# CR-5602

## B. C. A. (First Year) Examination, March-April 2019

**(Group-I)**

***Paper : BCA-12***

**DIGITAL ELECTRONICS**

***Time Allowed : Three hours***

***Maximum Marks : 40***

***Note :*** *All sections as directed. All questions carry equal marks.*

**Section-'A'**

**(Objective Type questions)** **5×1=5**

***Note :*** *Attempt all questions. Each question carries 1 mark.*









**1.** Choose the correct answer :

(i) What is the radix of a binary number system?

(a) 4

(b) 8

(c) 2

(d) 10

(ii) Which of the following logical operations is represented by the $\oplus$ sign in Boolean algebra?

(a) Inversion

(b) AND

(c) OR

(d) Complementation

(iii) What is the hold condition of a flip-flop?

(a) Both S and R inputs activated

(b) No active S or R input

(c) Only S is active

(d) Only R is active

(iv) In memory-mapped scheme, the devices are viewed as :

(a) Distinct I/O devices

(b) Memory locations

(c) Only input devices

(d) Only output devices

(v) What is the maximum time required before a dynamic RAM must be refreshed?

(a) 2 ms

(b) 4 ms

(c) 8 ms

(d) 10 ms









## Section-'B'

**(Short Answer Type Questions)** **5×2=10**

*Note : Attempt all questions. **One** question from each unit is compulsory. Each question carries 2 marks.*

### Unit-I

**2.** (i) Convert 0·85 to its binary equivalent.

(ii) Convert 2F59 to its equivalent decimal number.

**Or**

What is 2's complement representation? What are its advantages over the other number systems?

### Unit-II

**3.** What do you mean by Binary Fixed-Point representation?

**Or**

Show the following expression as product of sums. Depict the K-map for both as sum of products and product of sums with corresponding gates to realise the function

$$F = \overline{A}\overline{C} + B\overline{C}$$

**Unit-III**

4. What is T-type Flip-Flop? Explain.

**Or**

What do you mean by program control?

**Unit-IV**

5. What is synchronous data transfer?

**Or**

Write short note on isolated versus memory mapped I/O.

**Unit-V**

6. What do you mean by Page Replacement?

**Or**

Write short note on writing into cache.









**Section-'C'**

**(Long Answer Type Questions)** **5×5=25**

*Note : Attempt all questions. One question from each unit is compulsory. Each question carries 5 marks.*

**Unit-I**

7. Convert the following Hexadecimal number to Binary and then to Octal.

(i) 2BAFC

(ii) 67DEF

(iii) 2567C

(iv) 2AB76

**Or**

Describe the Gray Code. What are characteristics of gray code with example?

**Unit-II**

8. Explain using diagram how NOR and NAND gates are universal gate?

Or

Explain two and three variable Karnaugh map using example.

## Unit-III

9. Explain Half and Full adder with the help of logic circuit diagram.

Or

Draw the logic diagram and explain the 16 to 1 multiplexer circuit.

## Unit-IV

10. Write the some properties of simple I/O devices and controller.

Or

Explain in detail Handshaking.

## Unit-V

11. Write short notes on : (any three)

(i) Magnetic Drum

(ii) Semiconductor memories









(iii) Page table

(iv) Memory Hierarchy

(v) Mapping Techniques