F.Y. B. SC. (Computer Science) SEM – I (2014 COURSE) : SUMMER - 2019

SUBJECT: DIGITAL ELECTRONICS – I

Day: Wednesday
Date: 24/04/2019

Time: 12.00 NOON TO 02.00 PM
Max Marks. 40

S-2019-1127

N.B.

1) All questions are **COMPULSORY**.
2) Answers to the right indicate **FULL** marks
3) Draw diagrams **WHEREVER** necessary.

Q.1 Answers any **TWO** of the following **(10)**

a) Explain the working of 1:4 demultiplexer with necessary diagram.

b) Simplify the following Boolean expression using K – map and draw its simplified logic diagram.: $Y = \overline{A}B\overline{C} + \overline{A}\,\overline{B}C + \overline{A}BC + ABC$

c) State and prove De – Morgan's theorems.

Q.2 Answers any **TWO** of the following **(10)**

a) Define Encoder. With diagram explain octal to binary encoder.

b) Give any four basic Boolean postulates and simplify the following expression using Boolean algebra : $A + \overline{A}B = A + B$

c) With neat diagram explain the working of full adder.

Q.3 Answers any **TWO** of the following **(10)**

a) Explain BCD to seven segment decoder with necessary diagram.

b) Draw the logic symbols and write the truth tables for the following logic gates:

i) EX – OR
ii) NAND
iii) NOR

c) Convert the following

i) $(101101)_2 = (\ ?\ )_{Gray}$
ii) $(11011)_{Gray} = (\ ?\ )_2$

Q.4 Answers any **FIVE** of the following **(10)**

a) Define the terms for the logic families:

i) Propagation delay time
ii) Noise margin

b) Draw logic diagram of half subtractor.

c) Define decoder.

d) Write truth table for 4 : 1 multiplexer

e) Perform the following

i) $(359)_{10} = (\ ?\ )_8$

f) What is priority encoder?

g Represent the following decimal numbers in 2's compliment format :

$(19)_{10}$

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