

--	--	--	--	--	--	--	--	--	--



DMI-ST. EUGENE UNIVERSITY

DEGREE EXAMINATION – JUNE 2023

Semester: I 351 HE 11 FUNDAMENTALS OF DIGITAL ELECTRONICS

Time: 3:00 Hours

Max. Marks: 100

Answer any FIVE Questions (5 x 20 = 100 Marks)

- Describe AND gate, OR gate and NOT gate with the help of symbol, truth table and its operation. **(10 Marks)**
 - Explain categories of binary signed number representation. Give examples for each. **(10 Marks)**
- State and prove associative AND and OR law. Construct circuits. **(10 Marks)**
 - State and Prove De Morgan's First Law with the help of a truth table. **(5 Marks)**
 - Obtain a truth table for the given Boolean function:

$$F=A'B'C+A'BC+AB'C$$
 (5 Marks)
- Elaborate on Seven segments Decoder. Construct the truth table. **(10 Marks)**
 - Tabulate any five Key Differences between PLA and PAL. **(10 Marks)**
- State five Differences between the combinational circuits and sequential circuits **(5 Marks)**
 - With the help of a simple diagram, explain the S-R flip-flop. Give the truth table and circuit. **(5 Marks)**
 - Describe a J-K flip flop. Draw a circuit and truth table. **(5 Marks)**
- Design a 2 bit synchronous counter using JK flip flop. **(10 Marks)**
 - Describe a 2 bit ripple counter. Explain the operation Show the block diagram and signal diagram **(10 Marks)**
- Compute 1101 and -1001 using 1's complement **(5 Marks)**
 - Subtract $(0011010)_2 - (001100)_2$ **(5 Marks)**
 - Divide $(01111100)_2 / (0010)_2$. **(5 Marks)**
 - Represent -108 base 10 into binary using sign magnitude. **(5 Marks)**
- Explain various types of registers. **(10 Marks)**

b) Describe SISO shift register with the help of block diagram, truth table and wave form.

(10 Marks)