Total No. of Questions : 4]

PE1464

SEAT No. :

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[6501]-511

First Year B.Sc. (Regular)

PHYSICS

PHY-101-T : Fundamentals of Physics - I

(NEP 2024 Credit Pattern) (Semester - I)

Time : 2 Hours] *[Max. Marks : 30*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of Logarithmic table and calculator is allowed.***
4) ***Neat diagrams must be drawn wherever necessary.***

Q1) Answer the following (Any 5) **[5]**

a) State the principle of conservation of angular momentum.

b) Define Centre of Mass.

c) State parallel axis theorem.

d) Define buoyant force.

e) State Stokes' law.

f) State Rydberg-Ritz combination principle.

g) Write limitations of Bohr's model of atom (any two)

Q2) a) Answer any one of the following **[5]**

i) Derive an expression for moment of inertia of a solid cylinder about its axis.

ii) Discuss experimental arrangement of photoelectric effect in detail.

b) Answer any one of the following : **[3]**

i) Derive the expression for variation of pressure with depth in a fluid.

ii) A particle of mass 10 gm is rotating about an axis in a circular path of radius 20 cm. Calculate its moment of inertia

Q3) a) Answer any one of the following [5]

i) Explain compton effect and derive the expression for compton wavelength shift.

ii) State and explain Frank - Hertz experiment in detail.

b) Answer any one of the following : [4]

i) Derive Bernoulli's theorem.

ii) Calculate the wave number of second line of the paschen series (Given : $R = 1.094 \times 10^7\ m^{-1}$)

Q4) Write short notes on any four of the following. [8]

a) Radius of gyration.

b) Moment of inertia of Flywheel.

c) Venturimeter (Working principle only)

d) Surface tension and angle of contact.

e) Rutherford Scattering Formula.

f) Sommer feld's modification of Bohr's Theory.

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