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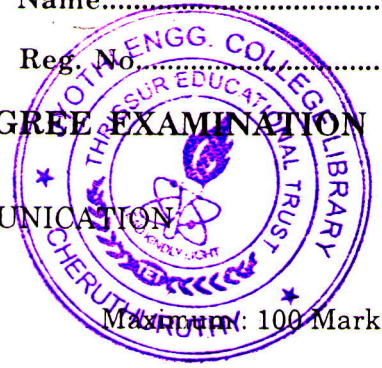
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SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
DECEMBER 2007

EC 2K 702—MICROWAVE DEVICES AND COMMUNICATION

(New Scheme)

Time : Three Hours   Maximum : 100 Marks

I. (a) What is a Wavemeter ? Explain how it can be excited ?

(b) Differentiate E-plane Tee from H-plane Tee.

(c) Define Beam Coupling coefficient of Klystron amplifier. Explain its significance.

(d) Explain the *three* valley model theory of LSA diode.

(e) What are the electron spokes in the interaction region of circular Magnetron ? Explain.

(f) Explain the advantages of BARITT diode.

(g) What is fading ? Explain. Write the types of fading.

(h) Name any *two* satellite antennas. Give their sketches. Write their characteristics.

(8 × 5 = 40 marks)

II. (a) (i) Derive TM mode field equations of circular waveguides.

(ii) Obtain an expression for 'Q' of the Cavity Resonator.

Or

(b) (i) Explain the characteristics of E-plane Tee and H-plane Tee with neat sketches.

(ii) Obtain the S matrix of Ideal, lossless matched 4 port circulator.

III. (a) (i) Explain in detail the buncking process of Klystron amplifier with a neat sketch.

(ii) Explain the need for slow wave structures, SERVERS and alternators of HTWT.

Or

(b) (i) Derive an expression for power gain of HTWT in terms of gain parameter.

(ii) Explain the Microwave characteristics and principle of operation of Magnetron Oscillator.

IV. (a) (i) Draw a neat sketch of mode chart of GUNN diode. Explain in brief about each domain of GUNN diode.

(ii) Derive the condition for negative resistance of GUNN diode.

Or

(b) (i) Give an account on 'LSA Diode'.

(ii) Explain in detail the operating principle of IMPATT diode with a neat sketch.

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V. (a) (i) Draw a neat block schematic of terminal transmitter and explain its principle of operation.

(ii) Explain the types of Microwave Repeaters with neat sketches.

Or

(b) Write technical notes on :

1. Principle of a Satellite antenna.

2. Multiple Access Schemes.

(4 × 15 = 60 marks)