

25. The following are examples of advantages of friction expect (a) it helps in charging of bodies (b) it prevents us from slipping down while walking (c) it helps in holding door nails (d) it consumes part of useful energies.
26. The unit of measure for human body blood pressure is usually in (a) Pascal (b) mmHg (c) N/m² (d) psi
27. To measure relative density in the laboratory, we use (a) barometer (b) hygrometer (c) hydrometer (d) hypsometer
28. A ship of mass 1200 tons floats in sea-water. What volume of sea-water does it displace? (Density of fresh water = 1000kgm⁻³, relative density of sea water = 1.03. 1 ton = 1000kg) (a) 1156m³ (b) 1105m³ (c) 1165m³ (d) 1135m³
29. The governing principle in the application of hydraulic brake in braking system of vehicles is based on (a) osmotic pressure (b) force pump (c) transmission of pressure (d) Archimedes' principle.
30. Torque plays the same role in rotation as force does in (a) circular motion (b) oscillatory motion (c) random motion (d) linear motion.
31. Which of the following perfectly express the concept of inertia? (a) $\sum F = ma$ (b) $\sum F = mg$ (c) $\sum F = m(a + g)$ (d) $\sum F = 0$
32. Which of the following is INCORRECT about Inertia frames of reference? (a) A frame of reference in which Newton's laws are valid is called Inertia frame of reference (b) The earth is approximately an inertia frame of reference (c) A landing aircraft is not an Inertia frame of reference (d) An inertia frame of reference must accelerate with respect to the earth
33. Calculate the mass an object attached to the hook of a spring balance and suspended vertically from the roof of an ascending lift with an acceleration of 0.5m/s², if the spring balance reading is 25N. (Take g=10m/s²). (a) 3.28kg (b) 2.38kg (c) 23.8kg (d) 0.238kg
34. If in question 34, the lift ascends with constant velocity of 0.2m/s, calculate the mass of the object (a) 25kg (b) 2.5kg (c) 24.4kg (d) 25.5kg
35. Which of the following expressions below do not represent the Impulse of force (a) $\int_{t_1}^{t_2} F dt = \int_{p_1}^{p_2} dp$ (b) $J = \int_{t_1}^{t_2} F dt$ (c) $P_2 = P_1 - J$ (d) $J = P_2 t_2 - P_1 t_1$
36. Calculate the final horizontal momentum of a tennis ball of mass 0.05kg initially travelling rightward with a velocity of 20m/s; struck to move at 12m/s at 60° upward to the horizontal. (a) -0.3kgm/s (b) 0.624kgm/s (c) -0.624kgm/s (d) 0.3kgm/s
37. Calculate the horizontal momentum change in question 36 (a) -1.3kgm/s (b) 0.7kgm/s (c) 1.3kgm/s (d) -0.7kgm/s
38. Which of the following is NOT CORRECT about inelastic collision? (a) $V_A = \frac{M_A}{M_A + M_B} V_1$ (b) $\frac{K_1}{K_2} > 1$ (c) $\frac{K_1}{K_2} < 1$ (d) $M_B = \frac{M_A V_1}{V_A} + M_A$
39. Calculate the Young modulus of a body of cross sectional area 0.2m² whose original length is 1.0m which experiences an increase in length of 2.0x 10⁻³m when a force of 5N was applied to it. Calculate its original length. (a) 1.25x10² (b) 1.25x10³ (c) 1.25x10⁴ (d) 1.25x10⁵
40. Calculate the compressibility K of a given gas original volume is 250cm³ and experiences a volume change of 1.5cm³ when a pressure change of 0.5Pa was applied to it (a) 1.2x10⁻³Pa (b) 1.2x10³Pa (c) 1.2x10⁻⁴Pa⁻¹ (d) 1.2x10⁻³Pa⁻¹

SECTION B (THEORY)

- State 4 applications of Physics in Agriculture
- A uniform beam 6m long and weighing 4kg rests on supports P and Q placed left and right 1m from each end of the beam. Weights of mass 10kg and 8kg are placed near P and Q respectively, right at each end of the beam. Calculate the reactions at P and Q.
- (a) A piece of solid steel sinks, but a ship made of steel floats. Explain.
(b) Describe an experiment to verify the coefficient of kinetic friction in the laboratory.
- Locate the centre of mass of three particles, $m_1 = 5\text{kg}$, $m_2 = 7\text{kg}$ and $m_3 = 8\text{kg}$ located at (-1,2,3), (2,4,6) and (3,-2,5) respectively, coordinates in metres.