

II B.Tech II Semester Supplementary Examinations, January 2005
PULSE & DIGITAL CIRCUITS
(Common to Electronics & Instrumentation Engineering and Electronics &
Control Engineering)

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. Draw the different output waveforms of a RC High Pass circuit when it is applied with different inputs like
 - (a) Step-voltage input,
 - (b) pulse input
 - (c) square wave input.Explain the same.
2.
 - (a) What is synchronized clamping? Explain.
 - (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.
3. Define and explain in detail transistor switching times with necessary circuit and waveforms.
4.
 - (a) Explain asymmetrical triggering in a binary and mention its uses.
 - (b) Design a nonsaturated bistable multivibrator using silicon n-p-n transistors. Assume that $V_{cc}=15V$; $h_{fe}(\min)=60$ and $h_{fe}(\max)=250$. If $I_c=1.5mA$, find the maximum and minimum levels of collector, base and emitter voltages of both transistors.
5.
 - (a) If the amplifier gain is different from unity in a bootstrap circuit, what is the effect on the sweep voltage? What is the effect of amplifier bandwidth on the sweep output?
 - (b) With a neat circuit, explain a method of compensation used to improve the linearity of a bootstrap time base circuit.
6.
 - (a) Compare the pulse synchronization and synchronization with symmetrical signals.
 - (b) Explain the importance synchronization in digital circuits.
7.
 - (a) What is a sampling gate? Explain the operation of series gate using JFET. Sketch the input and output waveforms.
 - (b) Illustrate the errors encountered in series sampling and what is the design procedure to minimize these errors?

8. Explain the operation of free running blocking oscillator (diode controlled) with neat sketch of current and voltage waveforms. Derive the expression for period and duty cycle of oscillations.
