R18

Code No: 151AB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year I Semester Examinations, June - 2022
ENGINEERING PHYSICS
(Common to CE, ME, MCT, MMT, AE, MIE, PTM, TTE)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) Explain the method of solving Newton's equations in polar coordinates.
b) Write a note on Cartesian and cylindrical coordinates. [5+10]

2.a) Compare working of mechanical harmonic oscillators with electrical oscillators.
b) A body of mass 0.01 kg executes SHM. When the displacement from the centre of motion is 0.02 m, the force acting on the body is 1.8×10^{-4} N. If the maximum velocity is 2 m/s, find the amplitude and acceleration. [7+8]

3.a) Setup and solve the differential equation of a damped harmonic oscillator.
b) Explain the heavy, critical and light damping conditions. [10+5]

4.a) Explain reflection and transmission of waves at a boundary.
b) Derive and solve the expression for longitudinal wave equation and also write properties of longitudinal waves. [5+10]

5.a) Give an account of standing waves and their Eigen frequencies.
b) Write properties of transverse waves. [10+5]

6.a) Explain Fraunhofer diffraction at single slit.
b) Discuss about interference of light by wave front splitting. [10+5]

7.a) Explain principle, theory and working of Michelson interferometer.
b) Write short note on existence of ether . [10+5]

8.a) Describe construction, principle and working of CO_2 laser.
b) Write applications of CO_2 lasers in industry. [10+5]

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