R13

SET - 1

III B. Tech I Semester Supplementary Examinations, May- 2019
PULSE AND DIGITAL CIRCUITS
(**Common to** Electronics and Communication Engineering and 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**
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PART –A

1	a)	Name the signals which are commonly used in pulse circuits and define any five of them.	[3M]
	b)	What is synchronized clamping.	[3M]
	c)	What are the reasons for existence of rise time and fall time?	[4M]
	d)	Explain the application of Astable Multi Vibrator as a Voltage to Frequency Converter.	[4M]
	e)	What is the basic principle of Bootstrap time base generator?	[4M]
	f)	Define Relaxation circuit? Give Some examples.	[4M]

PART -B

2	a)	Prove that an RC circuit behaves as a good integrator if RC > 15T, where T is the period of an input signal.	[8M]
	b)	A 10 kHz symmetrical square wave whose peak to peak amplitude is 2V is impressed upon a high pass circuit whose lower 3dB frequency is 5Hz. Calculate and sketch the output waveform in particular what is the peak to peak amplitude.	[8M]
3	a)	What is a clipper circuit? Mention the types of clippers circuits.	[8M]
	b)	Design a diode clamper circuit to clamp the positive peaks of the input signal at zero level. The frequency of the input signal is 500 Hz.	[8M]
	c)	Explain the applications of voltage comparators.	[8M]
4	a)	Explain in detail the junction diode switching times.	[8M]
	b)	Draw and explain the circuit diagram of ECL.	[8M]
5	a)	Explain the principle of operation of Bi-stable multivibrators.	[8M]
	b)	A fixed bias Bi-stable multivibrator circuit uses a DC supply of ±12 V, R_C=2kΩ, R_1=10kΩ and R_2=47kΩ. NPN silicon transistor with $V_{CE(sat)}$ = 0.1 V, $V_{BE (sat)}$ = 0.7 V and $h_{FE (min)}$=30 are used.	[8M]
6	a)	What are the different methods of generating time-base waveforms? Explain about each briefly.	[8M]
	b)	Explain the working of a transistor Bootstrap sweep circuit and derive expression for the slope sweep error.	[8M]
7	a)	Define the three errors that occur in a sweep circuit and obtain an expression for these errors for an exponential sweep circuit.	[8M]
	b)	What is the principle of synchronization? Explain the method of pulse synchronization. of relaxation devices with examples.	[8M]

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