

LNCT- UNIVERSITY
Mid-Semester-1, November-2024
B. Tech 1st Yr./ Semester-I [AIML]
Subject: Advanced Physics & Sustainable Environment [APSE]
Code:CS-201

Class roll no.....

Enrollment no.....

Time: 01 hour 30 minutes

Marks:20

Note: Attempt all questions.

1. Explain Divergence and Curl of a vector giving their mathematical representations respectively. **[CO-1, 5 marks]**

Or

Explain the working of a Zener diode. Also plot the V-I characteristics in forward and reverse bias. **[CO-1, 5 marks]**

2. State and prove Stoke's theorem. **[CO-1, 5 marks]**

Or

Explain Hall Effect? Derive the expression for V_H and R_H . **[CO-1, 5 marks]**

3. State and prove Heisenberg's uncertainty principle. **[CO-2, 5 marks]**

Or

Prove that if the uncertainty in position of a particle is equal to its de-Broglie wavelength, uncertainty in the velocity is equal to its velocity. **[CO-2, 5 marks]**

4. Define phase velocity and group velocity. Derive the correlation between them for a dispersive medium . **[CO-2, 5 marks]**

Or

Derive time dependent and time independent Schrodinger wave equations. **[CO-2, 5 marks]**

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