

SCHOOL OF SCIENCES



UTTARAKHAND OPEN UNIVERSITY, HALDWANI (NAINITAL)
उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी (नैनीताल)

M.Sc. Physics (MSCPHY13)

Second Year Assignment

Last Date of Submission: 15 May 2015

Course Title: Microwave devices and
Communication systems

Course Code: PHY-554

Year : 2014-15

Maximum Marks :40

Section A

Section 'A' contains 08 short answer type questions of 5 marks each. Students are required to answer 4 questions only. Answers of short answer type questions should be in 250 words approximately.

- 1- What are the characteristics of circular waveguide? Derive the field equations and discuss the applications.
- 2- What is S matrix? Derive the S matrix for a shunt element.
- 3- Describe the construction and working of hybrid ring. Write its S matrix.
- 4- Explain the operation and construction of IMPATT and its disadvantage.
- 5- Explain parametric up/down converter.
- 6- Derive the equation for velocity modulation.
- 7- Describe average diode detector or envelop diode detector for AM wave.
- 8- Explain the operation of parabolic reflector.

Section B

Section 'B' contain 04 long answers type question of 10 marks each and students are required to answers 02 questions only.

- 1- Explain the construction and working of rotary phase shifter. What is Faraday rotation?

- 2- What is modulation? Explain the usefulness of modulation. Deduce the expression indicating frequency spectrum of AM wave.
- 3- Describe VHF antenna. What are the types of loop antennas? Discuss the field patterns of vertical and horizontal loop antenna.
- 4- Explain RADAR in detail and technique of tracking RADAR.