

**III B.Tech II Semester Supplementary Examinations, April/May 2005**  
**PULSE AND DIGITAL CIRCUITS**  
**(Electrical & Electronic Engineering)**

**Time: 3 hours****Max Marks: 70**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) A symmetrical square wave of peak to peak amplitude  $V$  and frequency  $f$  is applied to a high pass RC circuit. Find the percentage tilt.  
(b) How can this tilt be reduced?
2. (a) Draw a typical circuit for clipping at two independent levels. Explain in detail the circuit and sketch its characteristics.  
(b) Derive the steady state response of a clamping circuit for a square wave input in which the resistance  $R_s$  of the signal source is taken into account.
3. With the help of neat wave forms explain the storage and transition times of diode.
4. (a) What is a direct connected binary circuit? Explain the direct connected binary with the help of a circuit diagram.  
(b) Mention the advantages and disadvantages of the above. Mention its use.
5. (a) With a neat diagram explain the operation of a transistor TV sweep circuit.  
(b) In the TV current sweep circuit  $L=5\text{mH}$  and total current change required to sweep the beam across the screen is  $100\text{mA}$ . Of the  $63.5$  microsec available for a horizontal sweep and retrace combined,  $7.0$  microsec is to be used for retrace.  
Calculate
  - i. required supply voltage
  - ii. the capacitance  $C$  and
  - iii. the maximum voltage that appears across the transistor.
6. What are the disadvantages of pulse synchronization? How they can be eliminated by using symmetrical signals, explain in detail with the help of waveforms.
7. (a) Explain the advantages and disadvantages of a diode type bi-directional gate?  
(b) Explain the merits and demerits of a transistor type bi-directional gate?
8. Explain the operation of an RC controlled free running blocking oscillator with neat sketch of circuit and voltage waveforms. Derive the expression for duty cycle. What are the advantages of the circuit?

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