

III B.Tech.(CCC) Supplementary Examinations, June 2008
MICROWAVE ENGINEERING AND COMMUNICATION
(Electronics & Communication Engineering)

Time: 3 hours**Max Marks: 100**

Answer any FIVE Questions
All Questions carry equal marks

★ ★ ★ ★ ★

1. (a) Show that input admittance of triode circuit is given by $\omega^2 L_K C_{gk} g_m + j\omega C_{gk}$, considering the inter electrode capacitances, lead inductance.
 (b) Describe the mechanism of velocity modulation in a two cavity Klystron and hence obtain an expression for the bunched beam current? [10+10]
2. (a) With the aid of neat sketches, describe the construction and operation of TWT.
 (b) Starting with the assumption that there are three forward traveling waves in TWT, derive an expression for power gain of the tube. [8+12]
3. (a) Explain the growth of oscillations in a traveling wave magnetron.
 (b) Compare the features of rising Sun magnetron with cavity magnetron. [10+10]
4. (a) Describe a non-degenerate negative resistance parametric amplifier.
 (b) An N type Ga As GUNN diode has the following specification
 Threshold field: 3KV/m
 Applied field 3.5KV/m
 Device length 10 micrometers
 Doping Constant 10^{14} electron/ Cm^3
 Operating freq. 10 GHz
 Calculate the current density and (-Ve) electron mobility in the device, explaining the relations used. [8+12]
5. Write short notes on the following:
 - (a) Directional coupler.
 - (b) Wave guide windows.
 - (c) Flap attenuator. [6+6+8]
6. (a) what is S-matrix? Give its applications.
 (b) Explain different types of cavity resonators and mention their applications. [10+10]
7. (a) Explain VSWR measurement procedure in microwave laboratory with a suitable microwave bench setup.
 (b) Calculate VSWR of a rectangular guide of 2.3cm x 1.0 cm operating at 8 GHz. The distance between twice minimum power points is 0.09 cm. [10+10]

Code No: EC412

OR

8. (a) Determine the height of a microwave radiator to permit a reliable radio link communication?
- (b) Explain the terms scatter angle and scatter volume of a topo link. [12+8]
