R13

SET - 1

III B.Tech I Semester Supplementary Examinations, October/November - 2019
PULSE AND DIGITAL CIRCUITS
(Common to Electronics and Communication Engineering, Electronics and Instrumentation Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

~~~~~~

PART –A (22 Marks)

1	a)	Define Linear Wave Shaping.	[4M]
	b)	Justify that a clamping circuit is a dc inserter.	[3M]
	c)	Define rise time and transition time of a diode.	[4M]
	d)	What is hysteresis? how it can be eliminated in a Schmitt trigger?	[3M]
	e)	What are the general features of a time base signal?	[4M]
	f)	Name some negative resistance devices used as relaxation Oscillator.	[4M]

PART –B (48 Marks)

2	a)	Explain the operation of attenuators.	[5M]
	b)	A symmetrical square wave of peak to peak amplitude V and frequency f is applied to a high pass RC circuit. Find the percentage tilt.	[8M]
	c)	What is Ringing circuit?	[3M]
3	a)	Explain transfer characteristics of the emitter coupled clipper.	[4M]
	b)	Draw the basic circuit diagram of positive peak clamper circuit and explain its operation.	[8M]
	c)	What do you mean by compensation? Explain in detail.	[4M]
4	a)	What are the saturation parameters of transistor and explain their variation with respect to temperature.	[8M]
	b)	Derive expressions for rise time and fall time in terms of the transistor parameters and operating currents.	[8M]
5	a)	Explain the principle of operation of Monostable multivibrators.	[8M]
	b)	Design a collector coupled Mono-stable for the following specifications: I_{CBO} and voltage drops across saturated transistors are negligible. For the transistors $h_{FE (min)}$=20, and the base-emitter cutoff voltage for the normally OFF transistor is –1 V. The base drive to the transistor in saturation is 50% in excess of minimum required. Collector supply voltage is 6V and collector current=2 mA the delay time is 3000 μsec. Choose R_1=R_2. Find R_C, R, R_1, C and V_{BB}.	[8M]
6	a)	Define and derive the terms slope error, displacement error and transmission error.	[8M]
	b)	Explain the working of a Miller sweep circuit and derive expression for the slope sweep error.	[8M]
7	a)	With a neat circuit, explain a method of compensation used to improve the linearity of a bootstrap time base circuit.	[8M]
	b)	Explain the principle of "synchronization" and synchronization with frequency division.	[8M]

*****