

FAMT, RATNAGIRI

QP CODE : 25315

07

[Total Marks : 80]

(3 Hours)

- N.B. : 1) Question No.1 is **compulsory**.
2) Attempt any **four** from the remaining **six** questions.

1. (a) i) Explain S-R flip-flop with truth table and circuit diagram. (10)
ii) Simplify the following expression using K-map and draw the circuit diagram using NAND gate
$$Y = f(A, B, C, D) = \sum m(0, 1, 2, 3, 5, 7, 8, 9, 11, 14)$$

(b) i) Why NAND and NOR gates are termed as universal gates. (6)
ii) Convert (4)
a) $(95.5)_{10}$ to hexadecimal.
b) $AB + AC + BC$ into standard SOP form.
2. (a) Explain states of instruction cycle using diagram. (07)
(b) List and explain different addressing modes with suitable diagrams. (08)
3. (a) Explain data flow in fetch cycle, indirect cycle and interrupt cycle along with suitable diagrams. (07)
(b) Write a note on six stages of instruction pipeline and effect of conditional branching on the same. (08)
4. (a) Discuss the control signals in Control unit. (07)
(b) Discuss the limitations of superscalar organization. (08)
5. (a) What are the different types of parallel processing system? What is their significance in practical parallel processing approaches? Explain. (07)
(b) Discuss programmed I/O and interrupt driven I/O. (08)
6. (a) Explain the concept of symmetric multiprocessors. (07)
(b) Discuss any two mapping functions of cache memory. (08)
7. Write Short Notes on any three :- (15)
a) Cloud computing
b) Micro-Programmed Control
c) RAID
d) SRAM