S. B. Roll. No.....

APPLIED PHYSICS-I
1st Exam/Common/5752/Nov'24
(For 2018 Batch Onwards)

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. a) Fill in the blanks. **15x1=15**

i. Dimensional formula of energy is_____.
ii. Number of fundamental and base units in S.I system is_____.
iii. Air is heated by_____.
iv. Small insects can walk on the surface of still water due to_____.
v. Moment of force is called_____.

b) State True or False.

vi. The magnitude of mass and momentum is same.
vii. Tesla is a unit of pressure.
viii. Rockets works on the principle of conservation of linear momentum.
ix. Angular velocity is defined as rate of change of displacement of a body.
x. Centripetal force and Centrifugal force are equal in magnitude and direction.

c) Multiple choice questions.

xi. Which of the following is a vector quantity?
a) Energy b) force c) speed d) mass
xii. Lubrication of a machine with oil: a) reduces efficiency of machine b) Increases efficiency of machine c) increases friction d) decreases friction
xiii. Unit of work in the following is: a) Newton b) erg c) Watt d) dyne
xiv. Blotting paper absorbs ink by:
a) Capillary action b) surface tension c) pressure d) gravity
xv. Absolute zero means the temperature on centigrade scale is:
a) 0^0C b) 273^0C c) -273 K d) -273 ^{0}C

SECTION-B

Q2. Attempt any six questions. **6x5=30**

a. Convert 1 Joule of energy into erg using dimensional analysis.
b. Differentiate between centripetal and centrifugal force.
c. Derive expression for kinetic energy and give its examples.
d. Define pressure and give its units.
e. What do you mean by term viscosity and coefficient of viscosity? Give its units.
f. Convert 40 0C into Fahrenheit and Kelvin scale
g. Define momentum. Give its mathematical expression, SI unit, dimension and examples.
h. Friction is a necessary evil. Explain.

SECTION-C

Q3. Attempt any three questions. **3x10=30**

i. A body of mass 'm' is moving with uniform speed 'v' in a circle of radius 'r'. Find an expression for centripetal force 'F' by using the method of dimensions.
ii. State and explain conservation of mechanical energy of a freely falling body.
iii. a) Differentiate between scalar and vector quantities. Give examples. **5**
b) Show that the vector A and B are perpendicular to each other.
If $\vec{A}$=î + 2 ĵ+ 3k and $\vec{B}$= 2î - ĵ. **5**
iv. What are the different modes of transfer of heat? Explain with examples.
v. a) Explain conservation of angular momentum and its examples. **6**
b) State the laws of friction. **4**