

Total No. of Questions : 8]

SEAT No. :

PC2410

[6354]-528

[Total No. of Pages :2

B.E. (E & TC)

RADIATION AND MICROWAVE THEORY

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

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer the Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*
- 2) *Neat diagram must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Use of Calculator is allowed.*
- 5) *Assume suitable data if necessary.*

- Q1)** a) A 2 Watt power source is connected to the input of a directional coupler with $C = 20\text{dB}$, $D = 25\text{ dB}$, and an insertion loss of 0.7 dB . Find the output power at the output. Coupled and isolated ports Assume all the ports to be matched. [6]
- b) Draw and explain circulator. [6]
- c) Explain the E - Plane Tee with the help of constructional diagram. [6]

OR

- Q2)** a) Explain any one application of magic tee with relevant diagram. [6]
- b) Explain construction & working of isolator. [6]
- c) Explain construction and working of H plane tee. [6]

- Q3)** a) Explain the operation of two cavity klystron amplifier with neat constructional diagram. [6]
- b) List the limitations of conventional Tubes? Explain the Interelectrode Capacitance effect in tube. [6]
- c) Explain Reflex klystron with its constructional diagram. [6]

OR

- Q4)** a) Explain with construction diagram & Operation of Helix type travelling wave tube (TWT). [6]
- b) Compare the 'O' type klystron tube & 'M' magnetron tube based on an three points [6]
- c) Explain the working of Cavity magnetron with constructional diagram.[6]

P.T.O.

- Q5)** a) Explain construction and working of Tunnel Diode with its VI characteristics. [6]
b) Compare the IMPATT Diode with TRAPATT Diode [6]
c) Explain the construction & working of Varactor diode [5]

OR

- Q6)** a) With the help of constructional diagram explain the working of Schottky Barrier Diode. [6]
b) Explain Gunn diode. With its construction and VI characteristics. [6]
c) Draw constructional diagram and explain the PIN diode state its application. [5]

- Q7)** a) Write short note on applications of Microwave system. [5]
b) With the help of block diagram. explain the Impedance measurement using a slotted line. [6]
c) Explain the measurement set up to measure VSWR using Tunable Probe Detector. [6]

OR

- Q8)** a) Explain how the unknown frequency and wavelength can be measured using the slotted line technique. [7]
b) Explain radiation hazards and safety precaution to avoid them. [6]
c) Two identical directional couplers are used in a waveguide to sample the incident and reflected powers. The output of the two couplers are found to be 2.5 mW and 0.25 mW. Determine the VSWR in the waveguide. [4]

