Hall Ticket Number :										

R-11 / R-13

Code: 1G373

IV B.Tech. I Semester Supplementary Examinations October 2020

Digital Design Through Verilog HDL

(Electronics and Communication Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

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1.		Explain the seven – types of Verilog lexical tokens with suitable examples.	14M
2.	a)	Write Verilog code, truth table and circuit diagram for 4-to-16 decoder?	7M
	b)	Write Verilog code, truth table and circuit diagram for AOI gate?	7M
3.		Write Verilog code, truth table and timing diagrams for the ALU with suitable diagrams and descriptions.	14M
4.	a)	Write Verilog code, truth table and circuit diagram for an edge triggered flip-flop?	8M
	b)	Explain delays in Verilog?	6M
5.		Write Verilog code for CMOS Inverter and 2 – input CMOS NOR gate with neat circuit diagrams and also write the test bench program for it.	14M
6.	a)	Explain Melay machine FSM with neat block diagram.	6M
	b)	Write Verilog code for Sequence generator using Melay machine FSM.	8M
7.	a)	Explain about FPGA with neat block diagrams	7M
	b)	Explain about CPLD with neat block diagrams	7M
8.	a)	Design UART using Verilog HDL	6M
	b)	Write about 486 Bus model	8M

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IV B.Tech. I Semester Supplementary Examinations October 2020

Digital Signal Processing

(Common to EEE & ECE)

Max. Marks: 70 Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

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1. Find the natural response and zero state response of the system described by the difference equation
$y(n)+2y(n-1)+y(n-2)=x(n)+x(n-1)$ with initial condition $y(-1)=y(-2)=1$ and input $x(n)=(1/2)^n u(n)$

2. State and prove the following properties of discrete Fourier series
i) Linearity ii) Time reversal

3. What is the need of FFT? Explain 16-point radix-2 DIT-FFT algorithm with the help of flow-graph and necessary steps

4. a) Find the z-transform and ROC of the following signals
(i) $x(n)=a^n u(n)$ **(ii)** $x(n)=(1/2)\delta(n) + \delta(n-1) + (1/2)\delta(n-2)$
b) State and prove the following properties of z-transform
(i) Multiplication by an exponential sequence
(ii) differentiation in z-domain

5. Design a Chebyshev filter with a maximum passband attenuation of 2.5dB at $\Omega p=20$ rad/sec and the stop band attenuation of 30dB at $\Omega s=50$ rad/sec

6. a) Distinguish between the IIR and FIR filters
b) Determine the magnitude and phase responses of linear phase FIR filter for N is odd

7. a) List out the applications of multirate signal processing
b) Consider a signal $x(n) = u(n)$
(i) Determine and sketch a signal with a decimation factor ‘3’
(ii) Determine and sketch a signal with a interpolation factor ‘3’

8. Write short notes on
(i) Echo filter
(ii) Reverberation
(iii) Chorus generator

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