

POKHARA UNIVERSITY

Level: Bachelor

Semester – Spring

Year:2020

Program: BE

Full Marks: 70

Course: Logic Circuits

Pass Marks: 31.5

Time: 2 hrs.

Candidates are required to answer in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

Section - A: (5×10=50)

- Q. N. 1 Which system do you prefer, analog or digital? Justify with a real world example. 5+5
Do the following as indicated(@@ is the last two digit of your symbol number):

- I. $(@@5.DD)_{16} = (\dots)_5$
- II. $(F@@2)_{16} = (\dots)_7$

OR

5+5

Simplify the given function F and Don't care condition D in SOP and POS form and draw the logic diagram using

- I. NAND gate only
- II. Nor gate only

$$F = \sum(1,4,5,6,12,14,15), D = \sum(11,13)$$

- Q. N. 2 Explain with suitable example how to overcome Half Adder (HA) drawbacks using Full Adder (FA). Is it possible to add & subtract n-bit data using full adder?
- Q. N. 3 What are the major difference between ROM and PLA? Implement the given function using multiplexer (suppose your own data and symbols if necessary):
 $F = (\text{set of digits of your symbol number})$
[For example, if your symbol number is 15070195 then $F = (0,1,5,7,9)$ i.e you should omit the repeated digits of your symbol number.]
- Q. N. 4 Differentiate between combinational circuit and sequential circuit. What is the problem found in RS flip-flop? Explain how it is solved in JK flip-flop.
- Q. N. 5 What are shift registers? Explain the operation of SISO and PISO shift register. Take data 1101

Section - B: (1×20=20)

- Q. N. 6 If you were assign a job for design a simple processor can be used in educational purposes. It consists two units only. They are arithmetic unit and logic unit. Starting with basic function design a complete circuit diagram for
- a) Arithmetic Circuits
 - b) Logic Circuits