LINCOLN UNIVERSITY COLLEGE

FORUM (15%)

Faculty : **ENGINEERING**

Course : **DIPLOMA ELECTRICAL AND ELECTRONICS ENGINEERING (ODL)**

Module Title : **DIGITAL ELECTRONICS**

Date : **2nd MAY 2024**

Time Allowed : **1 WEEK**

Instruction to candidates

1. Answer ALL the questions.

CO	Descriptions	Domain
CLO 1	Discuss the concepts and terminology of digital electronics. (C2, A2, PLO1)	C2

QUESTIONS.

1. Binary Number System is a number system that is used to represent various numbers using only two symbols “0” and “1”. The word binary is derived from the word “bi” which means two. Hence, this number system is called Binary Number System. **Briefly explain binary numbers as data representation in computer system.** (10 Marks)

2. Bit and byte appear to be very similar terms but there is a vast difference between them. They are the units that are used in computers. It is used in deciding the speed of data transmission between CPU and register, RAM, and CPU, etc. **Describe a component in writing binary, Bit and Byte.** (6 Marks)

3. Medium Scale Integration (MSI) is a type of integrated circuit (IC) that contains several logic gates and other components on a single chip. MSI chips typically contain between 30 and 300 gates, making them more complex than Small Scale Integration (SSI) chips but less complex than Large Scale Integration (LSI) chips. **Give two (2) examples of MSI (medium-scale-integration) circuits and sketch the symbol/diagram of the MSI.** (12 Marks)

4. Sequential circuits are digital circuits that store and use the previous state information to determine their next state such as latches and flip-flops. Unlike combinational circuits, which only depend on the current input values to produce outputs, sequential circuits depend on both the current inputs and the previous state stored in memory elements. **With the aid of diagram, discuss latches and flip - flops.** (12 Marks)

5. A state machine is a behavior model. It consists of a finite number of states and is therefore also called finite-state machine (FSM). Based on the current state and a given input the machine performs state transitions and produces outputs. **Interpret the role of state machines in the computer system.** (10 Marks)

(Total = 50 Marks)

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