Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B. Tech.

Mid-Semester Examination March, 2019

Branch	**: EEE**	**Semester**	**: 4th**
Title of the Course	**: Digital Electronics & Logic Design**	**Course Code**	**: CSB 254**

Time: 2 Hours **Maximum Marks: 25**

Note: All questions carry equal marks. Attempt any five.

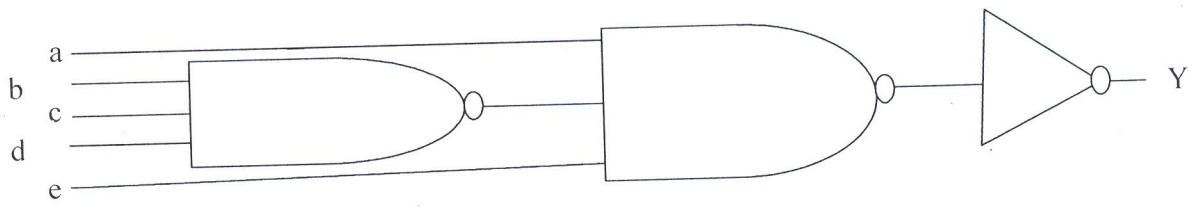
Q1. All questions are compulsory.
(a) When an input signal 1 is applied to a NOT gate, the output is .....
(b) In Boolean algebra, the bar sign (-) indicates .....
(c) The inputs of a NAND gate are connected together. The resulting output is .....
(d) The NOR gate is OR gate followed by .....
(e) The inverter is .....

Q2. Find the 1's and 2's complement of the following binary numbers (a) 00010000, (b) 00000000 (c) 11011010, (d) 10000101, (e) 11111111.

Q3. Convert the hexadecimal number 64CD to binary, and then convert it from binary to octal.

Q4. Determine whether the following Boolean equation is true or false.
$\overline{X}\overline{Y}+\overline{X}Z+\overline{X}\overline{Z} = \overline{X}\overline{Z}+\overline{Y}\overline{Z}+\overline{X}Z$

Q5. Write Boolean expressions and construct the truth-table describing the outputs of the circuits described by the logic diagram in Fig.



Q6. Simplify the following Boolean expressions in product of sum and sum of product: using four-variable maps: $\overline{A}\overline{B}\overline{C}\overline{D} + A\overline{C}\overline{D} + \overline{B}C\overline{D} + \overline{A}BCD + B\overline{C}D$