(6 pages)

Reg. No. : ....

Code No. : 1712   **Sub. Code : R 4 CS 11/**
                                            B 4 CS 11

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2010.

First Semester

Computer Science — Allied

Paper I — DIGITAL DESIGN

(For those who joined in July 2008 and afterwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1.   DVD stands for ————————

   (a) Digital Video Disk

   (b) Digital Versatile Disk

   (c) Data Versatile Disk

   (d) None

2.   The 2's complement of 0110111 is ————————

   (a) 1001000   (b) 1001001

   (c) 10001001   (d) 1000110

3.   ANDing maxterms is denoted by ————————

   (a) π (b) Σ

   (c) S (d) None

4.   ECC stands for ————————

   (a) Emitter coupled logic

   (b) Emitted-coupled logic

   (c) Emitted-couple logic

   (d) None

5.   ———————— is a universal gate

   (a) NAND   (b) OR

   (c) AND   (d) NOT

6.   The circuit that checks the parity at the receiver is
called a ————————

   (a) parity checker   (b) parity generator

   (c) parity corrector   (d) none

7. The combinational circuit that converts n-input line to a maximum of 2^n unique output lines is _____

(a) decoder
(b) encoder
(c) multiplexer
(d) none

8. Storage elements that operate with signal level and controlled by a clock transition are called _____

(a) flip flops
(b) latches
(c) clock control
(d) none

9. A group of flip flop is called _____

(a) counter
(b) register
(c) latch
(d) none

10. The BCD counter counting from 0 to 9 is called _____

(a) deci counter
(b) decade counter
(c) round counter
(d) none

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write about octal and hexadecimal numbers.

Or

(b) Prove :

(i) $x + x = x$

(ii) $x \cdot x = x$

(iii) $x + 1 = 1$

12. (a) Explain sum of minterms with suitable example.

Or

(b) Draw the logic diagrams for the Boolean expressions.

(i) $Y = A + B + B' + (A + C')$

(ii) $Y = (A \oplus C)' + B$.

13. (a) Explain multilevel NAND circuit.

Or

(b) Explain binary subtractor.

14. (a) Write about sequential circuits.

Or

(b) Discuss about (i) state diagram (ii) state table.

15. (a) Explain registers with parallel load.

Or

(b) Write notes on ring counter and up/down binary counter.

SECTION C — (5 × 8 = 40 marks)

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

16. (a) Explain the steps involved in converting binary numbers to other bases.

Or

(b) Discuss about Boolean functions in detail.

17. (a) Explain different forms of representing a boolean function.

Or

(b) Convert each of the following to other canonical form :

(i) $F(x, y, z) = \Sigma(2, 5, 6)$

(ii) $F(A, B, C, D) = \pi\ (0, 1, 2, 4, 7, 9, 12)$

18. (a) Explain the analysis procedure of combinational circuit.

Or

(b) Explain binary multiplier with a neat diagram.

19. (a) Explain in detail about decoders.

Or

(b) Explain in detail - Analysis with JK flip flop.

20. (a) What is shift register? Explain about universal shift register.

Or

(b) Explain in detail about ROM.

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