

11. What is a Zener diode and a Photo diode ? Give the specific use of such diodes.
12. What do you mean by Flip-flops ? Explain about RS Flip-flop.
13. Minimize the following variable logic function using K-map and construct the logic diagram using NAND gates for simplified expression :

$$Y[A,B,C,D] = ABC\bar{D} + \bar{A}BCD + \bar{A}\bar{B}\bar{C} \\ + \bar{A}\bar{B}\bar{D} + A\bar{C} + A\bar{B}C + \bar{B}$$

## BCA-03

December – Examination 2022  
**BCA (Part-I) Examination**  
**BASIC ELECTRONICS**  
Paper : BCA-03

*Time : 3 Hours ]*

*[ Maximum Marks : 70*

*Note :-* The question paper is divided into three Sections A, B and C. Write answers as per the given instructions.

### Section-A

7×2=14

#### (Very Short Answer Type Questions)

*Note :-* Answer all questions. As per the nature of the question delimit your answer in one word, one sentence or maximum up to **30** words. Each question carries 2 marks.

1. (i) Define Ohm's Law.
- (ii) What is Kirchhoff's first law ?

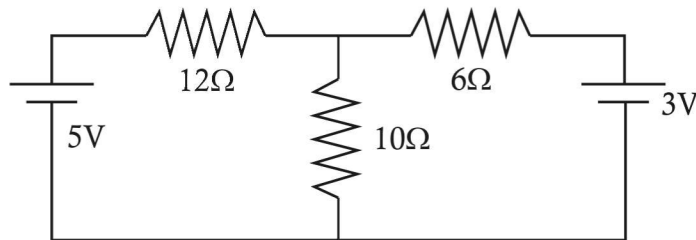
- (iii) What is the order of current? When diode is connected in reverse bias?
- (iv) What is forward bias?
- (v) Write the name of universal gate.
- (vi) Simplify  $AC + ABC$  by Boolean Algebra.
- (vii) Write the truth table of two input AND gate.

**Section-B** **4×7=28**

**(Short Answer Type Questions)**

**Note** :- Answer any *four* questions. Each answer should not exceed **200** words. Each question carries 7 marks.

2. Find the value of current in each resistor and also the potential difference across them by using Kirchhoff's law.



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- 3. Draw LCR series circuit diagram and obtain the impedance of it. Find the LCR series resonance frequency and show the variation of current with frequency.
- 4. Describe the transistor as an amplifier with neat and clean diagram.
- 5. What is De-Morgan's theorem in Boolean Algebra?
- 6. Explain current characteristics in PNP transistor.
- 7. Explain the functioning of half-wave rectifier.
- 8. Explain about NAND gate. How can you obtain OR and AND gate by using only NAND gates?
- 9. Write a short note on Don't Care Condition.

**Section-C** **2×14=28**

**(Long Answer Type Questions)**

**Note** :- Answer any *two* questions. You have to delimit your each answer maximum up to **500** words. Each question carries 14 marks.

10. Define Norton's theorem and explain it with suitable example.

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**TR-398** Turn Over