



INDIAN SCHOOL MUSCAT

CLASS :.....XI.....

SUBJECT:..PHYSICS.....

WORKSHEET 7



DATE :.....

CHAPTER 9 ,10, and 11 : MECHANICAL PROPERTIES OF SOLIDS MECHANICAL PROPERTIES OF FLUIDS  
AND THERMAL PROPERTIES

SECTION A CONCEPTUAL AND APPLICATION TYPE QUESTIONS  
MECHANICAL PROPERTIES OF SOLIDS

- 1 What does the slope of stress Vs strain graph give? 1
- 2 Why are springs made of steel and not copper?
- 3 Stress and pressure are both forces per unit area. Then in what respect does stress differ from pressure?
- 4 Why the bridges are declared unsafe after long use?
- 5 If 'S' is stress and 'Y' is young's modulus of the material of a wire, what is the energy stored in wire per unit volume in terms of 'S' and 'Y'?
- 6 Represent graphically the variation of extension with load in an elastic body. On the graph mark: (a) Hooke's law region (b) Elastic limit (c) Yield point. (d) Breaking point
- 7 Why Pillars and Columns are I shaped ?
- 8 Why thick steel ropes are made by braiding a number of thin steel wires?
- 9 Why any mountain on earth cannot have its height more than 10 km? Explain.
- 10 A wire is cut to half its original length (a) How would it affect the increase in length under a given load? (b) How does it affect the maximum load it can support without exceeding the elastic limit?
- 11 Which is more elastic, rubber or steel? Support your answer.

MECHANICAL PROPERTIES OF FLUIDS

- 1 Mention two applications of Pascal's law .
- 2 Why mercury is used as a barometric liquid?

- 3 Write the equation of continuity for i) a compressible fluid ii) incompressible fluid.
- 4 Why shapes of aeroplanes and cars are streamlined ?
- 5 Why soldering flux is added with molten lead while soldering electrical circuits?
- 6 Why two holes are made to empty an oil tin?
- 7 How do insects run on the surface of water?
- 8 Why the blood pressure in humans is greater at the feet than at the brain?
- 9 A person standing near a speeding train has a danger of falling towards the train. Why?
- 10 Why a small bubble rises slowly through a liquid whereas the bigger bubble rises rapidly?
- 11 Give expression for the Reynold's number and show that it is a dimensional constant.
- 12 What is the mechanical advantage of hydraulic press / lift?
- 13 How ploughing of the soil helps in retaining the moisture of soil?
- 15 When air is blown between two balls suspended close to each other, they are attracted towards each other. Why?
- 16 What happens to the surface tension when some impurity is added to water?
- 17 How does the angle of contact of a liquid depends on temperature?
- 18 Why is it difficult to stop bleeding from a cut in human body at high altitudes?
- 19 Oil is sprinkled on sea waves to calm them. Why?
- 20 Draw velocity time graph for a steel sphere dropped in a highly viscous fluid in a broad and tall jar.

#### THERMAL PROPERTIES OF MATTER

- 1 Why a small gap is left between two sections of steel rail of railway tracks?
- 2 i) Why is water used as an effective coolant?  
ii) Why is water used in hot water bottles?
- 3 Stainless steel cooking pans are preferred with extra copper bottom. Why?
- 4 Explain why a beaker filled with water at 4°C overflows if temperature is decreased or increased.
- 5 What kind of thermal conductivity and specific heat requirements would you specify for cooking utensils?
- 6 Explain why a beaker filled with water at 4°C overflows if temperature is decreased or increased.
- 7 Pendulum clocks generally run fast in winter and slow in summer. Why?

- 8 Why invar steel is used in pendulum clocks for making the pendulums?
- 9 Explain how the loss of heat due to three modes of heat transfer is minimized in a thermos flask.
- 10 Why pressure cookers are necessary for cooking at hill stations?