This question paper contains **2** printed pages]

NY—123—2023

FACULTY OF SCIENCE

M.Sc. (Second Year) (Fourth Semester) EXAMINATION
NOVEMBER/DECEMBER, 2023
(New/CBCS Pattern)

PHYSICS

Paper-PHY-402

(Microwaves and Measurements)

(Friday, 8-12-2023)   **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours*   *Maximum Marks*—75

N.B. :—   (i)   Attempt all questions.

       (ii)   *All* questions carry equal marks.

       (iii)   Figures to the right indicate full marks.

1.   Define the terms reflection coefficient and transmission coefficient and derive the equation for them.   15

Or

(a)   Define and explain the terms line impedance and admittance for a transmission line.   8

(b)   What is Smith chart ? State its applications.   7

2.   With neat diagram discuss the structure of rectangular wave guide and explain TE and TM mode of propagation in it.   15

Or

(a)   Explain construction and working of magic tee.   8

(b)   What is circulator ? Explain its principle of working.   7

P.T.O.

3. Explain in detail construction, working principle of operation of Travelling Wave Tube (TWT) 15

Or

(*a*) Explain construction and working of Gunn diode. 8

(*b*) Derive the hull cut off condition for linear magnetron. 7

4. State different types of antennas and explain E-plane and H-plane horn antenna. 15

Or

(*a*) Explain power measurement in microwave using Bolometer method. 8

(*b*) Discuss attenuation measurement in microwaves. 7

5. Write short notes on (any *three*) : 15

(*a*) Losses in transmission line

(*b*) Isolators

(*c*) Reflex klystron

(*d*) Impedance measurement.