Reg. No. _____

Karunya University

(Karunya Institute of Technology and Sciences)

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – April/May 2010

Subject Title: Solid State Circuits - II **Time : 3 hours**

Subject Code: EC206 **Maximum Marks: 100**

Answer ALL questions

PART – A (10 x 1 = 10 MARKS)

1. _____ filter is one in which at very high frequencies, capacitor acts almost as a short circuit.
2. Name any two important non sinusoidal waveforms in pulse circuitry.
3. A bistable circuit is one which can be induced to make an _____ from one state to the other by means of external excitation.
4. Define LTP in the Schmitt trigger circuit.
5. _____ circuit has one stable state and one quasi stable state.
6. The transition time may be reduced by introducing small _____ in parallel with the coupling resistors R_1, of the binary.
7. Define constant current charging.
8. Which one of the following is more efficient:
   a. Vacuum tube television sweep (or) b. Transistor television sweep.
9. What is meant by multiar?
10. Define sampling gate.

PART – B (5 x 3 = 15 MARKS)

11. Under certain conditions, high pass RC circuit can act like a Differentiator. Justify.
12. Give the applications of Schmitt trigger.
13. Differentiate monostable multivibrators and Bistable multivibrators.
14. Define displacement error and transmission error.
15. Mention any three applications of Blocking Oscillator.

PART – C (5 x 15 = 75 MARKS)

16. a. Explain the response of high pass RC circuit for a square input when $\tau << T$ and $\tau >> T$. (where τ - time constant). (8)
    b. Neatly sketch the ramp response of low pass RC circuit. (7)

(OR)

17. What is an attenuator? Draw and explain the response of an attenuator to a step input.

18. Explain the operation of self biased transistor binary with neat diagram. Draw its input and output waveforms.

(OR)

19. Calculate the stable state currents and voltages for the flip flop circuit (a) shown below, consisting of two cross-coupled inverter circuits whose parameter values are given in figure (b). Assume that the transistor have a minimum h_{FE} value of 20.

[P.T.O]

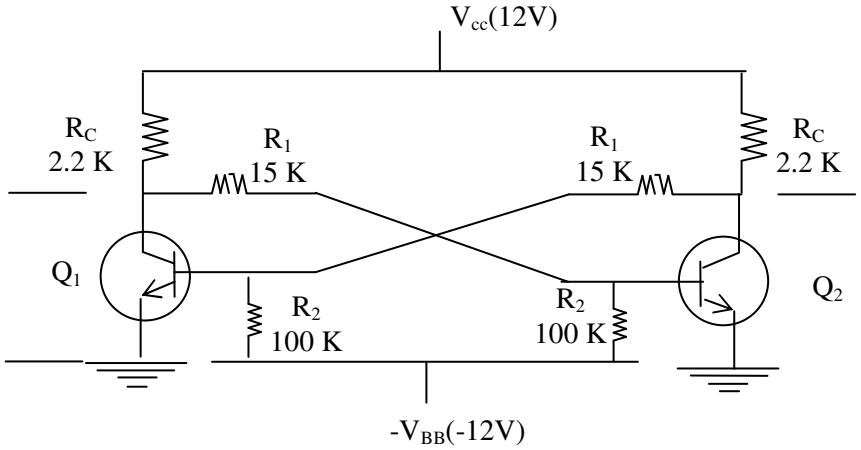


Fig. (a) Flip Flop circuit

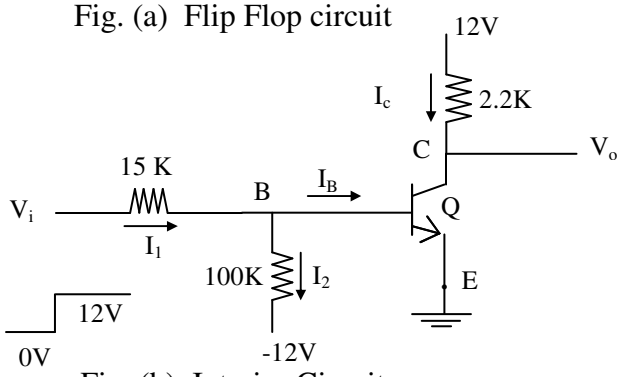
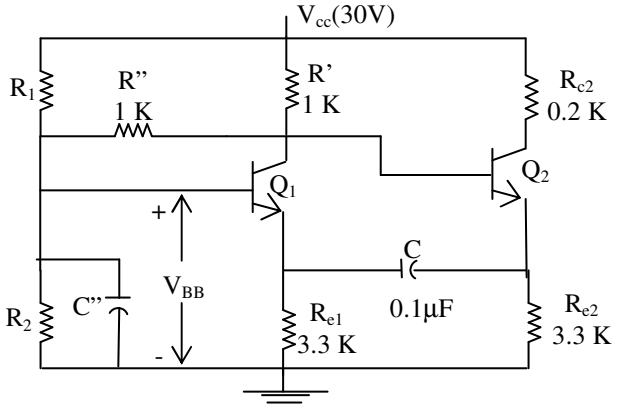


Fig. (b) Interior Circuit

20. Draw the circuit and explain the operation of emitter coupled monostable multivibrator. Also draw its waveforms.

(OR)

21. In the following circuit, V_{cc} = 30V, $R_2 = 2R_1 << R''$, C = 0.1μF, R_{c2} = 0.2k, R' = R″ = 1K and $R_{c1} = R_{c2}$ = 3.3K. Calculate (a) Draw and mention the voltage levels of the waveforms and (b) the frequency of oscillations. Assume Silicon transistors with h_{FE}= 30.



22. What are the general features of sweep signal? Discuss in detail.

(OR)

23. Discuss in detail, the block diagram of a time base system using transistor.

24. With neat diagram, explain the operation of transistor based bidirectional linear gate.

(OR)

25. Explain the operation of astable transistor blocking oscillator (Diode – Controlled) with neat diagrams.