Code No: R05210203 $\boxed{\textbf{R05}}$ $\boxed{\textbf{Set No. 2}}$

II B.Tech I Semester Examinations,November 2010
PULSE AND DIGITAL CIRCUITS
Common to Electronics And Telematics, Electronics And Instrumentation Engineering, Electronics And Communication Engineering, Electrical And Electronics Engineering

Time: 3 hours Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) For the circuit shown in figure 2a V_S is a sinusoidal voltage of peak 75 volts. Assuming ideal diodes. Sketch one cycle of output voltage. Determine the maximum diode currents.
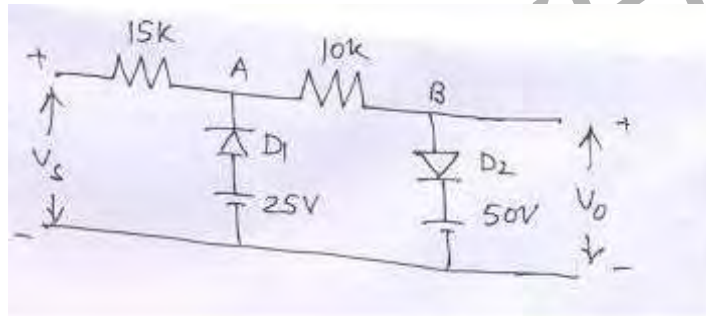

Figure 2a

(b) What are the uses of clipper circuits. [12+4]

2. (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 Vv = 3V, Vp=16V and η=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]

3. (a) Draw the circuit diagram of a Schmitt trigger circuit and explain its operation. Derive the Expressions for its UTP and LTP.

(b) Explain how an Schmitt trigger circuit acts as a comparator. [12+4]

4. (a) Explain the general features of a time base generators.

(b) Draw the circuit diagram of Transistor Miller time base generator and give the requirement of each component. [8+8]

5. (a) A square wave of time period 'T' is applied to an RC High pass circuit whose time constant τ is variable. If 'V' is the peak-to-peak voltage of square waveform, draw and theoretically justify the shapes of the waveform that result in the output for

   i. $T << \tau$
   ii. $T = \tau$

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  iii. $T >> \tau$

    Draw the waveforms of input and output to the same time scale.

  iv. Why RC differentiator is mostly preferred over RL differentiator. [10+6]

6. (a) Draw the equivalent circuit and derive the gain and control voltages of bi-directional two diode sampling gate and also give its disadvantages.

 (b) Draw the Block diagram of sampling scope and explain each block in brief.

                             [8+8]

7. The parameters in the diode OR circuit of figure 4 shown are V(0) = +12V, V(1) = -2V, Rs =600 ohms, R =10K, $R_f = 0$, $R_r = \alpha$ and $V_r =0.6$ V Calculate the two levels if one input is excited and if

 (a) $V_R=+12V$

 (b) $V_R = +10V$

 (c) $V_R = +14V$

 (d) $V_R=0V$.

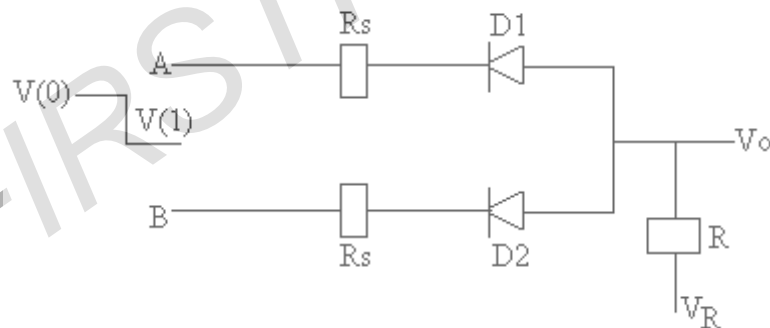For which of these cases is the OR function satisfied. Derive the equation used in this problem.   [16]

Figure 4

8. Explain how a BJT can be used as a switch. Compare its performance as a switch with JFET. Explain all Switching Times.   [16]

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R05 **Set No. 4**

II B.Tech I Semester Examinations,November 2010
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Time: 3 hours
Max Marks: 80

Answer any FIVE Questions
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3

Figure 2a

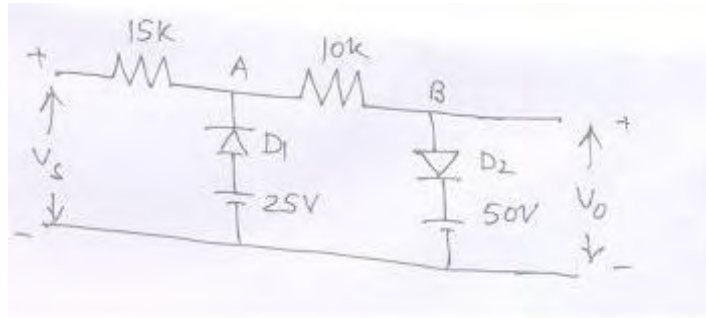(b) What are the uses of clipper circuits. [12+4]

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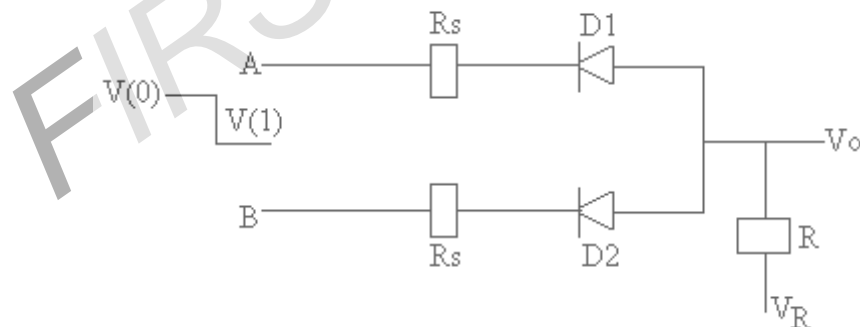

Figure 4

8. (a) Explain the general features of a time base generators.

   (b) Draw the circuit diagram of Transistor Miller time base generator and give the requirement of each component. [8+8]

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Code No: R05210203   **R05**   **Set No. 1**

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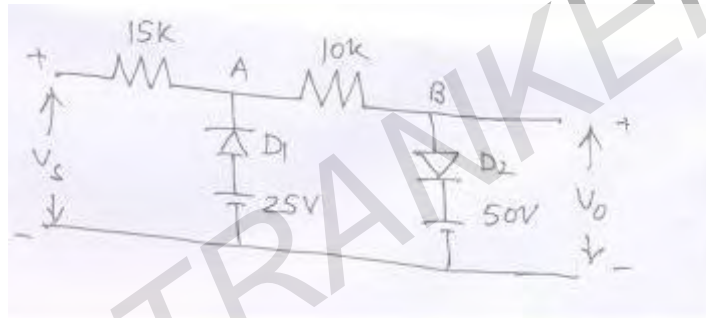

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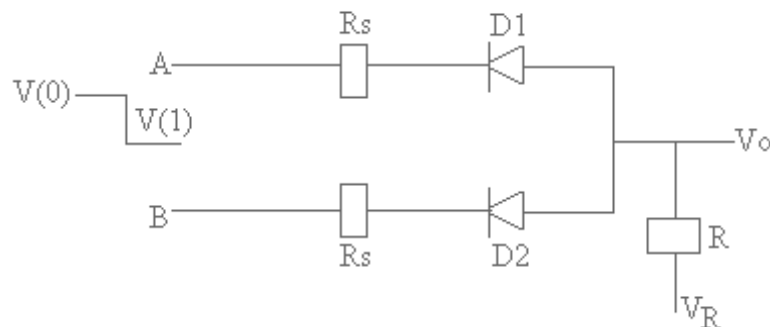

Figure 4

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3. (a) A square wave of time period 'T' is applied to an RC High pass circuit whose time constant τ is variable. If 'V' is the peak-to-peak voltage of square wave-form, draw and theoretically justify the shapes of the waveform that result in the output for

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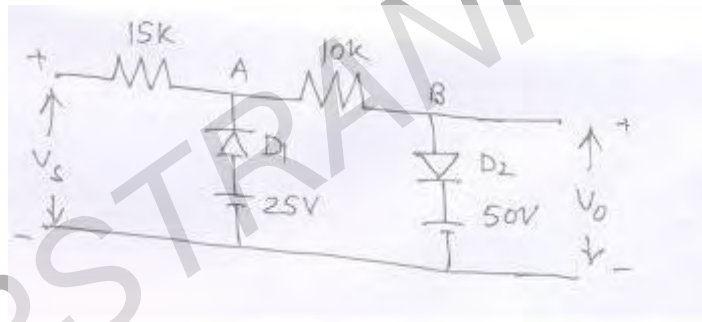

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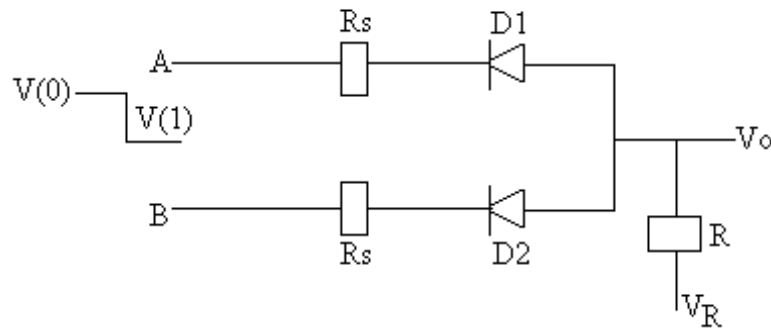   For which of these cases is the OR function satisfied. Derive the equation used in this problem. [16]

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