Code No: NR222102 **NR**

II B.Tech II Semester Supplementary Examinations, April/May 2005
ELECTRONICS AND INSTRUMENTATION
(Aeronautical Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) If an electron is making an angle θ with the magnetic field, what is the trajectory of the electron? Derive the expression for the period of rotation.
   (b) An electron is emitted from a thermionic cathode with zero initial velocity. The anode is at 400V. Calculate the final velocity.
2. (a) Derive the expression for electromagnetic deflection sensitivity S_M is the case of CRT.
   (b) In a CRT, the spacing between the deflecting electrodes is 0.7cm. The length of the deflecting plates is 2.4cm. The flourescent screen is at a distance of 15cms from the center of the plates. Calculate the deflection sensitivity for electron static deflection mechanism if the final anode voltage is 1500V.
3. (a) Explain about different applications of P-n junction diodes.
   (b) Determine the intrinsic resistively of Germanium at 300^oK. Given E_G = 0.75ev. A=9.64 $\times 10^{12}$; μ_n=3600cm^2/V-sec μ_p=1700cm^2/V-sec. $K = 8.62 \times 10^{-5} ev/^o k$.
4. (a) Explain about the constructional details, characteristics and applications of varactor diodes.
   (b) Explain about the transition capacitance associated with P-n junction diodes.
5. (a) Draw the circuit and explain about the V-I characteristics of n-channel JFET in common source configuration.
   (b) For a P- channel silicon JFET with a (usual notation of channel dimension) = 2×10^{-4}cms and channel resistivity ρ =10 Ω-cms, find the pinch off voltage.
6. (a) With the help of neat sketches explain about deflecting mechanisms employed in analog measuring instruments.
   (b) Describe Geneva Mechanism employed in instruments.
7. Using diagrams explain about safety relief values and pilot values.
8. Write notes on any TWO of the following:
   (a) CRO
   (b) Tunnel Diode
   (c) UJT

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