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

WT—123—2024

FACULTY OF SCIENCE

M.Sc. (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(CBCS/New Pattern)

PHYSICS

Paper PHY-402

(Microwaves and Measurements)

(Friday, 13-12-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

Note :— (*i*) Attempt *all* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Figures to the right indicate full marks.

1. Discuss distribution parameters in case of two conductor transmission line. Establish the transmission line equation. 15

Or

(*a*) Discuss losses in transmission lines. 8

(*b*) What do you mean by line impedance and admittance for transmission line ? Explain in short. 7

P.T.O.

2 Explain construction and working of E-plane tee and H-plane tee. 15

Or

(*a*) With neat diagram give structure of rectangular wave guide and explain TE mode of propagation. 8

(*b*) What are isolators ? Explain in brief its principle of working. 7

3. Describe with neat diagram two cavity klystron and explain velocity modulation and bunching process in it. 15

Or

(*a*) Derive the hull cutoff condition for linear magnetron. 8

(*b*) What do you mean by transfer electron devices ? Explain their typical characteristics. 7

4. With neat diagram explain attenuation measurement and impedance measurement in microwaves. 15

Or

(*a*) What is Radar range ? Derive equation for it. 8

(*b*) With neat diagram discuss H-plane horn antenna. 7

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

(*a*) VSWR

(*b*) Magic tee

(*c*) PIN diode

(*d*) Time domain reflectometry.