

II B.Tech I Semester(R07) Supplementary Examinations, May/June 2010**PULSE AND DIGITAL CIRCUITS****(Common to Electrical & Electronic Engineering and Electronics & Instrumentation Engineering)****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions
All Questions carry equal marks**

1. (a) Prove that for any periodic input wave form the average level of the steady state output signal from RC high pass circuit is always zero
(b) Explain how a low pass RC circuit act as an integrator. [8+8]
2. (a) What is meant by clipping in wave shaping?
(b) Classify different types of clipper circuits. Give their circuits and explain their operation with the aid of transfer characteristics. [4+12]
3. (a) Explain the reverse recovery of a semiconductor diode. How does the recovery time place a limitation on the diode speed
(b) Write about diode switching times. [8+8]
4. Explain the method of unsymmetrical triggering of the binary with relevant circuit diagram. [16]
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) In UJT sweep circuit $V_{BB} = 20\text{ V}$, $V_{YY} = 50\text{ V}$, $R = 5\text{ k}\Omega$, $R_{B1} = R_{B2} = 0\Omega$ and $C = 0.01\text{ }\mu\text{F}$. the UJT fires when $V_c = 10.6\text{ V}$ and goes to OFF state when $V_c = 2.8\text{ V}$. Find the
 - i. the amplitude of sweep signal
 - ii. the slope and displacement error
 - iii. the duration of the sweep, and
 - iv. the recovery time.[16]
6. (a) What is phase delay and phase jitter?
(b) Explain with the help of block diagram and waveforms for achieving division of relaxation devices without phase jitter.
(c) Write the factors which influence the stability of a relaxation divider. [16]
7. (a) With the help of neat diagrams explain the working of bidirectional diode gate and derive the expressions to control voltages and gain.
(b) For the bidirectional diode gate $V_s = 25\text{ V}$, $R_F = 50\Omega$, $R_L = R_C = 200\text{ k}\Omega$ and $R_2 = 50\text{ k}\Omega$. Find $(V_c)_{min}$, $(V_n)_{min}$, gain A and the 3 - dB frequency of the gate. [16]
8. (a) What is wired logic give some examples.
(b) What are the basic logic gates that perform all the operations in digital systems [8+8]
