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- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Assume suitable data whenever necessary.

1. a) Convert the following.
 - i) $(101101.1011)_2 = (?)_{10}$ 2
 - ii) $(10.625)_{10} = (?)_2 = (?)_{BCD}$ 2
 - iii) $(27.125)_{10} = (?)_8 = (?)_{16}$ 2
- b) Simplify the following using K-map.
 - i) $F(A, B, C, D, E) = \Sigma(1, 4, 6, 10, 20, 22, 24, 26) + \Sigma d(0, 11, 16, 17)$. 4
 - ii) $f(w, x, y, z) = \pi M(4, 6, 10, 11, 13, 14, 15)$ 4

OR
2. a) State and prove Demorgan's theorem. 6
- b) Reduce the following Boolean expression.
 - i) $(WX + \overline{W}\overline{x})(W + x) + WX(\overline{X} + \overline{Y})$ 4
 - ii) $\overline{A}BC + A\overline{B}C + AB\overline{C} + ABC$ 4
3. a) Implement the following using 4:1 multiplexer. 6
 $F(A, B, C, D) = \Sigma m(1, 2, 3, 4, 5, 8, 9, 12)$
- b) Write short note on priority encoder. 7

OR

4. a) Design BCD to Ex-3 code converter. 9
- b) Write short note on weighted & non weighted code. 4

5. a) Explain different methods of triggering in flip flop. 6
b) Draw logic diagram of J-K-Flip flop using NAND gate and explain its working? Give characteristics equation of J-K- Flip Flop. 7

OR

6. a) What is Master-Slave Flip Flop. Explain Also explain what is race around condition. 10
b) Explain how latch is used as 1-bit memory cell. 3
7. a) Design divide by 6 synchronous counter using J-K Flip Flop. 7
b) Explain difference between synchronous & asynchronous counter. 6

OR

8. a) Convert the following flip flops.
i) D F/F to S-R F/F. 4
ii) T F/F to J-K F/F. 4
b) Explain working of Johnson counter with suitable logic diagram. 5
9. a) Differentiate between ROM, PROM, EPROM and E²PROM. 6
b) Write short notes on. 8
i) Flag register of 8085 μ p. 4
ii) Semiconductor memory organization. 4

OR

10. a) Draw and explain Architecture of 8085 microprocessor in detail. 10
b) What is Random Access memory (RAM)? Explain. 4
11. a) Explain interrupt structure of microprocessor 8085 in detail. 8
b) Write a program to transfer ten bytes of data from one memory block to other memory block in reverse order. With destination block address starting from 26 FFH. 5

OR

12. a) Explain and draw timing diagram of instruction LXI H, 9200H. 7
b) Differentiate between maskable & Nonmaskable interrupts. 6



~ **Sam Walton**

