



**PES University, Bangalore**  
(Established under Karnataka Act No. 16 of 2013)

**UE14CS201**

**END SEMESTER ASSESSMENT (ESA) B.Tech. III SEMESTER- Nov. 2015**

**UE14CS201- Digital Design and Computer Organization**

Time: 3 Hrs		Answer All Questions	Max Marks: 100
1.	a)	Prove that $ABC+ABC'+AB'C+A'BC=AB+AC+BC$	05
	b)	What are Don't Care conditions? Briefly explain	03
	c)	Convert the given expression in canonical Product Of Sums form $Y=(A+B)(B+C)(A+C)$	06
	d)	Design a Combinational circuit with three inputs and one output: a) The output is 1, when the binary value of the inputs is less than 3, the output is '0' otherwise b) The output is 1, when the binary value of the inputs is an even number	06
2.	a)	Show that the characteristic equation for the complement output of JK flip flop is $Q'(t+1)=J'Q'+KQ$	04
	b)	Write the steps for designing synchronous sequential circuits	07
	c)	The contents of a 4 bit register is initially 0110. The register is shifted six times to the right with the serial input being 1011100. What is the content of the register after each shift	05
	d)	Draw a 4 bit binary ripple counter with (1) D Flip Flops and (2) T Flip flops	04
3.	a)	With the help of a neat diagram , show the connections between the processor and the memory	06
	b)	Write an Assembly Language Program to add 'n' numbers which are stored in consecutive memory locations , using assembler directives.	06
	c)	Show with suitable sketch , the implementation of interrupt priority using individual interrupt request and interrupt acknowledge lines	05
	d)	How does the debugger provide exception?	03
4.	a)	With the help of a neat diagram show the I/O interface for an input device	05
	b)	With the help of a neat diagram , discuss the use of memory controller	06
	c)	How can one view the entire computer memory as a hierarchy? Give suitable sketch	04
	d)	What are generate and propagate functions for a carry look ahead adder? Considering the design of a 4 bit adder, write 4 equations for C1,C2, C3 and C4.	05
5.	a)	Write the control sequence for execution of the instruction ADD (R3),R1	07
	b)	Write IEEE floating point format for single precision	03
	c)	Explain the organization of a Microprogrammed control unit with the help of a neat diagram	05
	d)	How a word (data) is fetched from memory? Explain	05