

CBCS Scheme

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15CS32

Third Semester B.E. Degree Examination, Dec.2017/Jan.2018

Analog and Digital Electronics (ADE)

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the operation and characteristics of N-channel JFET. (08 Marks)
b. With block diagram, explain the operation of a Astable multivibrator using IC 555. (08 Marks)

OR

- 2 a. With circuit diagram, explain the operation of a Relaxation oscillator. (06 Marks)
b. Fig. Q2(b), shows a Biasing configuration using DEMOSFET given that the saturation drain current is 8mA and the pinch off voltage is -2V.

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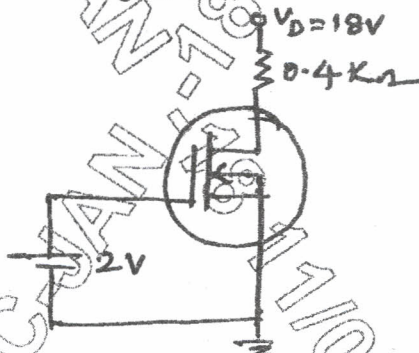


Fig. Q2(b)

- Determine the value of gate source voltage drain current of drain source voltage. (06 Marks)
c. Write the advantages of MOSFET over JFET. (04 Marks)

Module-2

- 3 a. Give the simplest logic circuit for following logic equation where 'd' represents don't care condition for following locations:
 $F(A, B, C, D) = \sum m(7) + d(10, 11, 12, 13, 14, 15)$. (06 Marks)
b. Simplify the following Boolean function by using Quine - McClusky method.
 $F(A, B, C, D) = \sum m(0, 2, 3, 6, 7, 8, 10, 12, 13)$. (10 Marks)

OR

- 4 a. What are Hazards? Explain the types of Hazards and it covers. (08 Marks)
b. Discuss Briefly an HDL Implementation models. (04 Marks)
c. Explain the concept of Duality in Digital circuits. (04 Marks)

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.

Module-3

- 5 a. What is multiplexer? Design a 32:1 multiplexer using 16:1 MUX and one 2:1 multiplexer. (05 Marks)
- b. Show how using a 3 to 8 Decoder and multi input OR Gates following Boolean Expressions can be realized simultaneously. (06 Marks)
- $F(A, B, C) = \sum m(0, 4, 6)$
 $F(A, B, C) = \sum m(1, 2, 3, 7)$
 $F(A, B, C) = \sum m(0, 5)$
- c. Show how two 1 to 16 DEMUX can be connected to get 1 to 32 DEMUX. (05 Marks)

OR

- 6 a. Explain parity Generators and checkers using suitable examples. (05 Marks)
- b. What is Magnitude Comparator? Explain 1 bit magnitude comparator. (05 Marks)
- c. What is PLA? Design seven segment Display using PLA. (06 Marks)

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- 7 a. Explain 4 bit serial in parallel out register. (04 Marks)
- b. Explain a 3 bit binary Ripple up counter. Give the block diagram, truth table and output waveforms. (06 Marks)
- c. Explain the working of JK master slave Flip Flop along with implementation using NAND Gates. (06 Marks)

OR

- 8 a. Design synchronous MOD - 6 counter with truth table and state diagram. (06 Marks)
- b. What is universal shift Register? Explain any one application of universal shift register with block diagram and truth table. (06 Marks)
- c. Write the comparison between Synchronous and Asynchronous counter. (04 Marks)

Module-5

- 9 a. Explain 5 bit Resistive divider with diagram. (06 Marks)
- b. Explain with neat diagram the working principle of Digital clock. (05 Marks)
- c. Explain the terms Accuracy and Resolution for D/A converter. (05 Marks)

OR

- 10 a. Explain with Block diagram the operation of successive approximation converter. (08 Marks)
- b. Explain counter type A/D converter with diagram. (08 Marks)
