

LNCT- UNIVERSITY

MidSemester-1

April-2024

B. Tech 1st Yr./ Semester-II [CSE]

Subject: Advance Physics & Sustainable Energy [APSE]

Code:CS-201

Time: 01hour 30 minutes

Marks:20

Note: Attempt all questions.

1. State and prove Gauss Divergence theorem.

[CO-1,5 marks]

Or

Explain the working of a photodiode along with V-I characteristic curve.

[CO-1,5 marks]

2. Define the term 'gradient' of a scalar quantity. The electric potential in a region of space is given by $V=5x-7x^2y+8y^2+16yz-5z$ volts. Deduce an expression for the electric field intensity E .

[CO-1, 5 marks]

Or

How is a PN junction formed? Explain the construction and working of a PN diode in forward and reverse bias.

[CO-1, 5 marks]

3. Define the term Interference of light. Describe the formation of Newton Ring's with a well labelled diagram.

[CO-3, 5 marks]

Or

In a Newton's ring experiment, the diameter of the n^{th} and the $(n+14)^{\text{th}}$ rings are 4.2 mm and 7.0 mm respectively. Radius of curvature of the plano convex lens is 100 cm. Calculate the wavelength of light

[CO-3, 5 marks]

4. Explain the principle involved in optical fibre communication. Deduce the expression for Numerical Aperture and Acceptance Angle. **[CO-3, 5 marks]**

Or

Calculate the numerical aperture and hence the acceptance angle for an optical fibre whose core and cladding are having refractive index of 1.45 and 1.40 respectively.

[CO-3, 5 marks]

.....END.....