

Time Allowed: 2:40 Hours

"Section - B"

Marks: 32

Q-2. Write short answers to any eight (8) of the following parts. All parts carry equal marks:-

- (i) Define any four branches of Physics?
- (ii) Define vector quantities. Graphically represent 10N force acting towards South.
- (iii) A 6kg object is moving with velocity of 3m/s when it collides with another object resulting in its new velocity of 2m/s. Calculate the change in momentum.
- (iv) How centripetal force is used in centrifuge?
- (v) Differentiate between like and unlike parallel forces by giving examples?
- (vi) What is first condition of equilibrium? Give its mathematical form.
- (vii) By giving examples describe renewable and non-renewable energy sources.
- (viii) Calculate the power of a 60kg person who climbs 5 meter high tree in 10 seconds.
- (ix) Briefly explain stress and strain curve.
- (x) Define evaporation. How dryness of air effects the rate of evaporation?
- (xi) Why is the cutting edge of the knife made very thin?

"Section - C"

Marks: 21

Note: Answer any three (3) questions. All questions carry equal marks:-

- Q-3. (a) Derive 3rd equation of motion using velocity time graph.
(b) A stone is dropped from a bridge reaches the water in 5.30s. Find the height of bridge from water and velocity of stone when it strikes the water.
- Q-4. (a) By using the law of gravitation calculate the mass of earth.
(b) Calculate the mass of Jupiter when radius is $r_j = 7.25 \times 10^7 \text{m}$ and acceleration due to gravity on this is 24.7 m/s^2 .
- Q-5. (a) Explain Pascal's Principle.
(b) What is the pressure at a depth of 100m below the surface of water?
- Q-6. (a) Define latent heat. Explain specific latent heat of vaporization, give its mathematical form and unit.
(b) How much heat is required to increase the temperature of 2.5kg of water (with specific heat capacity of $4190 \text{ J/Kg}^\circ\text{K}^{-1}$) from 20°C to 75°C ?