Code No: RT31041 **R13** SET - 1

III B. Tech I Semester Supplementary Examinations, May- 2018

PULSE AND DIGITAL CIRCUITS

(Common to Electronics and Computer 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)	What is the role of attenuator in CRO probes?	[3M]
	b)	Distinguish between comparators and clipping circuits?	[4M]
	c)	What are the important parameters to be observed when the transistor is operated as electronic switch?	[4M]
	d)	Briefly discuss about the Commutating Capacitors?	[4M]
	e)	Why time base generators are called sweep circuits?	[3M]
	f)	How do sampling gates differ from logic gates?	[4M]

PART -B

2	a)	Derive an expression for output of a RC differentiator circuit when its input is exponential signal. Determine the transmission error.	[8M]
	b)	Derive the expression for output voltage across the resistance of an RL circuit when the input is a pulse of duration T sec and amplitude of V volts. What is its counterpart using RC network? Draw the circuit.	[8M]
3	a)	Draw the circuit diagrams for double ended clipping of a sinusoidal input signal using diodes and zener diodes. Explain its operation using transfer characteristics of each circuit.	[8M]
	b)	Draw the circuit diagram for positive clamper circuit and explain its principle of operation.	[8M]
4	a)	Explain the piecewise linear diode characteristics	[8M]
	b)	Compare DTL,TTL and ECL circuits	[8M]
5	a)	With the aid of circuit diagram, and necessary derivations show that a collector coupled astable multivibrator can function as a voltage to frequency converter.	[8M]
	b)	Design a Schmitt trigger circuit to have UTP = 6 V, LTP = 3 V using silicon transistors whose h_{FE}(min) = 30, and I_C(on) = 4mA. Assume necessary data.	[8M]
6	a)	Explain the working of transistor based Bootstrap time base generator circuit, and draw the necessary waveforms.	[8M]
	b)	Draw and clearly indicate the restoration time and flyback time on the typical waveform of a time base voltage.	[8M]
7	a)	With the help of neat waveforms, explain sine wave frequency division with a sweep circuit.	[8M]
	b)	Draw and explain the unidirectional diode sampling gate for more than one input signal and also explain how to overcome the loading effect on control signal?	[8M]

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