

**18007**  
**B.C.A. Examination, May-2025**  
**DIGITAL ELECTRONICS AND**  
**COMPUTER ORGANISATION**  
**(BCA-204)**

*Time : Three Hours / [Maximum Marks : 75*

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

**Section-A**

**(Very Short Answer Type Questions)**

**Note :** Attempt all the **five** questions. Each question carries **3** marks.  $5 \times 3 = 15$

1. Explain the k-map.
2. What do you mean by encoder?
3. What do you understand by memory?  
Write a short note on primary memory.

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4. Differentiates between static and dynamic RAM.
5. Explain JK flip flop.

**Section-B**

**(Short Answer Type Questions)**

**Note :** Attempt any **two** questions. Each question carries **7½** marks.

$2 \times 7\frac{1}{2} = 15$

6. Draw RS flip flop and explain its working.
7. Define shift register and explain all types of shift registers.
8. Draw K-map and simplify the following Boolean expression.  
 $Y(A, B, C, D) = \Sigma(0, 2, 4, 6, 8, 10, 12, 14, 15)$

**Section-C**

**(Detailed Answer Type Questions)**

**Note :** Attempt any **three** questions out of the following five questions. Each question carries **15** marks.

$3 \times 15 = 45$

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9. (a) State and verify De Morgan's law in Boolean Algebra.  
(b) Draw a logic circuit diagram for the Boolean expression.  $x=(y'+z)$
10. Explain how 3 to 8 decoder function can be obtained from a demultiplexer.
11. What is associative memory? Draw and explain its block diagram. How read operations and write operations are performed in associative memories.
12. Write short notes on the following:
- (a) EPROM
  - (b) Dynamic RAM
  - (c) Hard Disk
  - (d) Floppy Disk
  - (e) CD-ROM

13. Simplify the boolean function F together with don't care condition D in-
- (a) Sum of product
  - (b) Product of sum
- $F(w, x, y, z) = \Sigma(0, 1, 2, 3, 7, 8, 10)$   
 $D(w, x, y, z) = \Sigma(5, 6, 11, 15)$