

1. Detail of Unit Revision

Subject Name	Physics
Course Name	Physics 02 (Physics Part-2, Class XI)
Module Name/Title	Unit 7: Properties Of Bulk Matter_Revision
Objectives	After going through this lesson, the learners will be able to understand • How to plan for study • How to consolidate the unit
Keywords	Elasticity, bulk modulus, viscosity, surface tension, thermal properties of matter, conduction, convection and radiation etc.

2. Development Team

Role	Name	Affiliation
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Study Guide

PROPERTIES OF BULK MATTER:

After going through the modules you must now have a fairly good idea of behaviour of materials in the three states of matter.

It is most important to note here is that we have studied only few properties for solid, liquid and gaseous states. This choice is for the simple reason, that they can be all commonly observed in daily life. Besides we utilise these properties for useful purposes to make our lives comfortable.

There are three sections in this unit. These must not be compartmentalised. There is a link between them which is the internal structure of materials. Read module 1 carefully, this is the foundation for rest of the modules

Now make a list of the concepts

This will be as follows

Chapter–9: Mechanical Properties of Solids:

- Elastic behaviour,
- Stress-strain relationship,
- Hooke's law,
- Young's modulus,
- bulk modulus,
- shear,
- modulus of rigidity,
- Poisson's ratio,
- elastic energy.

Chapter–10: Mechanical Properties of Fluids:

- Pressure due to a fluid column;
- Pascal's law and its applications (hydraulic lift and hydraulic brakes).
- Effect of gravity on fluid pressure.
- Viscosity,
- Stokes' law,
- terminal velocity,
- streamline and turbulent flow,
- critical velocity,
- Bernoulli's theorem and its applications.
- Surface energy and surface tension,

- angle of contact,
- excess of pressure across a curved surface,
- application of surface tension ideas to drops, bubbles
- application of surface tension capillary rise

Chapter–11: Thermal Properties of Matter:

- Heat,
- temperature,
- thermal expansion;
- thermal expansion of solids, liquids and gases,
- anomalous expansion of water;
- specific heat capacity;
- C_p , C_v –
- calorimetry;
- change of state - latent heat capacity.
- Heat transfer-conduction, convection, and radiation,
- thermal conductivity,
- qualitative ideas of Blackbody radiation,
- Wien's displacement Law,
- Stefan's law,
- Newton's laws of cooling
- Greenhouse effect

Now identify all the physical quantities write their definition, order of magnitude, direction in case it is a vector quantity and SI unit.

Write any formulae relating the physical quantities

Check out the derivation for elastic energy

For example, for Elasticity

- Longitudinal Stress-
- Volumetric stress
- Shear stress
- Longitudinal Strain
- Volumetric strain
- Shear strain
- Young's modulus
- Bulk modulus
- Modulus of rigidity
- Poisson's ratio

- Elastic energy
- Elastic energy per unit volume

If there is an experiment in the laboratory study the apparatus used, with relevant least counts, the principle, observations, method of calculation of result. What would be the sources of error, what precautions would you take.

Next do additional problems, check out your assignment and do the tests for each module.

Ask us, in case you have a query.

Do the same with other sections of the unit syllabus

Check out two interesting problem for clarity

Ppt acid and oil

Ppt ice box