CS/IT - 304

B.E. III Semester

Examination, December 2012

Electronics Devices and Circuit

Time : Three Hours

Maximum Marks : 70/100

Note: Attempt any Five questions. All questions carry equal marks.

Unit - I

1. (a) What is a Zener diode? Give its construction principle and typical V-I characteristics.

   (b) Give difference between BJT and MOSFET. Also explain FET construction, its principle of working and V-I characteristics.

Or

2. a) Write short notes on:

   i) PIN diode

   ii) Load line

   iii) Varactor diode

   b) For the network given in figure 1, calculate voltage gain if $V_i = 500$ mv and $R = 1$ kΩ with other circuit values remaining same.
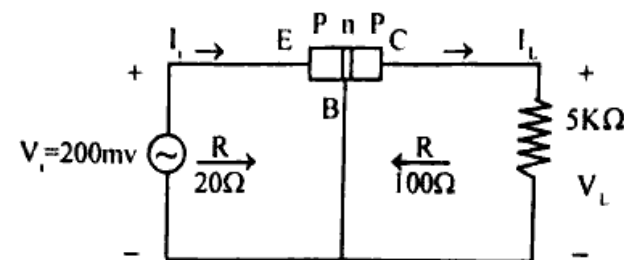
[2]

Figure 1

Unit - II

3. a) Draw Wein Bridge Oscillator. Explain how it works. Determine resonant frequency. Also discuss its stability.

   b) Explain two transistor push pull amplifiers. List their advantages.

Or

4. a) Determine the voltage gain, input and output impedance with feedback for voltage series feedback having $A = -100$, $R_i = 10$ kΩ, $R_o = 20$ kΩ for feedback of (a) $\beta = -0.1$ (b) $\beta = -0.5$.

   b) What is the concept of feedback? What are the different ways in which feedback is connected? Explain the effect of negative feedback on gain and bandwidth.

Unit - III

5. a) Explain monostable multivibrator give its applications.

   b) What is a parallel clipper? Explain draw the output voltage v_0 for the network in figure 2 for the given input waveform.
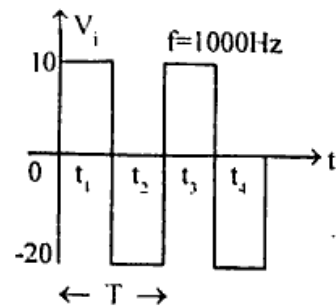
Figure 2

Or

6. a) Explain how a transistor works as a switch and as an amplifier.

b) What is a Darlington pair? Explain why is it required.

Unit - IV

7. a) Explain the following terms in reference to OPAM.
(i) CMRR

(ii) Slew rate

(iii) Input offset voltage

(iv) Full Power BW.

b) Draw the circuit for OPAM used as a summing amplifier. Determine the output voltage. Also explain how OPAM is used as an integrator.

Or

8. a) Draw pin diagram of 555 IC. Explain one of its application in detail.
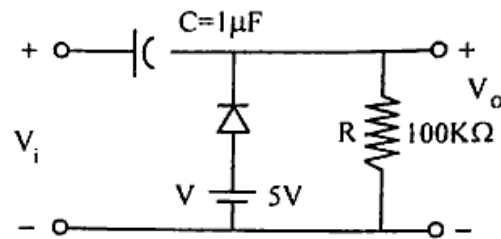
b) Draw and explain voltage to current and current to voltage convertor.

Unit - V

9. a) What is a regulated power supply? Explain series voltage regulator.

b) Explain IC voltage regulators.

Or

10. a) Write short notes on any 2

(i) SMPS

(ii) Shunt regulator

(iii) UPS.

b) What are current limiting circuits? Explain.