

III B.Tech I Semester Supplementary Examinations, May 2005
BASIC ELECTRONICS
(Mechanical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

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) What are the advantages and disadvantages of negative feed back in amplifiers.
(b) Explain the effects of Negative feedback in an amplifier on,
 i. Distortion,
 ii. Stability of transfer function.
4. (a) Compare transistor timer with relay load control and SCR delay timer.
(b) Draw the circuit diagram of asynchronous welding control system and explain.
5. (a) Give the merits of induction heating as compared to conventional methods of heating in industry. What are the drawbacks of induction heating.
(b) Explain the principle of dielectric heating. List the applications of dielectric heating.
6. (a) Draw the block diagram of CRO and explain the function of each block.
(b) Derive the expression for the electro-static deflection sensitivity of a cathode ray tube.
7. (a) What is thermocouple? Draw and explain the construction details of thermocouple.
(b) Explain the different methods to measure the thermocouple output.
8. (a) Classify mechanical generators for generating ultra sonic waves and indicate the frequency of the waves generated by the methods.
(b) Explain
 i. Thermal effects of ultra sonics
 ii. Biological effects of ultra sonics
