CBCS SCHEME

USN | | | | | | | | | | 15CS32

Third Semester B.E. Degree Examination, Jan./Feb. 2023
Analog and Digital Electronics

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain construction and working principle of operations of n-channel D-MOSFET along with its drain and trans-conductors characteristics. **(10 Marks)**

b. Explain any two applications of FETs with circuit diagram. **(06 Marks)**

OR

2 a. With a neat diagram and waveforms, explain astable multivibrator using 555 timers. **(08 Marks)**

b. With a neat diagram and waveform, explain the working of relaxation oscillator. **(08 Marks)**

Module-2

3 a. Explain positive and negative logic. List the equivalence between them. **(08 Marks)**

b. Find the minimal SOP form for the given min-terms using K-map,
$F(A, B, C, D) = \sum m(4, 5, 6) + d(10, 12, 13, 14, 15)$ **(08 Marks)**

OR

4 a. Simplify the expression using, Quine-Mcclusky method and find the prime implicates and Essential prime implicates and realize the obtained expression using NAND gates.
$F(A, B, C.D) = \sum m(0, 1, 2, 3, 10, 11, 12, 13, 14, 15)$ **(10 Marks)**

b. Define Hazard. Explain different types of Hazards. **(06 Marks)**

Module-3

5 a. What is multiplexers? Design 8 : 1 multiplexer using 2 : 1 multiplexer and explain. **(10 Marks)**

b. Explain Parity generator and checkers with an example. **(06 Marks)**

OR

6 a. What is an Adder? Explain with truth table the half Adder, full Adder, half subtractor and full subtractor. **(10 Marks)**

b. Explain seven segment decoders and types of decoders. **(06 Marks)**

Module-4

7 a. With a neat logic diagram and truth table explain the working of J-K Master Slave flip-flop using NAND gates. **(10 Marks)**

b. Explain switch contact bounce circuits. **(06 Marks)**

OR

8 a. What is a register? With neat diagram, explain 4-bit Parallel-in-serial out shift register. **(10 Marks)**

b. Explain with a neat diagram, how a shift register can be applied for serial addition. **(06 Marks)**

Module-5

9 a. Construct asynchronous counter for the sequence mod-8 using J-K flip flop. **(10 Marks)**

b. Explain with neat diagram the working principle of Decade counter. **(06 Marks)**

OR

10 a. Explain 2-bit simultaneous A/D converter. **(10 Marks)**

b. Explain the terms accuracy and resolution for D/A converter. **(06 Marks)**

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