C 44421 (Pages : 2) Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2013

EC 09 702—MICROWAVE ENGINEERING

(2009 Scheme – Supplementary)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

I. (a) What is the frequency range of Microwaves ?

(b) Distinguish between Reciprocal and Non-reciprocal networks.

(c) What are the limitations of conventional tubes in microwave generation ?

(d) What are varators ?

(e) Distinguish between Monolithic and Hybrid MICs.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

II. (a) Explain the features and applications of Microwaves.

(b) Draw the structure of a 3 port network and explain its operation and application.

(c) Explain the operation of a backward wave oscillator.

(d) Write a note on Millimetre wave tubes.

(e) Explain the high frequency limitations of transistors.

(f) Draw the structure of a slotline and explain its electric and magnetic field distributions.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*

III. (a) Discuss in detail about scattering matrix and its significance with a suitable example.

Or

(b) Explain the working and applications of :

(i) Circulators.

(ii) Isolators.

Turn over

IV. (a) Discuss in detail about the structure and working principle of reflex klystron oscillator.

Or

(b) Explain the working of :

(i) Magnetron.

(ii) Travelling wave tube.

V. (a) (i) Explain Manley Rowe relations.

(ii) Explain the principle of working of a Gunn Diode Oscillator.

Or

(b) Explain the operation of :

(i) IMPATT and TRAPATT diodes.

(ii) PIN diode and Schottky barrier diode.

VI. (a) Discuss in detail about

(i) Microstrip ; and (ii) Stripline.

Or

(b) Explain :

(i) VSWR measurement.

(ii) Microwave Power measurement.

(4 × 10 = 40 marks)