Total No. of Questions – [08]   Total No. of Printed Pages-[02]

G.R. No.

U218 – 125 (ESE)

DECEMBER 2018/ENDSEM

S. Y. B. TECH. (COMPUTER ENGINEERING) (SEMESTER - I)

COURSE NAME: DIGITAL SYSTEMS AND LOGIC DESIGN

COURSE CODE: CSUA21175

(PATTERN 2017)

Time: [**2 Hours**]   [Max. Marks: **50**]
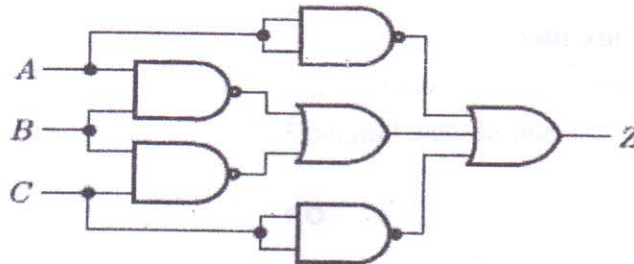
Instructions to candidates:
1) Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8
2) Figures to the right indicate full marks.
3) Use of scientific calculator is allowed
4) Use suitable data where ever required

Q.1) a) Simplify the four variable Boolean function using Quine McCluskey   [6 marks]
Method.

$$F (A, B, C, D) = \Sigma m (0,1,2,3,5,7,8,10,12,13,15).$$

OR

b) Describe De-Morgan's Theorem. Derive the Boolean expression for Z   [6 marks]
for the given figure.

Q.2) a) Design 4-bit Excess-3 to BCD code converter. Use logic gates as per your design
and requirement.
[6 marks]

OR

b) Implement a 2 Bit Comparator along with truth table, k-map and logic   [6 marks]
diagram using gates.

Q.3) a) Design a divide by 96(MOD-96) counter using 7490 ICs.   [6 marks]

OR

b) Differentiate between synchronous and asynchronous counters along   [6 marks]
with diagram.

Q.4) a) Draw the architecture for PAL and PLA.   [4 marks]

OR

b) What are the applications of PLD's?   [4 marks]

Q. 5) a) What is VHDL? Write VHDL code for structural model of full adder.   [6 marks]

b) Draw an ASM chart to describe a mealy state machine that detects a   [4 marks]
sequence of 101 and that asserts a logical 1 at the output during the
last state of the sequence.

c) What is ASM chart? Explain Mux Controller method using suitable   [4 marks]
example.

OR

Q.6) a) State the differences between concurrent and sequential statements   [6 marks]
of VHDL.

b) What are the advantages of VHDL.   [4 marks]

c) Compare ASM & VHDL.   [4 marks]

Q.7) a) Explain Arduino architecture in detail.   [6 marks]

b) Write short note on soldiering techniques?   [4 marks]

c) What is the classification of logic families?   [4 marks]

OR

Q.8) a) Explain the parameter to characterize logic families.   [6 marks]

b) What are the applications of Raspberry pi?   [4 marks]

c) Explain CMOS and RTL?   [4 marks]