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PES University, Bangalore

(Established under Karnataka Act No. 16 of 2013)

UE15CS201

END SEMESTER ASSESSMENT (ESA) B.TECH. 3rd SEMESTER- Dec 2019

UE15CS201-Digital Design and Computer Organization (Backlog)

Time: 3 Hrs | Answer All Questions | Max Marks: 100

1.	a)	Simplify the following minterms into simplified SOP expression using K-Map. $f(A,B,C,D) = \Sigma\, m(0,1,3,4,5,7,12,13,15)$	8
	b)	Simplify the following maxterms into simplified POS expression using K-Map. $f(A,B,C,D) = \Pi\, M(0, 2, 3, 4, 6, 7, 14)$	8
	c)	Simplify the following minterms into simplified SOP expression using K-Map. $f(X,Y,Z) = \Sigma\, m(0, 2, 6, 7)$	4
2.	a)	List the steps required to obtain boolean function from any digital logic diagram.	4
	b)	Explain Half adder and Full adder by mentioning its truth table, logic diagram and sum and carry expression.	8
	c)	Explain 4 input priority encoder.	8
3.	a)	Explain direct inputs preset and clear.	4
	b)	Design a sequential circuit with two D flip-flops A and B, and one input x_in . When x_in = 0, the state of the circuit remains the same. When x_in = 1, the circuit goes through the state transitions from 00 to 01, to 11, to 10, back to 00, and repeats	8
	c)	Explain S R Flipflop and D flip flop	8
4.	a)	Summarize the operations of a computer.	4
	b)	Explain the connection between processor and memory with neat diagram.	8
	c)	Explain Big-Endian and Little -Endian assignment.	6
	d	Explain Relative addressing mode.	2
5.	a)	Multiply 14 times -5 using 5-bit numbers (10-bit result). (using Booth's Multiplication)	8
	b)	Write the control sequence for execution of the instruction Add (R3),R1	8
	c)	Mention the actions required for executing the instruction Add (R3),R1	4