

CBCS SCHEME

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15CS32



Third Semester B.E. Degree Examination, July/August 2021 Analog and Digital Electronics

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions.

- 1 a. Explain the working of a N-channel ϵ -MOSFET with neat diagram. Explain with output characteristics of the same. (10 Marks)
b. Write the differences between JFET and MOSFET. (06 Marks)
- 2 a. List and explain any five performance parameter of op-amp. (10 Marks)
b. Explain peak detector circuit with neat diagram and waveform. (06 Marks)
- 3 a. Using K-map find the reduced SOP and POS form for $f(A, B, C, D) = \sum m(1, 3, 5, 6, 7, 8, 9, 12, 13)$ (08 Marks)
b. Write verilog code for given expression using structural modeling $Y = AB + CD$. (04 Marks)
c. Explain the concept of positive logic and negative logic. (04 Marks)
- 4 a. Find the prime implicants with the help of Quine-McClusky method. $F(w, x, y, z) = \sum m(1, 2, 8, 9, 10, 12, 13, 14)$ (08 Marks)
b. What are hazard? Explain types of hazard. How to design hazard free circuits? (08 Marks)
- 5 a. What is multiplexer? Implement the following Boolean function using 8:1 multiplexer: $F(A, B, C, D) = \sum m(2, 3, 4, 5, 12, 13, 15)$ (10 Marks)
b. What is Magnitude Comparator? Explain a 1 bit comparator with truth table and circuit diagram. (06 Marks)
- 6 a. Explain Full adder and Half adder with neat diagram. (08 Marks)
b. Design 7-segment decoder using PLA. (08 Marks)
- 7 a. With a neat diagram, explain the working of a Master Slave J.K flip flop. Also write JK flip flop excitation table and state transition diagram. (10 Marks)
b. Write the difference between synchronous and asynchronous counter. (06 Marks)
- 8 a. Explain Johnson counter with neat diagram. (08 Marks)
b. With a neat diagram, explain 4 bit Serial In Serial Out register (SISO). (08 Marks)
- 9 a. Design self correcting modulo-6 counter using JK Flip Flop. (10 Marks)
b. Explain Digital Clock, with neat diagram. (06 Marks)
- 10 a. Explain the concept of successive approximation of A/D converter. (10 Marks)
b. With the help of neat diagram, explain binary ladder with digital input 1000. (06 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.