**DCA1205, DIGITAL LOGIC**

**SET-I**

**1. What is a logic gate? Explain various logic gates with neat diagram and truth table.**

**Ans:** A logic gate is an electronic circuit which has one or more inputs but only one output. Logic gate produces logical operation on binary numbers.

Now let us study basic logic gates. OR gate: OR gate has two or more inputs and only one output. The operation of this gate is such that it produces a high output (i.e. logic 1) when one or more of inputs are high and it

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**2. Explain Karnaugh map method of simplification with example.**

**Ans:** Maurice Karnaugh a telecommunication engineer has invented Karnaugh Maps. In 1953, the Karnaugh map has been developed in Bell Labs while studying the application of digital logic to design of telephone circuits. This method is also known as K-maps. A Karnaugh map (K-map) is a visual representation of a Boolean function. The plan is to recognize patterns in the visual representation and thus

**3. What is a full adder? Explain the operation of full adder with a neat logic diagram.**

**Ans:** A full adder circuit adds the carry in C along with the two inputs A and B. A large adder circuit can be constructed using multiple full adders. In full adder circuit, carry in is labeled as Ci or Cin and carry out is labeled as Co or Cout, labeling this way will remove the ambiguity between the output carry and

**SET-II**

**4. Define Sequential Circuits. Briefly explain about the JK flip-flop with circuit and truth table.**

**Ans:** Sequential circuits are those whose outputs depend not only on the present value of its inputs but also on past history of its inputs. There are two types of memory elements which are used in sequential circuits, they are latch and flip flop. Flip flop is a device which changes its state at the positive edge or negative edge (also known as leading edge and trailing edge) of the clock signal. Asynchronous

**5. What is a shift register? Mention the types of shift register.**

**Ans:** Shift Register is a set of binary storage elements, typically flip-flops combined and linked together to facilitate the movement of the data bits stored, from one to another and in and out of it, whenever

**6. Describe various types of electrical switches.**

**Ans:** Two Way Switches In applications where multiple switching options are required (e.g., a telephone service), mechanical switches have long been replaced by electronic switching devices which can be automated and intelligently controlled. We can define a switch in terms of its operation and use. In general,