Council for Technical Education and Vocational Training
Office of the Controller of Examinations
Sanothimi, Bhaktapur
Regular/Back Exam - 2073, Bhadra/Ashwin

Program: Diploma in Information Technology /Computer Engineering **Full Marks: 60**
Pass Marks:24
Year/Part: I/II **Time: 3 hrs**
Subject: **Logic Circuits**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicates full marks.

Attempt Any Five (5) Questions.

1.	a]	Define signal. Differentiate between analog and digital signal with suitable example.	[2+4=6]
	b]	Convert the following number system. i] $(2564.87D)_{16} = (?)_2$ ii] $(4432.123)_8 = (?)_{16}$ iii] $(111101010*11010)_2$ iv] $(1101001.110)_2 / (110)_2$	[1×4=4]
	c]	Subtract the following $(11101010)_2$ from $(111110000)_2$ using 2's Compliment.	[2]
2.	a]	Explain about AND and OR gate with necessary truth table, symbol and logical expression.	[3+3]
	b]	Define Universal gate. Explain how NOR gate operate as Basic gate with necessary realization technique.	[1+5]
3.	a]	Simplify the following expression using K-map. $\Sigma F(A,B,C,D) = \Sigma m\ (0,1,3,4,7,8,12,15)\ \Sigma d\ (2,5,6,14)$	[6]
	b]	Define adder. Explain the operation of Full adder with clear diagram and truth table.	[1+5]
4.	a]	Define Encoder. Design BCD to decimal decoder with clear circuit diagram and truth table.	[1+5]
	b]	Design 8:1 Multiplexer with clear circuit diagram and truth table.	[6]
5.	a]	Define Flip-flop. Explain the operation of JK flip flop with necessary diagram and truth table.	[1+5]
	b]	Define counter. Explain the operation of ripple counter with clear diagram.	[1+5]

6.	Write short notes on: (Any Four)	[4×3=12]
	a] LCD Display b] SISO shift register c] Gray code d] De Morgan's theorm e] Demultiplexer	

Good Luck!