

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2019Subject: Digital Design Using Verilog HDLBranch: ECE

Time: 3 hours

Max. Marks: 75

PART – A**I. Answer ALL questions of the following****5x1M=5 M**

1. Explain RTL synthesis.
2. What is a bi-directional Gate?
3. What is Non - blocking assignment?
4. Write voltage strengths of switch level modeling.
5. Give example of the functional register.

II. Answer ALL questions of the following**10x2M=20 M**

1. Write the syntax of Port declaration.
2. Distinguish between VHDL and verilog.
3. What are different Equality operators in Data flow level
4. Explain defined primitives.
5. Write the Syntax of 'always'.
6. How Forever loop is differed from others?
7. What is Period in flip flop timing?
8. What are time related parameters
9. Write about Feedback model
10. Write about capacitive model

PART-B**Answer ALL questions of the following****5x10 M= 50M**

1. Classify and explain 'strengths & contention resolution' used in Verilog?

OR

2. (a) Explain scalars and vectors with example in full adder design.
(b) Write importance of parameters of verilog module programme.
3. Write a verilog code for D flip flop using NAND gates.

OR

4. (a) Design a 2x1 multiplexer using tristates.
(b) Write verilog programme for the 2x1 multiplexer using tristate primitives.
5. Write verilog code of OR gate using for loop and disable statement with simulation results.
Describe 'If-Else' and 'Wait' constructs in detail with examples.

OR

6. With the help of flow chart explain for loop and write Verilog code for Counter that has to count up to seven using for loop.
7. Write verilog code for CMOS NOR gate in switch level modeling.

OR

8. Explain in detail about Bidirectional gates and File based tasks and functions with proper examples.
9. Explain the importance of Assertion used in Verilog with examples.

OR

10. Explain about Behavioral memory element.

Code No.: 30405

MR13

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II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2019

Subject: SIGNALS & SYSTEMS

Branch: ECE

Time: 3 hours

Max. Marks: 75

PART – A

I. Answer ALL questions of the following

5x1Mark=5 Marks

1. What are the major classifications of the signal?
2. Define Fourier transform pair?
3. Sketch a signum function.
4. Define convolution integral of continuous time signal.
5. Write inverse Z transform equation of $X(z)$.

II. Answer ALL questions of the following

10x2Marks=20 Marks

1. State Time Shifting property in relation to Fourier series?
2. State parseval's theorem for continuous time periodic signals?
3. Define sampling theorem and Nyquist rate.
4. Explain Dirchlet's condition for fourier series.
5. What is the condition of LTI system to be stable?
6. Write any two properties of auto correlation function?
7. State the time shifting property for Laplace transforms?
8. What is the relationship between Z transform and Fourier Transform?
9. Define Hilbert Transform. Write any 2 properties.
10. What is the condition for convergence of laplace transform.

PART-B

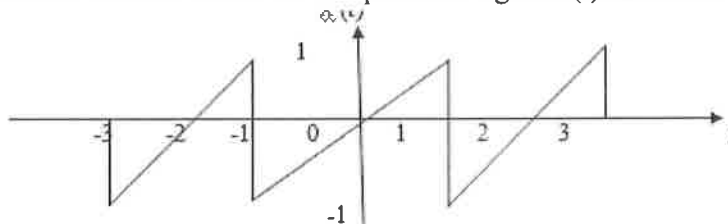
Answer ALL questions of the following

5x10 Marks= 50Marks

1. a) Find Cosine Fourier series for the periodic signal $x(t)$

$$x(t) = \begin{cases} 0 & \text{for } -\pi \leq t \leq 0 \\ 1 & \text{for } 0 \leq t \leq \pi \end{cases}$$

- b) Find trigonometric Fourier Series for the periodic signal $x(t)$ shown in fig below



OR

2. a) If $x(t)$ & $y(t)$ are orthogonal then, show that $E_{x+y} = E_x + E_y$ where E_{x+y} is the energy of the signal $x(t)+y(t)$, E_x is the energy of the signal $x(t)$ and E_y is the energy of the signal $y(t)$.
b) Determine the fourier series representation for $x(t)=2\sin(2\pi t-3)+\sin(6\pi t)$.

3. a) Find the Fourier transform for the signal

(i) $x(t) = 2\delta(t - t_0)$

(ii) $x(t) = 2\sin\Omega_0 t$

b) State and Prove sampling theorem for low pass signals?

OR

4. a) Discuss in detail about natural and flat top sampling?

b) The signal $x(t) = 10\cos(10\pi t)$ is sampled at a rate 8 samples per second. Plot the amplitude spectrum for $|\Omega| \leq 30\pi$. Can the original signal be recovered from samples? Explain.

5. Define cross correlation and state its properties.

OR

6. a) Explain distortionless transmission through system.

b) Stable LTI system is characterised by the differential equation $\frac{d^2 y(t)}{dt^2} + 4 \frac{dy(t)}{dt} + 3y(t) = \frac{dx(t)}{dt} + 2x(t)$.

Find its response for input $x(t) = e^{-t} u(t)$

7. a) Find the forced response of the system with transfer function $H(s) = 1/(s+0.5)(s+1)$ for unit step input.

b) Using Graphical Method, Find the convolution of $x(t)$ and $h(t)$. $x(t) = 1 \quad -3 \leq t \leq 3$
 $= 0 \quad \text{otherwise}$
 $h(t) = 2 \quad 0 \leq t \leq 3$
 $= 0 \quad \text{otherwise}$

OR

8. a) Find the Laplace transform of the signal $x(t) = e^{-a|t|}$ and find its ROC.

b) State and prove the properties of auto correlation of Power Signals?

9. a) State and prove initial value and final value theorem of Z transform. [6M]

b) Find $x(\infty)$, if $X(z) = (z+1) / 3(z-1)(z+0.9)$ [4M]

OR

10. Find the inverse Z transform of $X(z) = (z+1) / (z^2+0.5)$ using Cauchy's Residue method.

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II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2019Subject: **PULSE & DIGITAL CIRCUITS**Branch: **ECE**

Time: 3 hours

Max. Marks: 75

PART – A**I. Answer ALL questions of the following****5x1Mark=5 Marks**

1. Sketch the circuit of a RC High pass filter.
2. How diode acts as a Switch?
3. Give any two applications of Schmitt trigger.
4. Write the Basic Principle behind time base generator.
5. State the advantages of CMOS over TTL logic families.

II. Answer ALL questions of the following**10x2Marks=20 Marks**

1. Sketch the frequency response of RC Differentiator.
2. Explain the conditions of RL circuit to work as differentiator.
3. Draw the output characteristics in CE configuration.
4. List out the applications of voltage comparators.
5. Draw the circuit of a self-bias bistable multivibrator.
6. Draw the output waveform of monostable multivibrator.
7. What is frequency division?
8. Draw the waveform for Astable relaxation circuits.
9. Explain the operation of chopper amplifier.
10. What are Universal Gates? Draw NOT gate using Universal Gates.

PART-B**Answer ALL questions of the following****5x10 Marks= 50Marks**

1. Explain the operation of RC Low Pass Circuit for exponential input is applied.

(OR)

2. a) Explain about attenuators.
b) Draw the response for High Pass circuit for square wave.
3. a) Draw the basic circuit diagram of negative peak clamper circuit and explain its operation.

b) Explain transfer characteristics of the emitter coupled clipper and derive the necessary equations.

(OR)

4. State and prove Clamping circuit theorem.

5. Design and explain fixed bias Bistable multivibrator.

(OR)

6. Draw and explain emitter coupled Astable multivibrator.

7. a) Explain how a linearly varying current waveform can be generated from voltage time base generator.

b) Draw and explain about Miller Sweep Circuit.

(OR)

8. Derive an expression for sweep speed error in Bootstrap sweep circuit.

9. Explain bidirectional sampling gates using transistors.

(OR)

10. a) Draw the circuit diagram of Emitter-Coupled OR gate and explain its operation.

b) Draw the circuit diagram of negative logic NOR gate and explain its operation.