[06 – 3110]

III/IV B.E. DEGREE EXAMINATION.

First Semester

Electrical and Electronics Engineering

PULSE AND DIGITAL CIRCUITS

(Common for Electrical and Electronics Engineering and Electronics and Communication Engineering)

(w.e.f. admitted batch of 2004–2005 and after batches)

Time : Three hours Maximum : 70 marks

Answer question No.1 and any FOUR from the rest.

Answer ALL questions.

1. (a) What is linear wave shaping? What is its necessity?

   (b) What is meant by clipping?

   (c) What is the difference between clipping and clamping?

   (d) Define

      (i) Rise time

      (ii) Fall time

(e) Why are time base generators called sweep circuits?

(f) Explain the principle of synchronisation.

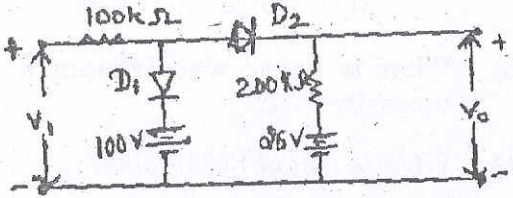
(g) Why is the NOT gate called an invertor?

2. (a) Discuss the response of RC low pass circuit to step and square wave input voltages.

(b) Explain the action of RC low pass circuit as integrator.

3. (a) With the help of a diagram, explain the working of transistor clipper.

(b) The input voltage V_i to the two level clipper shown in below figure varies linearly from 0 to 150V. Sketch the output voltage V_0 to the same scale as the input voltage.



4. (a) Explain about transistor switching times diagrammatically.

(b) Design a bistable multivibrator with silicon transistors with $hfe = 30$ and $Vcc = V_{BB} = 10v$.

5. (a) Draw and explain the operation of monostable multivibrator.

(b) Explain the working of simple current sweep with help of diagram.

6. (a) List out the applications of voltage sweep and current sweep circuits.

(b) What is sweep voltage? Write about the different methods of generating sweep waveforms.

(c) Compare miller and Bootstrap sweep circuits.

7. (a) Draw the CMOS NOR circuit and explain its logic operation.

(b) Explain the principle of synchronisation and frequency division and their importance.

8. Write short notes on

(a) ECL circuit

(b) Effects of diode characteristics on clamping voltage.

(c) Logic gates.
