

II B.Tech I Semester Regular Examinations, November 2007
PULSE AND DIGITAL CIRCUITS
(Common to Electrical & Electronic Engineering, Electronics &
Communication Engineering, Electronics & Instrumentation Engineering
and Electronics & Telematics)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Prove that an RC circuit behaves as a reasonably good integrator if $RC > 15T$, Where T is the period of an input ' $E_m \sin \omega t'$ '.
(b) What is the ratio of the rise time of the three sections in cascade to the rise time of Single section of low pass RC circuit. [8+8]
2. (a) Draw the circuit diagram of slicer circuit using Zener diodes and explain its operation with the help of its transfer characteristic.
(b) Draw the circuit diagram of emitter coupled clipper. Draw its transfer characteristics indicating all intercepts, slopes and voltage levels derive the necessary equations. [8+8]
3. (a) Explain the terms pertaining to transistor switching characteristics.
 - i. Rise time.
 - ii. Delay time.
 - iii. Turn-on time.
 - iv. Storage time.
 - v. Fall time.
 - vi. Turn-off time.(b) Give the expression for risetime and falltime in terms of transistor parameters and operating currents. [6+10]
4. In the nonsaturated binary shown in figure 4, the avalanche diodes D1 and D2 are nominally identical, as are diodes D3 and D4. The breakdown voltage V_Z of D3 and D4 is larger than the breakdown voltage V_Z of D1 and D2. Verify that the transistors do not enter the saturation region. Assume that D3 and D4 are always in the breakdown region and that either D1 or D2 but not both, is in the breakdown region. Then verify these assumptions. [16]

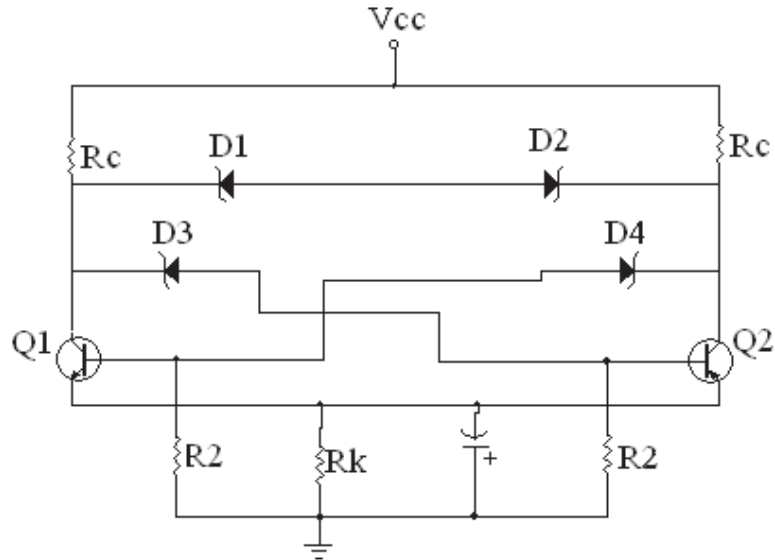


Figure 4

5. (a) Draw and clearly indicate the restoration time and flyback time on the typical waveform of a time base voltage.
 (b) Derive the relation between the slope, transmission and displacement errors
 (c) Explain how UJT is used for sweep circuit? [6+4+6]
6. (a) What do you mean by synchronization ?
 (b) What is the condition to be met for pulse synchronization?
 (c) Compare sine wave synchronization with pulse synchronization? [4+6+6]
7. (a) Why are sampling gates called Selection circuits?
 (b) What are the advantages of unidirectional sampling gates?
 (c) What are the applications of sampling gates? [6+4+6]
8. (a) With the help of circuit diagram explain the purpose of clamping diode in a positive diode AND gate.
 (b) Explain the effect of and diode capacitance on the output pulse of diode AND gate. [8+8]
