

B.Tech I Year (R07) Supplementary Examinations, December 2010
BASIC ELECTRONIC DEVICES & CIRCUITS
(Electrical & Electronics Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

1. (a) In an electrostatic deflection CRT, the length of the deflection plate is 2cm and spacing between deflection plates is 0.5cm. The distance from the centre of the deflecting plate to the screen is 20cm and the deflecting voltage is 25V. Find the deflection sensitivity and velocity of the beam. Assume anode potential is 1000V.
(b) Give the applications of electrostatic and magnetic deflection systems.
2. (a) Derive the expression for contact difference of potential V_0 in the case of an open circuited p-n junction.
(b) What is the ratio of current for a forward bias of 0.08 V to the current for the same magnitude of reverse bias for the Germanium diode.
3. (a) Discuss a full wave rectifier with π -filter.
(b) Compare the performance of L-section and π -filters.
4. (a) Compare JFET and MOSFET with respect to various features.
(b) Draw the biasing circuit suitable for JFET and if the JFET is replaced by a MOSFET for what mode of operation it is valid and explain about the function of each component used in the circuit.
5. (a) Derive the expression for stability factor 'S' in self bias circuit.
(b) With circuit explain compensation circuit for V_{BE} on self bias circuit.
6. (a) Discuss FET small signal low frequency model.
(b) Compare CE, CB, CC amplifiers.
7. (a) List the steps required to carry out the analysis of a feedback amplifier.
(b) Calculate voltage gain, input impedance and output impedance of a CE amplifier with voltage-shunt negative feedback.
8. (a) Explain why in every practical oscillator the loop gain is slightly larger than unity?
(b) RC network of a Wien-bridge oscillator consists of resistors of values $R_1 = R_2 = 220K\Omega$ and capacitors of values $C_1 = C_2 = 250pF$. Calculate the frequency of oscillation.
