Candidate Seat No._____

Charotar University of Science and Technology [CHARUSAT]

Faculty of Technology and Engineering

U & P U. Patel Department of Computer Engineering

Subject: CE252 Digital Electronics

Unit Test-1

Semester: 3rd Sem B.Tech (CE) **Maximum Marks: 30**

Date: 22/08/2019 (Thursday) **Time: 9:10 a.m to 10:10 a.m.**

Instructions:

(i) Attempt ***all*** the questions.

(ii) Figures to the right indicate ***full*** marks.

(iii) Make suitable assumptions and draw neat figures wherever if required.

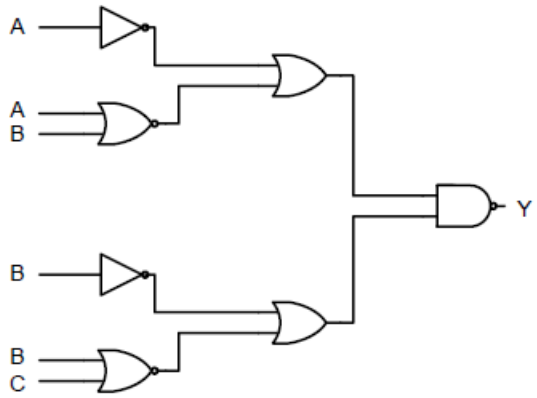
Q-1 Answer the following questions. **[10]**

[A] What is the Hexa decimal representation of $(2598.65)_{10}$. [01]

[B] What is the Minterm equivalent of A' + B' . [01]

[C] Write dual of F = (A+B') (A+1) . [01]

[D] Which gate is equivalent of given circuit? [01]



[E] What is r's complement of $(57340)_9$? [01]

[F] Write Octal representation of $(A5B.CE)_{16}$. [01]

[G] How many 1's are there if the number $(7 * 256^3 + 0 * 256^2 + 1 * 256 + 3)$ is represented in binary? [01]

[H] Write and demonstrate by means of truth tables the validity of the following theorems of Boolean algebra. The distributive law of OR (+) over AND (.) . [03]

Q-2 Answer the following questions. **[10]**

[A] Simplify the Boolean function F = (B + BC) (B + B'C) (B + D) . Specify the law that you have used in each step.

[B] What is the value of base r if $(121)_r = (144)_8$.

[C] Perform following operation using r's complement without converting numbers in other format. $(345)_7 - (127)_7$.

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[D] Express the complement of given function in product of Maxterm.
$F(A, B, C) = \Sigma (1, 4, 5, 6, 7)$.

[E] Draw a circuit for given Boolean function. F=X'Y+YZ+XY' .
(Note: You have only one Ex-OR, one AND and one OR Gate)

Q-3 Answer the following questions. **[10]**

[A] Minimize the following Expression and realize using basic gates.
$Y = \Sigma m(0,2,5,6,7,8,10,13,15)$

[B] Implement the following circuit using NOR-NOR implementation

$F = \pi_M(0,2,4,5,7,10,13,15)$

OR

[B] Simplify the following expression using Tabulation method.
$Y = \Sigma m(0,1,2,3,5,7,8,9,11,14)$

****Best of Luck****