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| **SESSION** | **MAY 2023** |
| **PROGRAM** | **BCA** |
| **SEMESTER** | **II** |
| **course CODE & NAME** | **DCA1205, DIGITAL Logic** |
| **CREDITS** | **4** |

**Set-Ist**

**1. Define a number system. Explain how to convert a decimal number to its equivalent binary, octal and hexadecimal number.**

**Ans:** A number system is a way of representing and expressing numbers using a set of symbols or digits. Different number systems are used in mathematics and computer science to perform various calculations and represent quantities. The most commonly used number system is the decimal system, also known as the base-10 system, which uses ten digits (0-9) to represent "Its Half solved only

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**2. Discuss the purpose of logic gate and explain various logic gates in detail.**

**Ans:**Logic gates are fundamental building blocks of digital circuits. They are electronic devices or circuits that operate on one or more binary inputs to produce a binary output based on predefined logical functions. Logic gates are essential in designing and implementing complex digital systems and computer architectures. They can perform logical operations such as AND,

**3. Define K-map. Simplify f (a, b, c, d) =∑m (0, 2, 4, 6, 7, 8, 9, 11, 12, 14).**

**Ans:** A Karnaugh map (K-map) is a pictorial method used to minimize [Boolean](https://whatis.techtarget.com/definition/Boolean) expressions without having to use Boolean algebra theorems and equation manipulations. A K-map can be thought of as a special version of a [truth table](https://whatis.techtarget.com/definition/truth-table) .

Using a K-map

**Set-2nd**

**4. Define Sequential Circuits. Brief the working of JK flip flop.**

**Ans: Sequential circuits** are digital circuits in which the output not only depends on the current input but also on the past history of inputs. Unlike combinational circuits, which have outputs solely based on the current inputs, sequential circuits have feedback paths that enable them to store information and have memory. These circuits are used in various applications such as memory units,

**5. Describe the Digital counter. Explain in detail about Ring Counter.**

**Ans:** A digital counter is a sequential circuit that cycle through a predetermined sequence of states in response to clock pulses. It is widely used in digital systems for counting events, generating timing signals, and controlling sequential operations.

Counters can be classified into different types based on their structure and functionality, one of which is the ring counte

**6. Explain the working principle of Traffic Signal Systems.**

**Ans: Traffic signal** systems are designed to control the flow of vehicular and pedestrian traffic at intersections or specific locations. The working principle of traffic signal systems involves the coordination of traffic signal lights based on predefined patterns and real-time traffic conditions.

**Here's a step-**