



# SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES

(Autonomous)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

QUESTION BANK

20ECE244– PULSE AND DIGITAL CIRCUITS

Question No.	Questions	PO Attainment
<b>UNIT – 1</b>		
<b>PART A ( 2 Marks)</b>		
1	Define is linear wave shaping?	PO1
2	What are High pass circuit and Low pass circuit?	PO2
3	Draw the outputs of High pass and Low pass circuits when step, ramp and exponential waveforms are given?	PO1
4	What is rise time $t_r$ for Low pass RC circuit in terms of time constant, 3db frequency and bandwidth?	PO1,PO2
5	What is non linear wave shaping?	PO1
6	What is a Clipper?	PO1
7	Write the other names of clippers?	PO1
8	Tabulate the values of $R_f$ , $R_r$ , $V_y$ for ideal diode?	PO1
9	Write the applications of Clipper.	PO1,PO2
10	Draw the circuit of Noise clipper	PO1,PO2,PO3
12	What is a Clamper?.	PO1,PO2,PO3
13	Write other names of clampers?	Po1
14	What is Non-linear wave shaping?	Po1
15	Define Clamping circuit theorem.	Po1
<b>PART-B (10 Marks)</b>		
1.	a)Derive an expression for the output voltage levels under steady state conditions of a low pass circuit excited by a ramp input. b)How an RC low pass circuit works as an integrator?	PO1,PO2
2.	a)Derive an expression for the output voltage levels under steady state conditions of a high pass circuit excited by a pulse input. b.Explain how high pass RC circuit works as a differentiator	PO1,PO2
3.	Prove that $t_r = T/2RC$ for ramp as input to the High pass RC-Circuit.	PO1,PO2,PO3
4.	Derive the expression for percentage tilt P of a square wave output of a RC high pass circuit.	PO1,PO2,PO3
5.	Explain about attenuators and derive the condition for perfect compensation of an attenuator. a) Explain the working of attenuator as a CRO Probe? b) Explain the operation of double ended clipper	PO1,PO2
6.	Discuss the function of series diode and shunt diode clipping circuits? How can the clipping level shifted to reference voltage? Explain?	PO1,PO2
7.	With the help of neat Circuit diagram, explain the working of Transistor Clipper? Explain the operation of diode comparator. Briefly mention various applications of comparators.	PO1,PO2
8.	With the help of a neat circuit diagram, explain the working of emitter- coupled clipper?	PO1,PO2
9.	With the help of neat circuit explain the working of negative and positive clamping circuits. a) What is synchronized clamping? Draw the circuit and explain its operation. b) State and prove clamping circuit theorem.	PO1,PO2
10.	Discuss the effect of diode characteristics on clamping circuits.	PO1,PO2
<b>UNIT – 2</b>		
<b>PART A ( 2 Marks)</b>		
1.	Define the following terms related to transistor switch. i. Rise time. ii. Fall time. iii. Delay time. iv. Storage time. v. Turn-on time and vi. Turn-off time.	PO1



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2.	What is a Multivibrator?	PO1
3.	Write the pulse width expression of an Astable multivibrator?	PO1
4.	List the others names of Astable multivibrator?	PO1
5.	Discuss the applications of Astable multivibrator?	PO1
6.	How many stable and quasi-stable states are there in an Astable multivibrator?	PO1
7.	Write is pulse width expression of a Monostable multivibrator?	PO1
8.	What are the other names of Monostable multivibrator?	PO1
9.	Mention the applications of Monostable multivibrator?	PO1
10.	Classify the types of triggering?	PO1,PO2
11.	What are the advantages of Collector triggering?	PO1
12.	Describe the type of feedback present in multivibrators?	PO1,PO2
13.	Tabulate are the other names of Bistable multivibrator?	PO1
14.	Write the applications of Bistable multivibrator?	PO1
15.	What are the stable states of Bistable multivibrator?	PO1
16.	Define UTP	PO1
17.	Define LTP	PO1
18.	What is Hysteresis voltage?	PO1
19.	Write the applications of Schmitt trigger	PO1
20.	How the Hysteresis can be eliminated.	PO1
<b>PART-B (10 Marks)</b>		
1.	Write short note on junction switching times.	PO1
2.	Describe about piece-wise linear diode characteristics.	PO1,PO2
3.	Explain the operation of transistor as a switch.	PO1,PO2
4.	Write short notes on (a) diode switching times (b) transistor switching times.	PO1
5.	Explain with the help of a neat circuit diagram, the principle of operation of a monostable multivibrator and derive an expression for pulse width.	PO1,PO2
6.	Explain about Schmitt trigger circuit with neat diagram.	PO1,PO2
7.	Explain the operation of fixed bias bistable multivibrator with neat circuit diagram.	PO1,PO2
8.	Describe with neat circuit diagram and waveform of collector coupled astable multivibrator.	PO1,PO2
9.	Design an astable multivibrator to generate a square wave of 1KHz.	PO1,PO2,PO3
10.	Explain with the help of a neat circuit diagram, the principle of operation of astable multivibrator and derive an expression for pulse width	PO1,PO2
<b>UNIT – 3</b>		
<b>PART A ( 2 Marks)</b>		
1.	Write the conditions for UJT to be ON and OFF?	PO1
2.	Define intrinsic stand off ratio?	PO1
3.	Why it is called relaxation oscillator?	PO1,PO2
4.	Give the formula for seep time and frequency of oscillations	PO1,PO2
5.	Tabulate the applications of UJT Relaxation oscillator?	PO1
6.	Describe the Time base generators?	PO1,PO2
7.	List other names of Time base generator?	PO1
8.	What is the ideal gain of Bootstrap and Miller circuits?	PO1
9.	Give the difference between Bootstrap and Miller circuits	PO1
10.	Define Sweep time and Return Time	PO1
<b>PART-B (10 Marks)</b>		
1.	Explain in brief about the Bootstrap sweep circuit?	PO1,PO2
2.	Derive the expression and define the following a) Sweep speed error b) Displacement error c) Transmission error	PO1,PO2



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3.	Describe the operation of miller sweep circuit?	PO1,PO2
4.	With the help of neat circuit diagram and waveforms explain transistor miller time base generator.	PO1,PO2
5.	Explain the basic principles of Miller and Bootstrap time-base generators. Give the comparison of both the generation methods.	PO1,PO2
6.	Illustrate the different methods of generating time-base waveforms? Explain any one of it.	PO1,PO2,PO3
7.	Summarize the working of a transistor bootstrap time base generator.	PO1,PO2
8.	Develop a neat circuit diagram, and explain the working of a simple current sweep.	PO1,PO2
9.	What are the techniques used to improve the Linearity of current sweeps?	PO1,PO2
10.	Discuss about Transistor Current Time Base Generator.	PO1,PO2
<b>UNIT – 4</b>		
<b>PART A ( 2 Marks)</b>		
1.	Write the the basic gates?	PO1
2.	What are universal gates?	PO1
3.	Draw the truth table for EX-OR gate?	PO1,PO2,PO3
4.	Implement NOR gate by using OR, NOT and AND gates.	PO1,PO2
5.	Analyse the NAND gate by using OR, NOT and AND gates.	PO1,PO2
<b>PART-B (10 Marks)</b>		
1.	Describe with neat diagram of OR, AND & NOT gates using diodes.	PO1,PO2
2.	Explain the operation of AND, OR & NOT gates using transistors.	PO1,PO2
3.	With reference to logic gates explain the terms: (i) Fan out (ii) Noise margin (iii) Propagation delay (iv) Figure of Merit	PO1
4.	With the help of neat circuit diagram and truth table brief the working of (i) DTL NAND gate (ii) RTL NAND gate	PO1
5.	Draw the Timing Diagram for all the gates	PO1,PO2,PO3
<b>UNIT – 5</b>		
<b>PART A ( 2 Marks)</b>		
1.	Explain about CMOS transistor	PO1,PO2
2.	Expand BICMOS	PO1,PO2
3.	What is pull up transistor	PO1
4.	What is pull down transistor	PO1
5.	Describe the demarcation line in cmos implementation	PO1
<b>PART B ( 10 Marks)</b>		
1.	Describe about CMOS NAND and NOR gate with neat circuit diagram.	PO1
2.	Write short notes on CMOS logic and explain about CMOS inverter.	PO1
3.	Explain the operation of TTLGates	PO1,PO2
4.	Explain the operation of ECL Gates	PO1,PO2
5.	Explain the operation of IIL logic	PO1,PO2
6.	Explain the operation of BICMOS Circuits.	PO1,PO2