D 51331



SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2008

EC 04 702 - MICROWAVE DEVICES AND COMMUNICATION

(2004 Admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all the questions.

- I. (a) Differentiate Isolator from circulator. Explain the difference.
 - (b) Draw a typical microwave link and explain it.
 - (c) What are electron beam devices? Explain. Give examples.
 - (d) What are the types of Magnetrons? Explain them.
 - (e) Explain the principle of biasing and decoupling circuits of BJT and FET.
 - (f) Explain the potential applications of baritt diode.
 - (g) What is fading? Explain the types of fading.
 - (h) What is TTLC? Explain the principle.

 $(8 \times 5 = 40 \text{ marks})$

II. (a) Derive the field and characteristic equations of a rectangular wave guide in TE mode. Also explain the characteristics of rectangular wave guide.

Or

- (b) Differentiate rectangular cavity resonator from circular cavity resonator. Derive field equations and resonant frequency for rectangular cavity resonator.
- III. (a) Derive an expression for exit velocity of 2 cavity Klystron amplifier. Also derive an expression for a.c. power output. Explain the working principle with a neat sketch.

Or

- (b) Derive S matrix for Ideal, lossless 3 port circulator and magic Tee. Explain the steps.
- IV. (a) (i) Explain the construction of Microwave BJT and microwave FET with neat sketches.
 (ii) Explain the working principle of tunnel diode.

(8 + 7 = 15 marks)

Or

(b) Explain the physical structure, principle of operation and applications of READ ATT diode.

V. (a) Draw neat block diagrams of terminal transmitter and receiver. Explain their principle in detail.

Or

(b) Give an account on : 1. Satellite orbits ; 2. Diversity Receivers.

(7 + 8 = 15 marks) $[4 \times 15 = 60 \text{ marks}]$