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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**B.Tech III Year II Semester Regular & Supplementary Examinations October-2020**
MICROWAVE ENGINEERING

(Electronics & Communication Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)**UNIT-I**

- 1 a Discuss how the microwave spectrum is categorized into different bands. **6M**
b Derive the expressions for the field components due to TM waves in rectangular wave guide. **6M**

OR

- 2 a Define Cavity Resonator. Draw Diagrams of Rectangular & circular cavity Resonators. **6M**
b Derive the equation for resonant frequency in circular cavity resonator. **6M**

UNIT-II

- 3 a Explain the coupling mechanism of waveguide. **4M**
b Explain the following (i) Waveguide windows (ii) Screws. **8M**

OR

- 4 a Derive the S-matrix for Magic Tee junction. **6M**
b A 20 dB coupler has a directivity of 30 db. Calculate the value of isolation. **6M**

UNIT-III

- 5 a Give the performance specification of Reflex klystron. **4M**
b Define and explain current modulation with neat diagrams and required expressions. **8M**

OR

- 6 a Derive the expressions for propagation constant and output power gain of TWT. **5M**
b In an O-type traveling wave tube, the acceleration voltage is 4000 V and the magnitude of the axial electric field is 4 V/m. The phase velocity on the slow wave structure is 1.10 times the average electron velocity. The operating frequency is 2 GHz. Determine the magnitude of velocity function. **7M**

UNIT-IV

- 7 Explain the growth of oscillations in a travelling wave magnetron. **12M**

OR

- 8 a Explain Two Valley Model Theory. **6M**
b Write short notes on "TRAPATT diode". **6M**

UNIT-V

- 9 a Distinguish between low frequency measurement and microwave measurements. **5M**
b With the help of a neat sketch, briefly explain the functions of different blocks of a microwave bench. **7M**

OR

- 10 a Discuss in detail about measurement of attenuation. **6M**
b Write short notes on "Reflection co-efficient and Insertion loss measurement at microwave frequencies". **6M**

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