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 $(n+14)^{th}$ 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]**

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