

(4)

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) $(A+D)(C'+D)(A+B'+C)$.

18007-4

(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.

54

(2)

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.

18007

(3)

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. $15 \times 3 = 45$

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 $16K \times 8$ memory chips are used to construct $64K \times 16$ memory :
 - (a) Find how many chips will be needed
 - (b) Draw block diagram showing connections of chips to address lines.
11. Explain and compare sequential and combinational circuit. Using full adder, design a four bit adder and subtractor circuit.

18007

53

(20519)

Roll No.

Total Questions : 13]

[Printed Pages : 3

18007

B.C.A. IInd Semester Examination, May-2019

**DIGITAL ELECTRONICS AND
COMPUTER ORGANISATION**

(BCA-204)

Time : 3 Hrs.]

[M.M. : 75

Note :- Attempt all the Sections as per instructions.

Section-A

(Very Short Answer Type Questions)

Note :- Attempt all *five* questions. Each question carries 3 marks. Very short answer is required not exceeding 75 words.

1. Give the truth table and symbol for X-OR logic gate.

2. What is Subtractor ?

NA-565

(1)

Turn Over

+

3. Define associative memory.
4. Give the applications of shift registers.
5. State the boolean distributive law.

Section-B

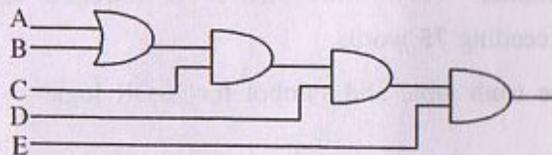
(Short Answer Type Questions)

Note :- Attempt any *two* questions out of the following three questions. Each question carries 7½ marks.

Short answer is required not exceeding 200 words.

6. Simply the given function using *k*-maps :

$$F(A, B, C, D) = \Sigma(0, 2, 3, 5, 7, 9, 11, 13, 14)$$
7. Derive the Boolean expression for logic circuit shown below :



8. Draw RS flip flop and explain its working.

NA-565

(2)

Section-C

(Long Answer Type Questions)

Note :- Attempt any *three* questions out of the following five questions. Each question carries 15 marks. Answer is required in detail.

9. Give difference between the following :
 - (i) SRAM vs DRAM
 - (ii) Registers vs Counters
10. Design 5-Mod counters using J-K flip flop.
11. (i) What is cache memory ? Why is it called high speed memory ?
 (ii) Design 8 × 1 Multiplexer
12. Describe the following terms :
 - (i) ROM
 - (ii) PROM
 - (iii) EPROM
 - (iv) RAM
 - (v) Virtual Memory
13. Discuss various types of Logic Gates. Also discuss their applications.

NA-565

(3)

12. Define the following : $3 \times 5 = 15$

- (a) Multiplexer (8×1) MUX Design
- (b) Register
- (c) Flip-Flop Application
- (d) Asynchronous Counter
- (e) Basic Cell of Static RAM

13. Write short notes on cache memory organization. 15

180074

N (Printed Pages 4)

(20517) Roll No.....

B.C.A. - II Sem.

18007

B.C.A. Examination, May 2017

Digital Electronics and Computer

Organisation

(BCA-204)

(New)

Time : Three Hours] Maximum Marks : 75

Note : Attempt **all** the sections as per instructions.

Section-A

Note : Attempt all **five** questions. Each question carries **three** marks.

1. What is truth table? What is its significance? 3
2. What is multiplexers? 3

P.T.O.

44

3. Explain the Edge Triggered D Flip-Flops. 3
4. Why are NAND and NOR gates more popular? 3
5. Difference between Registers and Counters. 3

Section-B

Note : Attempt any **two** questions.

6. Reduce the following Boolean expression using K-Map. 7.5

$$F(P, Q, R, S) = \Sigma(0, 3, 5, 6, 7, 11, 12, 15)$$

7. The 2732 is a 4096 x 8 EPROM. How many address line does it have? 7.5
8. Draw the master slave JK flip-flop and explain its working. 7.5

1800712

Section-C

Note : Attempt any **three** questions.

9. (a) Explain the difference between cache memory and virtual memory. 7.5
(b) Draw the Half adder Logic circuit and summarize the operation. 7.5
10. (a) State and verify De Morgan's Law in following Boolean Algebra. 7.5
(b) Draw a Logic Circuit Diagram for the Boolean expression 7.5

$$X : (Y'+Z)$$

11. (a) Explain the operation of the bi-directional shift register. 7.5
(b) Explain how a J-K flip-flop can be converted into a D flip-flop. 7.5

1800713

P.T.O.

43

(4)

12. Discuss the working principle of a synchronous (parallel) counter with its block diagram. What is the advantage of synchronous counters over asynchronous (ripple) counters? Give same example(s) of both types of counters. 15
13. What is associative memory? Draw and explain its block diagram. How read operations and write operations are performed in associative memories. 15

18007-4-

V

(20516)

Roll No.

BCA-II Sem.

18007

B.C.A. Examination, May 2016

DIGITAL ELECTRONICS AND COMPUTER

ORGANISATION

(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 of this Section. Each question carries 3 marks. Very short answer is required not exceeding 75 words. $3 \times 5 = 15$

1. What are logic gates? Draw the schematic block diagram of a 3-input AND gate. Give its truth table. 3

34

18007

(2)

2. What is decoder and encoder? 3
3. What do you mean by Cache memory? 3
4. What is the function of shift-register? Where are such registers used? 3
5. Differentiate RAM and ROM. 3

Section-B

(Short Answer Questions)

This Section contains three questions, attempt any *two* 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. Draw K-map and simplify the following boolean expression : $7\frac{1}{2}$

$$Y(A, B, C, D) = \sum(0, 2, 4, 6, 8, 10, 12, 14, 15).$$

7. What is shortcoming of an S-R flip-flop? Explain how its shortcoming is removed by J-K flip-flop. Describe its operating principle. $7\frac{1}{2}$
8. Explain the difference between static and dynamic memories. $7\frac{1}{2}$

18007

(3)

Section-C

(Detailed Answer Questions)

This Section contains five questions, attempt any *three* questions. Each question carries 15 marks. Answer is required in detail. $15 \times 3 = 45$

9. Explain the various Boolean laws and simplify the following boolean expressions : 5×3
 - (a) $(\bar{A} + B + \bar{B}A)D$
 - (b) $\bar{A}\bar{B}\bar{C} + A\bar{B}\bar{C} + \bar{A}\bar{B}C + A\bar{B}C$
 - (c) $\bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}CD + \bar{B}\bar{C}$
10. (a) Implement a full-subtractor with two half-subtractors and an OR-gate. $7\frac{1}{2}$
(b) Show how a full-adder can be converted to a full-subtractor with the addition of one inverter circuit. $7\frac{1}{2}$
11. Write short notes on the following : 3×5
 - (a) EPROM
 - (b) Dynamic RAM
 - (c) Hard disk
 - (d) Floppy disk
 - (e) CD-ROM.

18007

33