiate a decoder from a Demultiplexer.

(8 × 5 = 40 marks)

Part B

II (a) Explain in detail about positive and negative logic with a complete example.

Or

(b) Simplify the 5 variable switching function using Karnaugh map, $f(EDCBA) = \sum m(3, 5, 6, 8, 9, 12, 13, 14, 19, 22, 24, 25, 30)$.

III (a) Design and implement the conversion circuits for BCD to Excess - 3 code.

Or

(b) Explain the operation of carry look ahead adder with neat diagram.

IV (a) Explain in detail about SR flip-flop and D flip-flop.

Or

(b) Elaborate the working of Ring counter and Johnson counter.

V (a) Explain in detail about basic design steps of finite state machine with an example.

Or

(b) Discuss in detail about state reduction and state assignment of asynchronous sequential circuits with examples.

(4 × 15 = 60 marks)