R18

Code No:151AB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD

B. Tech I Year I Semester Examinations, December - 2018

ENGINEERING PHYSICS

(Common to CE, ME, MCT, MMT, AE, MIE, PTM)

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

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Write short note on friction.	[2]
b)	Discuss about quality factor.	[2]
c)	Write any four properties of standing waves.	[2]
d)	Why the rings are circular in Newton's rings experiment.	[2]
e)	Explain phenomena of total internal reflection.	[2]
f)	Explain transformation of scalars.	[3]
g)	Write the properties of damped harmonic oscillator.	[3]
h)	Explain reflection and transmission process.	[3]
i)	Write short note on diffraction grating.	[3]
j)	Explain losses associated with optical fibers.	[3]

PART - B

(50 Marks)

2.a) Explain Newton's laws and their completeness in describing particle motion.
b) Give an account of forces in nature. [5+5]

OR

3.a) Explain the method of solving Newton's equations in polar coordinates.
b) Write short note on cylindrical coordinates. [5+5]

4.a) Compare working of mechanical harmonic oscillators.
b) Discuss about energy decay in damped harmonic oscillator. [5+5]

OR

5. Explain working of damped harmonic oscillator in various conditions like heavy, critical and light damping. [10]

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

OR

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

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

OR

9.a) Explain principle, theory and working of Michelson interferometer.
b) Write short note on resolving power of a grating. [5+5]

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

OR

11.a) Derive an expression for acceptance angle and numerical aperture.
b) Give an account of graded and step index fibers. [5+5]

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