

No. _____

[No. of Questions : 09]

[Total No. of Pages : 02]

B.Tech. (Sem. - 3rd)**DIGITAL CIRCUITS AND LOGIC DESIGN****SUBJECT CODE : CS - 205****Paper ID : [A0453]****[Note : Please fill subject code and paper ID on OMR]****= 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**(10 × 2 = 20)**

- a) How many select lines are required for a 10 to 1 MUX?
- b) List the various types of A/D converters.
- c) How ROM is different from RAM?
- d) Divide $(10101011)_2$ by $(101)_2$.
- e) Construct the truth table for $Z = xy + \overline{xy}$
- f) If $A = 1010$ and $B = 1001$, find $A - B$ using 2's complement method.
- g) How sequential circuits are different from combinational circuits?
- h) Compare TTL with ECL.
- i) Compare synchronous counters with asynchronous counters.
- j) Minimize the following expressions

(i) $A + \overline{(\overline{B} + \overline{C})}$

(ii) $\overline{(\overline{AB(C+D)} + C)}$

Section - B

(4 × 5 = 20)

Q2) Minimize the following expressions using K - map

(a) $Y = (A + B)(A + \bar{B})(A + \bar{C})$

(b) $Y = \bar{A}B + A\bar{B}C + AB$

Q3) Design 8:1 MUX by using two 4:1 MUX.

Q4) What is race around condition? How it is avoided in Master Slave Flip Flop?

Q5) Explain the working of successive approximation A/D converter.

Q6) Write a short note on the following:

(a) CMOS

(b) RTL

Section - C

(2 × 10 = 20)

Q7) (a) Design full adder using logic gates.

(b) Design EX - OR gate using NAND gates only.

Q8) Design mod - 8 synchronous counter using T flip flops.

Q9) Explain the different types of ROMs. Discuss their advantages and disadvantages

