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Total No. of Pages : 02

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B.Tech.(CSE/IT) (2011 Onwards) (Sem.–3)

DIGITAL CIRCUITS & LOGIC DESIGN

Subject Code : BTCS-303

Paper ID : [A1125]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Write briefly :**

a) Solve $(10101)_2 + (10011)_2$.

b) What is 1's complement? Explain with example.

c) Explain De-Morgan's theorem.

d) Which device can be used to change from serial data to parallel data?

e) What do you understand by volatile memory?

f) What is the difference between PROM and EPROM?

g) Write the name of various types of Analog to Digital Convertors.

h) What is the use of Dynamic RAM?

i) What can be done to avoid racing problem in JK-Flip flop?

j) Write one advantage of ECL logic family.

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SECTION-B

2. Explain the principle of Duality.

3. Draw and explain the operation of TTL 2- input AND Gate.

4. Explain the working of 'T' and 'D' Flip-flops.

5. Explain the working of weighted type Digital to Analog Convertor.

6. Explain the working of 6-Transistor static RAM cell.

SECTION-C

7. Find the minimum sum of products expression for the function

   $f(a, b, c, d) = \Sigma m(1, 3, 4, 6, 7, 9, 11, 12, 13, 15)$ using K-Map method.

8. Design a 32 to 1 Multiplexer using 4 to 1 Multiplexer and explain its working.

9. a) Design a 4 bit synchronous ring counter. Explain its working with the help of timing diagram.

   b) Explain the working of 4 bit successive approximation type ADC.

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