

1. All questions are compulsory.
2. All questions carry equal marks.
3. Draw neat, labelled diagrams wherever necessary.

**1. Attempt the following (Any four)**

**(20 Marks)**

- a. Construct Basic gates using NAND & NOR gate.
- b. Minimize the expression using K-map and implement using gates.

$$F = \sum m(0,5,9,12,13,14,15) + d(1,2,3,4).$$

- c. Draw and explain JK flip flop.
- d. Draw & explain full adder.
- e. What is Demultiplexer? Explain 1:2 Demultiplexer.
- f. Explain Ex-OR and Ex-NOR gate in detail.

**2. Attempt the following (Any four)**

**(20 Marks)**

- a. Explain different components of computer and its functions.
- b. Write a short note on ISA.
- c. What are the major requirements of input/output module?
- d. Write a short note on Secondary memory.
- e. Explain the working of magnetic disk.
- f. Draw and explain RISC architecture.

**3. Attempt the following (Any four)**

**(20 Marks)**

- a. Draw and explain Logical Microoperation.
- b. Write note on Flynn's classification of parallel computer.
- c. Explain Wilke's Engine in detail.
- d. Draw and explain SMID.
- e. Explain with diagram functioning of Micro Programmed control unit.
- f. Write a short not on Vector Processors.

**4. Attempt the following (Any five)**

**(15 Marks)**

- a. Explain the working of 2:1 Multiplexer.
- b. Write a short note on Universal gate.
- c. What is Associative memory?
- d. Explain Instruction and Instruction cycle.
- e. Explain the Register Transfer Microoperation in detail.
- f. Explain the functions of control unit.

\*\*\*\*\*