

Code No.: 1537

Sub. Code: R 4 CS 11

**B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2008.**

First Semester

Computer Science - Allied

Paper I – DIGITAL DESIGN

(For those who joined in July 2008 onwards)

Time: Three hours

Maximum : 75 marks

PART A - (10 x 1 = 10 marks)

Answer ALL questions

Choose the correct answer :

1. The 9's complement of 546700 is _____
(a) 453299 (b) 987061
(c) 012398 (d) None.
2. $x + x' =$ _____
(a) 1 (b) 0
(c) x (d) xx' .
3. _____ is the number of inputs available in a gate
(a) Fan-in (b) Fan-out
(c) Binary value (d) None.
4. Functions that have unspecified outputs for some input combinations is _____
(a) Incomplete Function
(b) Incompletely Specified Function
(c) Don't Care Function
(d) Boolean Function.
5. Exclusive - OR Gate is denoted by symbol _____
(a) & (b) %

12.(a) Express the Boolean Function $F = xy + x'z$ as a product of Max terms.

Or

(b) Simplify the Boolean function

$F(w,x,y,z) = \sum(0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$ using four-variable map.

13.(a) Explain parity generation and checking process.

Or

(b) Explain Half Adder circuit with diagram.

14.(a) Define sequential circuits.

Or

(b) Explain D Latch with circuit.

15.(a) Explain Binary Counter.

Or

(b) Discuss on Read only Memory.

PART C- (5 x 8= 40 marks)

Answer ALL questions choosing either (a) or (b).

16.(a) Do the following conversions:

- (i) Convert $(4310)_5$ to decimal
- (ii) Convert $(16.5)_{16}$ to decimal
- (iii) Convert $(27.315)_{10}$ to binary
- (iv) Convert B2FA to binary.

Or

(b) Explain Basic theorems and properties of Boolean Algebra.

17.(a) Simplify the following Boolean expressions to a minimum number of literals.

- (i) $ABC + A'B + ABC'$
- (ii) $A'C' + ABC + AC'$

(iii) $x'yz + xz$.

(b) Simplify the Boolean function:

$$F(A, B, C, D) = \sum (4,5,7,12,13,14) \text{ and don't care condition } d(A,B,C,D) \\ = \sum (1,9,11,15).$$

18.(a) Describe the Implementation of NAND and NOR Gate.

Or

(b) Explain Binary Adder and Subtractor with neat circuit.

19.(a) Explain Decoders in detail.

Or

(b) Brief out state equations, state table and state diagrams.

20.(a) Explain Synchronous counters.

Or

(b) Describe Random Access Memory in detail.