



INDIAN SCHOOL DARSAIT  
DEPARTMENT OF PHYSICS



Subject : PHYSICS	TOPIC:MECHANICAL PROPERTIES OF SOLIDS	Worksheet no#08
Resource Person: Ms Sonia Antony		Date : 25/11/17
Name of the Student :	Class & Division :	Roll Number:

Q.NO	QUESTIONS	MARKS
1	Why does a spring balance show wrong measure after long use?	1
2	What are the factors that may affect elasticity of a material?	1
3	Crystalline solid are called true solids. Why?	1
4	Why are springs made of steel and not of copper?	1
5	When the pressure on a sphere is increased by 80 atmospheres then its volume decreases by 0.01 percentage .Find the bulk modulus of elasticity of the material of the sphere.	2
6	The breaking force for a wire is 'F'. What will be the breaking forces for two parallel wires of this size and for a single wire of double thickness?	2
7	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 $r/2$ .what will be Young's modulus?	2
8	Show graphically the stress versus strain relation for a brittle material.	2
9	Write two differences between crystalline and amorphous materials.	2
10	Why does a cycle tube burst in summer?	2
11	A wire of length $l$ and area of cross section $A$ is stretched by the application of a force. If the Young's modulus is $Y$ , What is the work done per unit volume?	2
12	A 5 cm cube has its upper face displaced by 0.2 cm by a tangential force of 8 N .Calculate the shearing strain, shearing stress and modulus of rigidity of the material of the cube?	2
13	Compute the bulk modulus of water form the following data; Initial volume =100L, Pressure increase=100 atm, Final volume=100.5L.Compare the bulk modulus of water with that of air at constant temperature.	2

14	What is tensile strength?	2
15	Compute the fractional change in volume of a glass slab when subjected to a hydraulic pressure of 10 atm.	2
16	Read the following two statements below carefully and state, with reasons, if it is true or false 1.the Young's modulus of rubber is greater than that of steel 2.the stretching of a coil is determined by its shear modulus	2
17	What do you mean by compressibility. Write its SI unit and dimensional formula.	2
18	Determine the volume contraction of a solid copper cube,10cm on an edge, when subjected to a hydraulic pressure of $7 \times 10^6$ Pa. K for copper= $140 \times 10^9$ m <sup>2</sup> /N.	2
19	i)Write Hooke's law. ii)A steel wire of length 4 m and diameter 5mm is stretched by 5 kg wt .Find the increase in its length, if the young's modulus of steel wire is $2.4 \times 10^{12}$ dyne/cm <sup>2</sup> .	3
20	Explain stress strain curve and write its significance.	3