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Total No. of Printed Pages: 1

Total No. of Questions: [09]

B. Tech ECE (Semester – 4th)
DIGITAL ELECTRONICS
Subject Code: BECE1411
Paper ID: [111308]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

- Q1. Attempt the following:
- a) Differentiate between combinational and sequential circuits.
 - b) Explain the terms Resolution and Accuracy of A/D converter.
 - c) Convert Grey Code to BNS (110001101).
 - d) What is the range of signed decimal values which can be represented by 8 bits?
 - e) Compare a synchronous and asynchronous counter.
 - f) Implement the basic gates AND, OR and NOT using NAND gate only.
 - g) What is the difference between ordinary encoder and priority encoder?
 - h) Can the input to a D/A converter be BCD? Explain.
 - i) Write the excitation table of a J-K and D flip-flop.
 - j) Define tri-state logic.

Section – B

(5 marks each)

- Q2. What is a ring counter? What type of flip-flop is used in such counters? Write one application of this counter.
- Q3. Give the comparison of TTL, ECL and CMOS basis on various parameters (give the approximate numerical values).
- Q4. In a new number system X and Y are successive digits such that $(XY)_r = (25)_{10}$ and $(XY)_r = (31)_{10}$ Find X, Y and r.
- Q5. What is a dual slope A/D converter? Draw its circuit and explain its working.
- Q6. Design full adder and full subtractor using 4:1 multiplexer.

Section – C

(10 marks each)

- Q7. Solve using Q-M method and verify the result with K-map. Also implement using NOR gates only.
 $F(v, w, x, y, z) = \sum m(0, 1, 2, 4, 5, 14, 15, 19, 23, 25, 27, 29, 31) + d(5, 7, 9, 11)$
- Q8. Design MOD-6 up-down counter using D flip-flop.
- Q9. Draw and explain working of a 4-bit bidirectional shift register controlled by multiplexers.