

II B.Tech I Semester(R05) Supplementary Examinations, May/June 2010**PULSE AND DIGITAL CIRCUITS**

(Common to Electrical & Electronic Engineering, Electronics & Communication Engineering and Electronics & Instrumentation Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

1. (a) A square wave of 5 V amplitude with an ON time of 1 msec and an OFF time of 3 m sec is applied to a high pass RC circuit with $R = 2K$ and $C = 0.1 \mu f$. Sketch the steady state output waveform showing all the details
(b) Explain the operation of RC high pass circuit when exponential input is applied. [8+8]
2. (a) Explain transfer characteristics of the emitter coupled clipper and derive the necessary equations.
(b) Draw the basic circuit diagram of positive peak clamper circuit and explain its operation. [8+8]
3. (a) Explain with relevant diagrams the various transistor switching times.
(b) Explain the tests that can be performed for listing of a transistor for saturation.
(c) Give the design considerations of a transistor switch. [4+4+8]
4. Write short notes on:
(a) Gate width of mono-stable multi.
(b) Astable multivibrator as a voltage to frequency converter with circuit and waveform. [8+8]
5. (a) Compare the principle of operation of Miller sweep circuit and Bootstrap sweep circuit
(b) Explain how linearity is obtained by adjusting the driving waveform of current sweep circuit. [8+8]
6. (a) Explain the factors which influence the stability of a relaxation divider with the help of a neat waveforms.
(b) A UJT sweep operates with $V_V = 3V$, $V_P = 16V$ and $\eta = 0.5$. A sinusoidal synchronizing voltage of 2V peak is applied between bases and the natural frequency of the sweep is 1kHz, over what range of sync signal frequency will the sweep remain in 1:1 synchronism with the sync signal? [8+8]
7. (a) What is sampling gate? Explain how it differ from Logic gates?
(b) What is pedestal? How it effects the output of a sampling gates?
(c) What are the drawbacks of two diode sampling gate? [6+6+4]
8. (a) What are the basic logic gates which perform almost all the operations in Digital communication systems.
(b) Give some applications of logic gates.
(c) Define a positive and negative logic systems.
(d) Draw a pulse train representing a 11010111 in a synchronous positive logic digital system. [4+4+4+4]
