



- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Assume suitable data whenever necessary.

1. A) Draw & explain the working of Multicavity Klystron with the help of neat diagram. **8**
- B) A Reflex Klystron operates under the following condition. **6**
- $V_o = 500$ V
 $R_{sh} = 20$ K
 $f_r = 8$ GHz
 $L = 1$ mm is the spacing between repeller & cavity. The tube is oscillating at f_r at the peak on $n = 2$ mode.
- a) Find repeller voltage.
 - b) Find dc necessary to give Microwave gap voltage of 200 V.
 - c) Calculate electronic efficiency.

OR

2. A) Derive the expression for magnetic field density B of 8 – cavity Magnetron. **8**
- B) Explain, how bunching is achieved in TWT. **6**
3. A) What are S-parameter? Write various properties of S-matrices & hence derive zero property. **7**
- B) Explain with necessary diagram, Low magic Tee can be used for the measurement of Unknown impedance? **6**

OR

4. A) Explain the following, **6**
- i) Attenuator.
 - ii) Matched Terminations.
- B) Explain with neat diagram working of Gyrator. **7**
5. A) What are parametric Amplifiers? What is PUC & PDC? **6**

B) Write short Note on –

- i) IMPATT Diode
- ii) PIN Diode

7

OR

6. A) What is GUNN effect? Draw energy band diagram of GaAs diode & Explain its principle of operation. 8

B) An IMPATT diode has drift length of 2 μm . Determine operating frequency of IMPATT if drift velocity for Si is 10^7 cm/sec. 5

7. A) Explain with neat diagram, measurement of Dielectric constant. 6

B) Explain how Microwave power can be measured by using bolometer method. 7

OR

8. A) Explain the measurement of Q of a cavity Resonator. 6

B) Draw & explain the test bench setup for the measurement of frequency. 7

9. A) What is the basic principle of operation of RADAR? Explain with neat block diagram. 6

B) Derive Radar range equation & hence Discuss the factors affecting the radar range. 7

OR

10. A) Explain pulsed Radar with neat diagram. 6

B) Explain the effect of Noise on radar range. 7

11. A) What is scanning related to radar? Discuss various types of scanning in radar. 7

B) Draw & explain moving target indication Radar. 7

OR

12. Write short notes on **any three**. 14

- i) Radar display methods.
- ii) Radar beacons.
- iii) cw phased array Radar.
- iv) Doppler Radar.
