

(20518)

Roll No.

BCA-II Sem.

18007

B. C. A. Examination, May 2018

DIGITAL ELECTRONICS AND COMPUTER

ORGANIZATION

(BCA-204)

(New)

Time : Three Hours]

[Maximum Marks : 75

Note: Attempt questions from all Sections as per instructions.

Section-A

(Very Short Answer Questions)

Attempt all the *five* questions. Each question carries 3 marks. Very Short answer is required not exceeding 75 words. $3 \times 5 = 15$

1. What are universal gates ? Explain how basic gates can be realize using NAND and NOR gate.
2. Design and draw the logic diagram of full adder.

3. What is Read Only Memory ? How PROM, EPROM, EEPROM differ from each other ?
4. What is flip-flop ? Explain T flip-flop.
5. Using K-map method simplify the following Boolean function :

$$F(ABCD) = \sum m(0, 2, 3, 6, 7) + \sum d(8, 10, 11, 15)$$

Section-B

(Short Answer Questions)

Attempt any *two* questions out of the following three questions. Each question carries $7\frac{1}{2}$ marks. Short answer is required not exceeding 200 words. $7\frac{1}{2} \times 2 = 15$

6. What is race around condition ? Construct master slave flip-flop using SR flip-flop.
7. What is track and sector ? How data are stored in hard disc, floppy disc and CD ROM ? Explain.
8. Using eight 64×8 ROM chips with an enable input and decoder, construct a 512×8 ROM.

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Section-C

(Detailed Answer Questions)

Attempt any *three* questions out of the following five questions. Each question carries 15 marks. Answer is required in detail. 15×3=45

- 9. Design a synchronous sequential circuit with input A and B and output Y. Initially and at any time if both the inputs are 0, then the output Y is equal to 0. When A or B become 1, Y becomes 1 when other input also become 1, Y become 0. The output stay at 0 unit circuit goes back to initial state.
- 10. Discuss various semiconductor cells. Also discuss a RAM organization. If 16K×8 memory chips are used to construct 64K×16 memory :
 - (a) Find how many chips will be needed
 - (b) Draw block diagram showing connections of chips to address lines. <https://www.ccsustudy.com>
- 11. Explain and compare sequential and combinational circuit. Using full adder, design a four bit adder and subtractor circuit.

- 12. Explain how 3 to 8 decoder function can be obtained from a demultiplexer.
- 13. Simplify the following Boolean function : 3×5
 - (a) $W'X(Z'+YZ) + X(W + Y'Z)$
 - (b) $X'Y + XY + XY'$
 - (c) $XY'Z + X'Y'Z + XYZ$
 - (d) $(X+Z')(Y + Z')$
 - (e) $(A+D)(C'+D)(A+B'+C)$.