Roll No……..….. **Total No. of Printed Pages: 1**
Total No. of Questions: [09]

B. Tech (CSE) (Semester – 3rd)
DIGITAL CIRCUIT & LOGICAL DESIGN
Subject Code: BCSE1304
Paper ID: [111103]

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. Convert $(11000111)_2$ to Gray code and Excess 3 code.
b. How many bits are required for a DAC so that its full scale output is 15.4 V and resolution is 25 mV?
c. Show the excitation table and truth table of SR flip flop.
d. What is the maximum conversion time for an n-bit counting ADC?
e. How many state a Ring Counter have with 5 Flip-Flops?
f. How many flip- flops are require to build a binary counter to count from 0 to 128?
g. State and prove idempotent laws of Boolean algebra.
h. How the high speed achieve in TTL?
i. Explain resolution of A/D converters.
j. Calculate the value of LSB, MSB and Full scale output for 8-bit DAC for 0 to 10 V range.

Section – B **(5 marks each)**

Q2. Implement an even and odd parity generator for 4-bit using a decoder?

Q3. Solve the function using K Map xyz+ x′y′z ′+ xy′z + xy′z

Q4. What is the process and purpose of the right rotate logical shift and the left rotate logical shift?

Q5. Differentiate successive and dual slope converters? Explain each with example?

Q6. Enlist different applications of Multiplexer. Implement the logic function:
Y(A,B,C,D)= ∑ m(0,l,3,5,7) using Two 4:1 MUX

Section – C **(10 marks each)**

Q7. Explain PROM, EPROM & EEPROM with example?

Q8. Differentiate SR and JK flip-flop? Which is better and why? Convert the SR flip- flop into JK flip – flop?

Q9. i) Derive the product of maxterms for f (a, b, c, d) = a.b.c+ b′.d+c.d′.
ii) Explain the characteristic of MOS and CMOS?