

D 70388

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Name:

Reg. No.



**THIRD SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE
EXAMINATION, NOVEMBER 2014**

IT/CS 09 306/PTCS 09 305—SWITCHING THEORY AND LOGIC DESIGN

Time : Three Hours

Maximum : 70 Marks

Part A

Answer all questions.

Each question carries 2 marks.

1. Convert the Gray number 1110 to BCD.
2. Construct table for 3-input NOR gate.
3. List the gates with universal property.
4. What is a fault ?
5. Write the truth table of a T-flip flop.

(5 × 2 = 10 marks)

Part B

Answer any four questions.

Each question carries 5 marks.

6. Apply DeMorgan's theorems to the following :—

$$\overline{\overline{AB}(CD + \overline{EF})} \quad \overline{\overline{AB} + \overline{CD}} \quad \text{and} \quad \overline{(A + \overline{B})(\overline{C} + D)}$$

7. Using AND and OR gates implement the following expressions :

$$X = A(CD + B) \quad \text{and} \quad X = ACD + B$$

8. Write notes on Test generation.
9. Explain parity generators.
10. Compare J-K flip flop and S-R flip-flop.
11. Explain the operation of parallel adders.

(4 × 5 = 20 marks)

Part C

Answer all questions.

Each question carries 10 marks.

12. (a) Use a Karnaugh map to reduce each expression to a minimum sum-of-products form :

$$X = A + \overline{BC} + CD \quad \text{and} \quad X = \overline{AB} + \overline{AB} + \overline{CD} + \overline{CD}$$

Or

Turn over

- (b) Explain the rules and laws of Boolean algebra.
13. (a) Describe the universal property of NOR gate with suitable diagrams.
- Or*
- (b) Explain BCD-to-binary and binary-to-Gray code conversion with examples.
14. (a) Describe the procedure for finding the faults using Boolean difference method.
- Or*
- (b) Write notes on Fault-tolerance technique and Design for testability.
15. (a) Explain the operation of up-down counters.
- Or*
- (b) Describe any two applications of shift registers.

(4 × 10 = 40 marks)