TAPARIA INSTITUTE (96916-11000)

IX CBSE   **FLOATATION**   **11/12/16**   **MM : 30**

Q.1   Relative density of aluminium is 2.7. Explain this statement.   [1]

Q.2   Give any two examples where Archimedes' principle is applied.   [1]

Q.3   Define B.O.T.   [2]

Q.4   Calculate the electricity bill amount for a month of April, if 4 bulbs of 40 W for 5 hrs, 4 tube lights for 60 W for 5 hrs, a T.V. of 100 W for 6 hrs, a washing machine of 400 W for 3 hrs are used per day. The cost per unit is Rs. 1.80.   [2]

Q.5   A plastic bottle of 500 g has a volume of 450 cm^3. Will the bottle float or sink in water? Density of water is 1 g/cm^3? Also calculate the mass of the water displaced by the bottle.   [2]

Q.6   Lead has greater density than iron and both are denser than water. Is the buoyant force on a lead object greater than or lesser than or equal to the buoyant force on an iron object of the same volume? Explain your answer giving reason.   [2]

Q.7   Why are railway tracks laid on large sized concrete sleepers? Explain.   [2]

Q.8   A ship is loaded in sea water to maximum capacity. What will happen if this ship is moved to river water? Why?   [2]

Q.9   A force of 5 N acting on a body at an angle of 30° with the horizontal direction displaces it horizontally through a distance of 6 m. Calculate the work done.   [2]

Q.10   Calculate the change that should be affected in the velocity of a body to maintain the same kinetic energy. If the mass of the body is increased to four times.   [2]

Q.11   If 196×10^2 J of energy were used to raise a 20 kg boy above the ground, how high would he be raised? [Given g = 9.8 m/s^2]   [2]

Q.12   A rectangular iron block of mass 10 kg is placed on the top of a table. The dimensions of the block are 20 cm $\times$ 10 cm $\times$ 5 cm. Find the pressure exerted by the block on the table if the block lies on the table with its sides of dimensions (i) 20 cm $\times$ 10 cm and (ii) 10 cm $\times$ 5 cm. Take g = 10 m/s^2.   [3]

Q.13   Water is falling on the blades of a turbine at the rate of 6×10^3 kg per minute. The height of the fall is 10 m. Calculate the power given to the turbine. (Given g = 10 m/s^2)   [3]

Q.14   Show that the energy of a freely falling object or body is conserved.   [4]