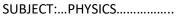


INDIAN SCHOOL MUSCAT

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







1

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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

- What does the slope of stress Vs strain graph give?
- 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?
- Why the bridges are declared unsafe after long use?
- 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'?
- 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
- Why Pillars and Columns are $oldsymbol{\mathbb{I}}$ shaped ?

7

- 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.
- 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.
- Why mercury is used as a barometric liquid?

- 3 Write the equation of continuity for i) a compressible fluid ii) incompressible fluid. Why shapes of aeroplanes and cars are streamlined? 5 Why soldering flux is added with molten lead while soldering electrical circuits? 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 thebrain? A person standing near a speeding train has a danger of fallingtowards the train. Why? 9 10 Why a small bubble rises slowly through a liquid whereas the biggerbubble 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? Draw velocity time graph for a steel sphere dropped in a highly viscous fluid in a broad and tall jar. 20 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?
- 7 Pendulum clocks generally run fast in winter and slow in summer. Why?

Explain why a beaker filled with water at 4°C overflows if temperature is

6

decreased or increased.

- 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?