

2018

Full Marks - 40

Time - 3 hours

The questions are of equal value

Answer *all* questions.

1. a) What is 2's complement ? Perform subtraction using 2's complement with an example.
- b) What is BCD code, explain with example.

OR

- c) Explain different types of logic gates with truth table and example.
 - d) What is flip-flops. Discuss about different types of flip-flops with example.
2. With a circuit diagram, explain the working principle of a 4-bit bidirectional shift register.

OR

- a) Design a 2-bit full adder using logic gates.
- b) Discuss about different types of addressing mode with applications.

3. a) With suitable diagram explain Instruction fetch cycle, execute cycle.
- b) Explain the 3-address, 2-address and 1-address constructions.

OR

- c) Explain with suitable diagram memory-mapped I/O.
- d) With suitable diagram explain direct memory access mechanism.
4. a) What do you mean by memory hierarchy ? How memory performance can be achieved by different hierarchy of memory ?
- b) With suitable diagram explain virtual memory techniques in details.

OR

What is cache memory ? Explain the components and structure of cache memory with diagram.

How you can implement cache memory for mapping process and for maintaining hit ratio.