

**II B.Tech II Semester Supplementary Examinations, April/May 2005**  
**BASIC ELECTRONICS**  
**( Common to Metallurgy & Material Technology and Production**  
**Engineering)**

**Time: 3 hours**

**Max Marks: 80**

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

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1. (a) Draw the atomic structure for P and N type semiconductors. Explain about minority and majority carriers.  
(b) Draw Bridge rectifier circuit and explain the working of it. What are the advantages of it over the full wave rectifier with centre tapped transformer?
2. (a) Explain the various current components in a p-n-p transistor with forward biased emitter junction and reverse biased collector junction.  
(b) Explain the V- I characteristics of SCR
3. (a) Write short notes on “Frequency stability in Oscillator”.  
(b) Draw the circuit of RC phase shift Oscillator using transistor. Derive an expression for frequency of Oscillation.
4. (a) Classify the timers according to the function and the technique used to achieve the industrial timing.  
(b) List the electronic welding controls used in resistance welding.
5. (a) Explain the application of induction heating for
  - i. Brazing and
  - ii. Annealing of Brass and Bronze items.  
(b) Discuss the selection of suitable electrodes for dielectric heating.
6. (a) Explain the working and construction of a CRT with neat sketch. Give the detailed description of all parts in a CRT.  
(b) What is a time base? State the need for time base in CRO.
7. (a) Explain the construction and working principle of turbine flow meter and list out the merits and limitations.  
(b) What is Hall effect and how the concept is used in measurements of non-electrical quantities?
8. (a) Draw and explain piezo electric generator circuit using Hartley oscillator for generation of ultrasonic waves.  
(b) Explain the application of ultra sonic waves for the study of non-homogeneities in metals and plastics.

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