Time: 3 Hours   **Max Marks: 75**

Note: Attempt all the sections as per instruction.

SECTION-A
(Very Short Answer Questions)

Note: Attempt all Five questions. Each question carries 3 (Three) marks. Very short answer is required not exceeding 75 words.   (3×5=15)

1) What are need of NAND and why this is called as universal gates?
2) What are adders? And how full adders are constructed from using two half-adders?
3) What is multiplexer? Also explain 8 × 1 multiplexer using 4 × 1.
4) What is main memory and explain the EPROM?
5) What is flip-flop? Explain the RS flip-flop using NAND gate.

SECTION-B
(Short Answer Questions)

Note: Attempt any Two questions out of the following 3 (Three) questions. Each question carries 7.5 marks. Short answer is required not exceeding 200 words.   (7.5×2=15)

6) What is Master-Slave flip-flop?
7) Writes short notes on RAM and CD-ROM?
8) Explain the 2D and 2½ D Chip Organization? And compare both of them?

SECTION-C
(Detailed Answer Questions)

Note: Attempt any Three questions out of the following Five questions. Each question carries 15 marks. Answer is required in detail.   (3×15=45)

9) What is shift register and explain its types?
10) Simplify the following Boolean function using Sum-of-Product form, by Karnaugh's map : F(A, B, C, D) = S (0, 2, 3,5, 7, 8, 10, 13, 15)
11) Explain the general register organization and differentiate between synchronous and asynchronous counter?
12) What is cache memory? And explain various mapping functions and cache memory read and write operation?
13) What is virtual memory? Explain various page replacement policies with example?