

I B.Tech Supplementary Examinations, November/December 2005
SEMICONDUCTOR DEVICES & CIRCUITS
(Common to Electrical & Electronic Engineering, Electronics &
Communication Engineering, Computer Science & Engineering, Electronics &
Instrumentation Engineering, Bio-Medical Engineering, Information
Technology, Electronics & Control Engineering, Computer Science & Systems
Engineering, Electronics & Telematics and Electronics & Computer
Engineering)

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain with a block diagram the details of each and every block in CRT.
(b) In a cathode ray tube having magnetic deflection system, the screen is 26 cms away from the centre of the deflection coils. The length of the uniform magnetic field along the axis is 4 cms. If a deflection of 4 cms is required on the screen, what is the amount of magnetic flux density required for the final anode voltage of 1500V. [10+6]
2. (a) Explain various applications of pn- junction diode.
(b) Explain the principle of Tunneling phenomena using energy level diagrams. [6+10]
3. (a) Explain i/p and o/p characteristics of BJT in CE configuration using a relevant circuit.
(b) Compare the performance of BJT transistor in CE, CB, CC configuration with reference to R_i , R_o , A_v and A_i . [8+8]
4. What is the need for biasing a transistor? What are various methods of biasing? Compare their performances. [16]
5. (a) Prove that emitter follower circuit proves very high input resistance and very low o/p resistance.
(b) Derive the expression for β - cutoff frequency of hybrid- π CE amplifier. [8+8]
6. (a) What are the advantages of negative feedback? Prove that the negative feedback improves the Bandwidth and reduces the gain of an amplifier circuit.
(b) Derive an expression for voltage gain of voltage series feedback amplifier. [10+6]
7. (a) Distinguish between an oscillator and an amplifier.
(b) Derive an expression for frequency of oscillation of Hartley oscillator with a circuit diagram. [6+10]
8. (a) Classify large signal amplifiers and compare them.

- (b) Derive an expression for conversion efficiency of class B pushpull amplifier circuit. [8+8]
