

ENGINEERING PHYSICS

( Theory – 2(a) )

Full Marks : 80

Time : 3 hours

Answer any five questions including Q. Nos. 1 & 2

Figures in the right-hand margin indicate marks

1. Answer all questions : 2 × 10

- (a) What are the basic units in SI system.
- (b) State triangle law of vector addition.
- (c) What is relation between linear velocity and angular velocity ?
- (d) Define Work and write its SI unit.
- (e) Define universal gravitational constant(G).
- (f) Define transverse wave.
- (g) Define Latent Heat.
- (h) State the laws of refraction
- (i) Define unit charge.
- (j) State Lenz's law.

2. Answer any six questions : 5 × 6

(a) State the principle of homogeneity and check the correctness of the formula

$$v^2 - u^2 = 4as.$$

- (b) A body projected vertically upward reaches height of 89 m. Calculate its initial velocity.
- (c) Distinguish between mass and weight.
- (d) Define ultrasonics and write its properties.
- (e) State first law of thermodynamics.
- (f) Define critical angle and total internal reflection.
- (g) State Coulomb's law of magnetism and define unit pole.
- (h) Write the properties and application of LASER.

(Turn Over)

3. Derive expression for Time of flight, Maximum height and Horizontal Range for a projectile fired at an angle  $\theta$ . 10
4. ✓ State the laws of limiting friction and mention different methods to reduce friction. 10
5. ✓ (a) State Kepler's laws of planetary motion.  
(b) A body weights 40 kg wt on the surface of earth. What will be its weight on the surface of Mass of radius  $\frac{1}{3}$  and mass  $\frac{1}{12}$  of that of earth. 6 + 4
6. Calculate the quantity of heat required to raise the temperature of 10 gm of ice at  $-10^\circ\text{C}$  to water at  $60^\circ\text{C}$ . 10
7. ✓ State Faraday's laws of electromagnetic induction and compare between Fleming's Left Hand Rule and Right Hand Rule. 6 + 4
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