Reg.No. _____

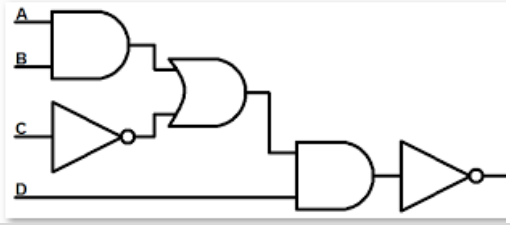
Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : 16PH2001 **Semester : 2016-17 ODD**
Sub. Name : Semiconductor Logic Devices **Duration : 3hrs**
Max. marks : 100

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Convert Binary (11111001001) to decimal	CO1	**4**
	b.	Convert decimal (292) to binary	CO1	**4**
	c.	Binary addition: 1100.011 + 1011.011	CO1	**4**
	d.	Binary subtraction :11.01111-10.01001	CO1	**4**
	e.	Convert hexa (7 C 9) to decimal	CO1	**4**
		(OR)		
2.	a.	Draw the symbol, timing diagram and truth table for the following gates: AND, OR, NOT, Ex-OR,NOR and NAND	CO3	**20**
3.	a.	Obtain the Boolean expression using K-Map $f(A,B,C,D)= \Sigma (0,1,2,5,7,8,9,10,13,15)$	CO3	**14**
	b.	Obtain the Boolean expression using K-Map $f(A,B,C) = \prod (1,3,5,7)$	CO3	**6**
		(OR)		
4.	a.	Draw the circuit diagram, truth table and derive the K-map for half and full adder	CO3	**16**
	b.	Write the Boolean expression for the following circuit 	CO3	**4**
5.	a.	Simplify the following Boolean function by using Quine-Mcluskey Method $F(A,B,C,D) = \Sigma m (0,2,3,6,7,8,10,12,13)$	CO1	**20**
		(OR)		
6.	a.	Design a digital comparator with neat truth table and circuit diagram	CO2	**18**
	b.	Expansion of SOP and POS	CO1	**2**
7.	a.	Derive the expression for 1:4 Demultiplexer and draw the circuit diagram	CO2	**10**
	b.	Implement the following Boolean function using 8:1 Mux (7) $F(P,Q,R,S)=\Sigma m (0,1,3,4,8,9,15)$	CO2	**10**
		(OR)		
8.	a.	Implement the following multiple output combinational logic circuit using 4:16 line decoder IC and external gates $F1=\Sigma m (2,3,9,11)$ $F2= \Sigma m (10,12,13,14)$ $F3= \Sigma m (2,4,8)$	CO2	**10**
	b.	Tabulate Decimal number to BCD encoder	CO2	**10**
		Compulsory:		
9.	a.	Difference between latches and Flip flops	CO2	**4**
	b.	Discuss in detail the different types of flip flops with a neat diagram and truth table	CO2	**16**