Microwave & Radar Engg.
(EC-302, Dec-2005)

Note: Section A is compulsory. Attempt any four questions from Section-B and any two from Section-C.

Section-A

1. a) List the range of microwave frequencies.
   b) What is bunching in reflex blystrins?
   c) What is a crossed electric magnetic field?
   d) Explain transferred electron effect.
   e) Define "Detection" of microwaves.
   f) Where is "circulator" used?
   g) List the four different modes of Microwave bipolar transistor.
   h) What is the need for matched termination?
   i) Explain "Blind speed"?
   j) What are Doppler tracking systems?

Section-B

2. Describe the construction, working and applications of a magnetron.
3. A microwave tunnel diode has a negative resistance Rn and the resonant circuit resistance Rt. Derive an equation for the gain of a microwave Tunnel diode amplifier.
4. Describe the analysis of MW components using sparameter.
5. Compare the methods for microwave measurements.
6. Explain the operations of a RADAR with a block diagram.

Section-C

7. An O-type TWT operates at 2 GHz. The slow wave structure has a pitch angle of 5.7°. Determine the propagation constant of the traveling wave in the tube. It is assumed that the tube is lossless.
8. Describe the Doppler radars.
9. Write notes on:
   (a) Scanning techniques
   (b) Advance transit time effect