Reg. No. : .....

Code No. : 20270 E **Sub. Code : JACA 11/ SACA 11/AACA 11/ CACA11**

B.C.A. (CBCS) DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Computer Applications — Allied

DIGITAL DESIGN

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answers :

1. The binary equivalent of decimal number 15 is

   (a) 1101 (b) 1011

   (c) 1111 (d) 1001

2. How many bits are byte

   (a) 4 (b) 8

   (c) 16 (d) 32

3. For n binary variables we can obtain ———— minterms.
   (a) n (b) 2^n
   (c) 2*n (d) n^2

4. A product of sums is a Boolena expression contains ———— terms.
   (a) OR (b) AND
   (c) not (d) sum

5. Combinational circuit has ———— an m outputs.
   (a) n (b) m
   (c) 2^n (d) 2*n

6. A combinational circuit that performs the addition of two bits is called ———— adder.
   (a) two (b) half
   (c) full (d) binary

7. A ———— is a digital circuit that performs the inverse operation.
   (a) encoder (b) decoder
   (c) multiplexer (d) demultiplexer

8. An encode has n input lines 2^n input lines and ———— output lines.
   (a) n (b) m
   (c) 2^n (d) 2*n

9. How many types of memory is available?
   (a) 2 (b) 3
   (c) 4 (d) 5

10. Which of the following is volatile memory?

(a) RAM (b) ROM

(c) Secondary storage (d) None of these

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Describe about 1's complement and 2's complement numbers.

Or

(b) Explain any five Boolean functions.

12. (a) Explain five variable map.

Or

(b) Describe any three logic gates.

13. (a) Describe combinational circuits.

Or

(b) Describe binary adder.

14. (a) Write short notes on Flip-flop.

Or

(b) Describe sequential circuits.

15. (a) Write a note on binary counter.

Or

(b) Explain memory unit with neat diagram.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Explain various logic gates.

Or

(b) Explain the conversion of octal number to decimal and hexa decimal.

17. (a) Explain four variable map.

Or

(b) Simplify the following Boolean function using sum-of product method F(A,B,C,D) = (0, 1, 2, 5, 8, 9, 10).

18. (a) Explain subtractor.

Or

(b) Describe binary multiplier.

19. (a) Explain decoder.

Or

(b) Describe storage element latches.

20. (a) Describe memory decoding.

Or

(b) Explain error detection and correction.

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