

(6 pages)

Reg. No. :

Code No. : 21126

Sub. Code : JACA 11

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2016.

First Semester

Computer Application – 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 answer :

1. Which of the following is 2's complement of 1000011?

(a) 1000011

(b) 1111111

(c) 0111101

(d) 0111100

2. Which of the following is the symbol of AND gates?



(d) None of the above

3. The K-map is used for _____ boolean function.

(a) maximizing

(b) minimizing

(c) deriving

(d) all the above

4. The don't care condition square marked by _____.

(a) d

(b) x

(c) 1

(d) 0

5. In exclusive – OR $xy' + x'y =$ _____.

(a) $x \oplus y$

(b) $x \odot y$

(c) $x + y$

(d) $x.y$



6. A binary adder produces the arithmetic _____ of two binary number.
- (a) product (b) sum
(c) subtraction (d) division
7. The state of the flip flop is switched by change in the control of _____.
- (a) output (b) input
(c) trigger (d) none of the above
8. If an encoder has 2^n input lines then it has _____ output lines.
- (a) $n+1$ (b) $n+2$
(c) n (d) $n+3$
9. A shift register shifting binary information in _____ direction(s).
- (a) one (b) both
(c) (a) or (b) (d) (a) and (b)
10. Memory of computer not represent by following letter.
- (a) K (b) M
(c) G (d) E

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PART B — ($5 \times 5 = 25$ marks)

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

Each answer should not exceed 250 words.

11. (a) Express the following numbers in decimal.
 $(10110.0101)_2$, $(16.5)_{16}$, and $(26.24)_8$
- Or
- (b) Explain associate law and commutative law in Boolean algebra.
12. (a) Explain in detail about Don't care conditions.
- Or
- (b) Explain K-map with example.
13. (a) Explain in detail about Exclusive –OR function.
- Or
- (b) Explain Half-adder circuit with neat diagram.
14. (a) Explain encoder with diagram.
- Or
- (b) Explain in detail about D-Latch.

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[P.T.O.]



15. (a) What is the use of register? Explain shift registers.

Or

- (b) What is the use of BCD counter? Explain with neat diagram.

PART C — ($5 \times 8 = 40$ marks)

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

Each answer should not exceed 600 words.

16. (a) Perform subtraction on the following unsigned binary numbers using the 2's complement of the subtrahend. Where the result should be negative, 2's complement it and affix a minus sign.

(i) 11011-11001

(ii) 110100-10101

Or

- (b) Explain

(i) Register

(ii) Boolean functions

17. (a) Simplify the following Boolean expressions, using four-variable maps.

(i) $A'B'C'D' + AC'D' + B'CD' + A'BCD + BC'D$

(ii) $x'z + w'xy' + w(x'y + xy')$

Or

- (b) Explain the following with example.

(i) Product-of-sum

(ii) Sum-of-product

18. (a) Explain full adder circuit with neat diagram.

Or

- (b) Draw a NAND logic diagram and explain.

19. (a) Explain any one Flip-Flop circuit with neat diagram.

Or

- (b) Explain SR Latch with diagram.

20. (a) Explain in details about RAM and its operations.

Or

- (b) What is the use of registers? Explain Ripple counter.

