

Seat No.	
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T.E. (Electrical) (Semester - V) (New)
Examination, November - 2019
DIGITAL ELECTRONICS AND MICROCONTROLLER
Sub. Code : 66250

Day and Date : Friday, 22 - 11 - 2019

Total Marks : 100

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :**
- 1) All questions are compulsory.
 - 2) Use of non-programmable calculator is permissible.
 - 3) Figures to the right indicate full marks.
 - 4) Assume necessary data, if required.

SECTION - I

Q1) Attempt any two:

a) Convert the numbers into desired base

[8]

i) $(6054.263)_8 = ()_{16}$

ii) $(6534.04)_8 = ()_{10}$

iii) $(4F7.A8)_{16} = ()_8$

iv) $(420.6)_{10} = ()_8$

b) Prove the following using De-Morgans' Theorem

[8]

i) $AB + CD = \overline{\overline{AB} \cdot \overline{CD}}$

ii) $(A + B) \cdot (C + D) = \overline{\overline{(A + B)} \cdot \overline{(C + D)}}$

P.T.O.

c) Reduce using mapping the expression: [8]

i) $f = \sum m(0,1,4,5,6,7,9,11,15) + d(10,14)$

ii) $f = \sum m(9,10,12) + d(3,5,6,7,11,13,14,15)$

Implement the real minimal expression in universal logic

Q2) Attempt two:

- a) Draw and explain with logic diagram 8-bit Adder/Subtractor with Control logic. [9]
- b) Draw and explain with logic diagram Half Subtractor and realize using NAND gate as universal gate. [9]
- c) Draw and explain with logic diagram BCD Adder. [9]

Q3) Attempt any two:

- a) Write short note on "4 bit magnitude comparator" [8]
- b) What is Decoder? Draw and explain 2 to 4 line decoder using NAND gate. [8]
- c) Write short note on Edge Triggered Flip-Flop with circuit diagram. [8]

SECTION - II

Q4) Attempt any two:

- a) Draw & explain Architecture of Microcontroller. [9]
- b) Explain in detail Memory organization of microcontroller 8051. [9]
- c) Draw and explain Port 1 and Port 3 pin configuration of 8051. [9]

Q5) Attempt any two:

- a) Write a program with algorithm to find the checksum. [8]
- b) Write a program with algorithm to find the largest and smallest from N unsigned integers. The value of N is available at 40H in internal data memory. The array starts from 41H. Store largest value in R5 and smallest value in R7. [8]
- c) Write a program with algorithm to copy a block of 20 bytes of data presently located from 60h to 73H to the location starting from 30H. [8]

Q6) Attempt any two:

- a) Interface seven segment LED to 8051. Write a program to display all even number between 0 to 9 on it. [8]
- b) Interface 64KB of ROM & 16KB of RAM to 8051. [8]
- c) Interface DC motor with 8051 and write a program to run the motor alternately slower and faster speed with 25% and 75% Duty Cycle respectively using L293D. [8]
