C 5446 (Pages 2) Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2010

EC 04 702—MICROWAVE DEVICES AND COMMUNICATION

(2004 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

I. (a) What are the different types of directional couplers ?

(b) What are the characteristics of standard rectangular waveguides ?

(c) What is the principle of working of cross field tubes ?

(d) What are the different types of re-entrant cavities available ?

(e) Explain the operating principle of read diode.

(f) Differentiate between microwave transistors and TED's.

(g) Explain the concept of fading.

(h) What is meant by LOS propagation and over the Horizon propagation ?

(8 × 5 = 40 marks)

II. (a) Explain the working of different circular cavity resonators and derive the expression for resonant frequency of each type.

(15 marks)

Or

(b) Derive the TE_{mn} and field equations for a rectangular waveguide. (15 marks)

III. (a) With neat diagram explain the velocity modulation process in a two cavity Klystron.

(15 marks)

Or

(b) With neat schematic diagram explain the operation of cylindrical magnetron and derive the Hull cut-off voltage equation.

(15 marks)

IV. (a) Explain the working of :

(i) LSA diode. (5 marks)

(ii) IMPATT diode. (5 marks)

(iii) Cd Te diode. (5 marks)

Or

(b) Explain the different modes of operation of Gunn diode with neat diagrams. (15 marks)

Turn over

V. (a) Explain with neat block schematic the terminal transmitters of a terrestrial microwave communication system.

(15 marks)

Or

(b) Explain the link analysis of satellite communication and derive the expression for power-budget equation.

(15 marks)

[4 × 15 = 60 marks]