D 11952 (Pages : 2) Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE EXAMINATION, NOVEMBER 2016

EC/PTEC 09 702—MICROWAVE ENGINEERING

Time : Three Hours Maximum : 70 Marks

Part A

I. Answer *all* questions :

1 Discuss about the diagonal elements for perfect matched network.

2 A 20 mW signal is fed into one of the collinear port 1 of a lossless H plane Tee Junction.Calculate power delivered through port 1 when other ports are terminated in matched line.

3 Compare TWTA and Klystron Amplifier.

4 List high frequency limitation of bipolar devices.

5 List the properties of dielectric materials.

(5 × 2 = 10 marks)

Part B

II. Answer any *four* questions :

6 Find the S Matrix of a length L of a lossless transmission line terminated by matched impedance.

7 Explain Velocity Modulation.

8 The Drift velocity of electrons is 2×10^{-1} cm/s through the active region of length 10×10^{-4}cm. Calculate the natural frequency and critical voltage of the Gunn diode.

9 Calculate the planar resistance for the resistive film length of 10 mm, width of 5 mm , thickness of. 1 micrometer and sheet resistivity of film is 2.4×10^{-8}mho-m.

10 Discuss the working principle of backward diode.

11 With neat schematic block diagram explain Network Analyzer.

(4 × 5 = 20 marks)

Part C

III. Answer *all* questions :

12. (a) Explain in detail about Magic Tee and also list its application.

Or

(b) State the properties of Circulator and also explain its working principle.

Turn over

13 (a) (i) With neat functional diagram explain the mechanism of oscillations in klystron.

(7 marks)

(ii) Derive the expression for output power in Reflex Klystron.

(3 marks)

Or

(b) Explain in detail about the construction and operation of Magnetron.

14 (a) Discuss about PIN Diode and its characteristics.

Or

(b) (i) Explain the modes of operation in Gunn Diode.

(7 marks)

(ii) List the advantage of upconverter over negative resistance device.

(3 marks)

15 (a) Explain in detail about hybrid technology.

Or

(b) Explain the experimental setup and possible source of error in VSWR measurement.

[4 × 10 = 40 marks]