

Total No. of Questions : 8]

SEAT No. :

P598

[Total No. of Pages : 2

[6004]- 547

B.E. (E & T.C.)

RADIATION AND MICROWAVE THEORY

(2019 Pattern) (Semester - VII) (404181)

Time : 2 ½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right carries full marks.
- 4) Assume suitable data, if necessary.

Q1) a) Explain E plane Tee and Magic Tee with the help of construction diagram. **[6]**

b) With neat schematic diagram explain the operation of Isolator. Also State S-matrix for it. **[6]**

c) Draw and explain two-hole directional coupler with neat diagram. **[6]**

OR

Q2) a) State and explain properties of S matrix. **[6]**

b) Explain the working principle of Gyrator. **[6]**

c) An Isolator has an insertion loss of 0.5db and an isolation of 30dB. Determine the scattering matrix of the isolator if the isolated ports are perfectly Matched to the junction. **[6]**

Q3) a) Explain the construction of Single Cavity klystron Tube. **[6]**

b) Explain the Cavity Magnetron with Hull cut off condition in detail. **[6]**

c) What are the limitation of conventional tubes at microwave frequencies? **[6]**

OR

Q4) a) Explain the phase focusing effect in cavity magnetron. **[6]**

b) Explain construction, operation of Two Cavity Klystron. **[6]**

c) Distinguish between TWTA and Klystron Tube. **[6]**

P.T.O.

Q5) a) Explain construction and working of PIN diode. State applications of pin diode. [6]

b) Write a short note on IMPATT diode. [6]

c) Write the comparison between PN junction diode and Schottky diode. [5]

OR

Q6) a) Explain the working principle of Varactor diode. [6]

b) Explain construction and working of Schottky barrier diode. [6]

c) Explain Gunn effect using two valley theory. [5]

Q7) a) Explain the phase shift measurement using double minimum method at microwave frequency. [6]

b) State different methods for measurement of power. Explain Bolometric technique to measure power. [6]

c) Write short note on effect of Microwave radiation on human. [5]

OR

Q8) a) Write a note on measurement of quality factor. [6]

b) Explain microwave measurement techniques to measure S-parameters. [6]

c) List industrial and medical applications of microwave communication. [5]

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