

(b) What is Varactor diode? Explain it's construction and working. 6

Q-3 Attempt all questions (14)

(a) Define: waveguide. Write basic features. Explain different modes of propagation. 5

(b) Explain rectangular waveguide in detail. Write formula for cut off wavelength. 5

(c) Explain circular waveguide. Write expression for cut off wavelength and applications. 4

OR

Q-3 (a) Derive transmission line equation. 8

(b) What are standing waves? Derive expression for voltage standing wave ratio **S**. 6

SECTION – II

Q-4 Attempt the Following questions (07)

- a. Write full names of UHF and VHF.
- b. Explain critical frequency.
- c. Draw the symbol of PIN diode.
- d. Define: skip distance
- e. Write frequency range of UHF and VHF bands.
- f. Write names of different layers of ionosphere.
- g. What is ground wave propagation?

Q-5 Attempt all questions (14)

(a) Explain sky waves and the structure of ionosphere with figure. 6

(b) Explain sky wave propagation mechanism. Derive expression for maximum usable frequency. 8



OR

- Q-5** (a) Explain tropospheric propagation. **4**
- (b) Explain below parameters of antenna, **6**
- I. Isotropic radiator
 - II. Directional radiator.
 - III. Power density.
- (c) What is antenna? Explain it's radiation mechanism. **4**

- Q-6** **Attempt all questions** **(14)**
- (a) Derive relation between directivity and effective area of antennas. **6**
- (b) What is loop antenna? Derive expressions for it's radiated power, radiance resistance and directivity. **8**

OR

- Q-6** **Attempt all Questions**
- (a) What is half wave dipole antenna? Write expression for directivity, draw figure. **4**
- (b) Explain: Horn antenna **4**
- (c) Explain: 1.attenuator **6**
2.flangers

