

S. B. Roll. No.....

MICROWAVE RADAR ENGINEERING
6th Exam/ECE/3612/Nov'24
(For 2018 Batch Onwards)

Duration: 3Hrs.

M.Marks:75

SECTION-A

Q1. Do as directed.

15x1=15

- a. Write full form of RADAR.
- b. Write full form of PPI.
- c. Write full form of TWT.
- d. Can Transverse Electro-Magnetic (TEM) wave travel inside a waveguide?
- e. A continuous wave radar is used to measure _____ of target.
- f. Define guide wavelength.
- g. Define microwaves.
- h. Write full form of IMPATT.
- i. Define maximum unambiguous radar range.
- j. _____ is a microwave device that transmits power in one direction only.
- k. Write full form of FMCW.
- l. As frequency increases, directivity of antenna increases and beam width decreases. (True/False)
- m. Input and output cavities in a Klystron amplifier are known as _____ & _____ cavity.
- n. Which modulation is used to explain the working of a two cavity Klystron amplifier?
- o. How many cavity is there in Reflex Klystron?

SECTION-B

Q2. Attempt any six questions.

6x5=30

- i. Explain merits and demerits of circular waveguide. Mention some applications also.
- ii. Describe the working principle of IMPATT diode with suitable diagram.
- iii. Explain merits and applications of Microwaves.
- iv. What is a dominant mode? Define the terms phase velocity and group velocity.
- v. Explain the working principle of FMCW radar.
- vi. Write a short note on a) E & H plane bend b) Microwave joints
- vii. What is a Microwave Attenuator? Explain fixed and variable attenuator.

SECTION-C

Q3. Attempt any three questions.

3x10=30

- a. Derive the radar range equation. What are various factors affecting it? Explain.
- b. Describe the working principle of Reflex Klystron with the help of Applegate diagram and explain its characteristics also.
- c. Explain the block diagram and working of Microwave Communication link in detail.
- d. What is a Magnetron? Explain how sustained oscillations can be generated using phase focusing effect of Magnetron.
- e. Describe working principle of a directional coupler with suitable diagram. Explain its parameters also.