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 ½Hours] *[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 scatting 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]**