



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.C.A.DEGREE EXAMINATION – COMPUTER APPLICATIONS

SECOND SEMESTER – APRIL 2019

CA 2505– DIGITAL LOGIC FUNDAMENTALS

Date: 04-04-2019
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

PART – A

ANSWER ALL QUESTIONS

(10 x 2 = 20 marks)

1. Convert $(0.6875)_{10}$ to binary.
2. Implement AND gate using NOR gates.
3. Give the truth table for half adder and write the expression for sum and carry.
4. What is EPROM?
5. What is the operation of JK flip flop?
6. Write any two applications of shift registers.
7. What do you mean by indirect address?
8. Define Operation code.
9. What is non- volatile memory?
10. What do you mean by addressing modes?

PART – B

ANSWER ALL QUESTIONS

(5 x 8 = 40 marks)

11.a) Simplify the following expressions in (1) sum of products and (2) product ofsums

i) $AC' + B'D + A'CD + ABCD$ (4)

ii) $(A' + B' + D') (A+B'+C') (A'+B+D') (B+C'+D')$ (4)

(Or)

b) i) Convert $(126)_{10}$ to Octal number and binary number. (4)

ii) Find the Octal equivalent of the hexadecimal number DC.BA. (2)

iii) Find the octal equivalent of hexadecimal numbers AB.CD (2)

12. a) Design and explain about full adder with neat diagram.(8)

(Or)

b) Design a full subtractor and derive expression for difference and borrow.(8)

13.a) Explain in detail about counters.

(Or)

b) Explain the operation of a JK Master Slave flip flop with logic diagram. (8)

14.a) Explain in detail about the common bus system of a processor with neat Diagram.(8)

(Or)

b) Discuss in detail about the stored program architecture of computer system with neat diagram.(8)

15. a) Explain in detail about various addressing modes with suitable example.(8)

(Or)

b) Explain in detail about types of computer instructions. Give examples.(8)

PART – C

ANSWER ANY TWO QUESTIONS

(2 x 20 = 40 marks)

16. a) Simplify the given Boolean function in POS form using K-map (10)

$$F(A,B,C,D)= m(0,1,4,7,8,10,12,15)+d(2,6,11,14)$$

b) Explain in detail about multiplexers.(10)

17. a) Explain in detail about RS flip flop with suitable diagram.(10)

b) Explain about various registers of computer system.(10)

18. a) Explain about instruction formats with examples. (10)

b) What is ROM? Explain in detail about its types.(10)

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