INDIAN SCHOOL NIZWA - WORKSHEET

PHYSICS

CH: 9 MECHANICAL

PROPERTIES OF SOLIDS

Name: _____ Date:_____ Class: XI Sec: _A__

1. What is a perfectly elastic body?
2. No material is perfectly elastic. Why?
3. Define stress and strain.
4. When does a body acquire permanent set?
5. State Hooke's law. State one limitation of Hooke's law.
6. State the factors on which the modulus of elasticity depend.
7. Is it possible to double the length of a metallic wire by applying a force over it?
8. Is the elastic limit a property of the material of the wire?
9. The Young's modulus of a wire of length l and radius r is Y. If the length is reduced to L/2 and radius r/4, what will be its Young's modulus?
10. A wire is stretched by a certain amount under a load. If the load and radius both are increased to four times, find the stretch caused in the wire.
11. Which is more elastic – water or air?
12. Why springs are made of steel and not of copper?
13. Two wires of same length and material but of different radii are suspended from a rigid support. Both carry the same load. Will the stress , strain and extension in them be same or different?
14. Why bridges are declared unsafe after long use?
15. The breaking stress for a metal is $7.8 \times 10^{9} Nm^{-2}$. Calculate the maximum length of the wire made of this metal which may be suspended without breaking. The density of the metal = $7.8 \times 10^{3} kgm^{-3}$.
16. Graphite consists of planes of carbon atoms. Between atoms in the planes there are weak forces. What kind of elastic properties do you expect from graphite
17. A steel wire of length 2m is stretched through 2mm. The cross sectional area of the wire is $4mm^{2}$. Calculate the elastic potential energy stored in the wire in the stretched condition. Young's modulus of steel is $2 \times 10^{11} Nm^{-2}$.
18. What is elastic after effect?
19. What is elastic hysteresis?
20. A hard wire is broken by bending it repeatedly in alternating directions. Why?

21. Why is the longer side of cross section of girders used as depth?
22. What is the value of modulus of rigidity for an incompressible liquid?
23. Stress and pressure are both forces per unit area. Then in what respect does stress differ from pressure?
24. The ratio stress/strain remains constant for a small deformation. What happens to this ratio if deformation is made very large?
25. A wire fixed at the upper end stretches by length l by applying a force F. What is the work done in stretching the wire?