

Code No: 07A40405

**R07**

**Set No. 2**

II B.Tech II Semester Examinations, April/May 2012

**BASIC ELECTRONICS**

Metallurgy And Material Technology

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

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1. (a) Sketch the input and output characteristics of NPN, BJT in C.E. configuration and explain about different regions of operation.  
(b) What is the condition to be satisfied for a transistor to be in cut-off? If  $V_{BB} = -1.0V$  and  $R_B = 50 k\Omega$ , how high may the temperature increase before the transistor comes out of cut-off? [8+8]
2. (a) Discuss the applications of Induction Heating.  
(b) Discuss about electrodes used in Dielectric Heating. [8+8]
3. (a) With the help of a block schematic explain about the concept of negative feedback and show all the four feedback configurations through corresponding block schematics.  
(b) Explain about the terms:
  - i. Return ratio.
  - ii. Return difference. [10+6]
4. A sample of Germanium is doped to the extent of  $10^{14}$  donor atoms/cm<sup>3</sup> and  $6.7 \times 10^{13}$  acceptor atoms/cm<sup>3</sup>. At room temperature, the resistivity of pure Germanium is  $70 \Omega\text{-cm}$ . An electric field of  $2V/cm$  is applied to the semiconductor. Determine the value of the resulting current density  $J$ . [16]
5. Compare the salient features, advantages and limitations of DIAC, TRIAC devices. [16]
6. (a) Discuss the classification of oscillators based on frequency.  
(b) Establish the conditions required for oscillations and explain the possible configurations to meet these conditions. [6+10]
7. (a) Explain the basic circuit for A.C. resistance welding.  
(b) Explain the sequence timer used in resistance welding. [8+8]
8. Discuss the different types of DAC's and explain functioning of each of them in detail. [16]

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