

**R18**

Code No: 151AE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech I Year I Semester Examinations, June - 2022

APPLIED PHYSICS

(Common to ECE, EIE, ECM, CSBS, CSE(AI&ML), CSE(IOT), AI&DS, AI&ML)

Time: 3 Hours

Max. Marks: 75

**Answer any five questions  
All questions carry equal marks**

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- 1.a) Discuss the energy spectrum of black body.
- b) Explain Heisenberg's uncertainty principle in detail. [8+7]
- 2.a) Obtain time independent Schrodinger's wave equation.
- b) Obtain eigen values and wave function for a particle in one dimensional box. [8+7]
- 3.a) Define intrinsic and extrinsic semiconductors. Discuss about them with examples.
- b) Write the principle and working of BJT. [8+7]
- 4.a) Write a note on LED and semiconductor photo detectors.
- b) Write the principle and working of PIN diode. [8+7]
- 5.a) Write the principle and working of He-Ne laser with neat energy level diagram.
- b) Write any five applications of lasers. [10+5]
- 6.a) Define acceptance angle and numerical aperture. Derive an expression for acceptance angle and numerical aperture.
- b) Discuss the losses associated with the optical fibers. [8+7]
- 7.a) Write Maxwell's equations and their importance.
- b) Write about ferroelectrics and piezoelectrics. [8+7]
- 8.a) Write the concept of domains in ferromagnetic materials.
- b) Write the applications of magnetic materials. [8+7]

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