

Roll No.

Total No. of Questions : 09]

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B.Tech. (Sem. - 3rd)

[Total No. of Pages : 02

DIGITAL CIRCUITS & LOGIC DESIGN

SUBJECT CODE : CS - 205

Paper ID : [A0453]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

Section - A

Q1)

(10 x 2 = 20)

- a) Solve $(10101)_2 - (10011)_2$.
- b) Subtract $(11001)_2$ from $(11101)_2$ using 2's complement method?
- c) State De-Morgans theorem?
- d) Name three types of TTL gates?
- e) What does the term driver mean in a decoder?
- f) List two applications of Multiplexer?
- g) Which flip flop is preferred for data transfer?
- h) What is a volatile memory?
- i) Which is the fastest ADC among available ADCs?
- j) What is a ring counter?

Section - B

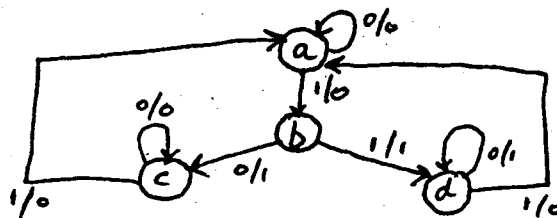
(4 x 5 = 20)

- Q2) What is a BCD code? What are its advantages and disadvantages?
- Q3) Prove that if $A + B = A + C$ and $A' + B = A' + C$, then $B = C$.
- Q4) With the help of circuit diagram explain working of a two input TTL NAND gate?
- Q5) Describe with diagram internal architecture of PAL?
- Q6) Design a circuit that will generate an even parity bit for 4 bit input and implement it using only NAND gates?

Section - C

(2 x 10 = 20)

- Q7) (a) Explain the difference in operation of a monostable and astable multivibrator?
(b) What is master slave JK flip flop / Explain its working?
- Q8) Design a circuit that will function according to state diagram given below:



- Q9) (a) Implement the function
$$F = A'BC + ABC' + A'B'C' + AC'$$
 using PAL.
(b) With help of neat diagram explain working of R-2R ladder type DAC.

