

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN  
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)  
Chromepet, Chennai — 600 044.

B.Sc.(Physics) - END SEMESTER EXAMINATIONS APRIL-2023

SEMESTER - I

**22UPHCT1001 - Properties of matter**

Total Duration : 2 Hrs 30 Mins.

Total Marks : 60

### Section B

Answer any **SIX** questions ( $6 \times 5 = 30$  Marks)

1. Derive an expression for gravitational potential and gravitational field due to a uniform solid sphere.
2. Give the relation between elastic moduli.
3. Discuss about the expression for torque per unit twist.
4. Define surface tension and Derive an expression for excess pressure inside a curved liquid surface.
5. Explain the working of Ostwald's viscometer.
6. Derive an expression for bending moment.
7. Discuss by dynamic method to find rigidity modulus by torsion pendulum.
8. Explain the experimental set to derive an expression for angle of contact.

### Section C

Answer any **THREE** questions ( $3 \times 10 = 30$  Marks)

9. Discuss in detail the experimental method of finding G by Cavendish method.
10. Derive an expression for Young's modulus by Koenig's method.
11. Explain the experimental setup to find rigidity modulus by Static torsion method.
12. Derive an expression for surface tension of a liquid by Jaeger's method.
13. Derive an expression for Poiseuille's method for the flow of liquid through a capillary tube.

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