PHYSICS

BOOKS - R G PUBLICATION

MECHANICAL PROPERTIES OF FLUIDS

Exercise

1. The surface tension of a liquid decreases with temperature. True or False?
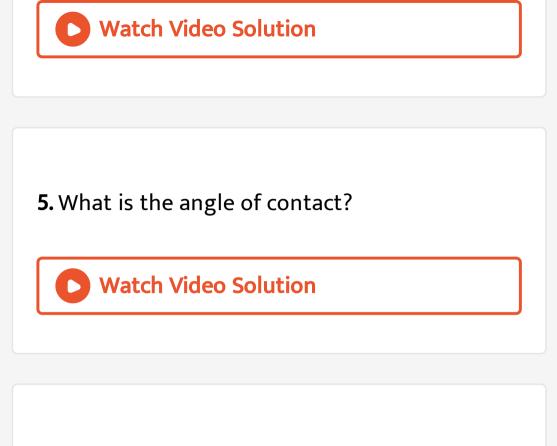
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2. What is the effect of temperature on the viscosity of liquids?

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3. State Stokes law.

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4. What is the effect of temperature on the viscosity of liquids?
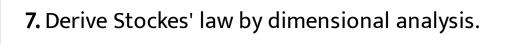
5. What is the angle of contact?

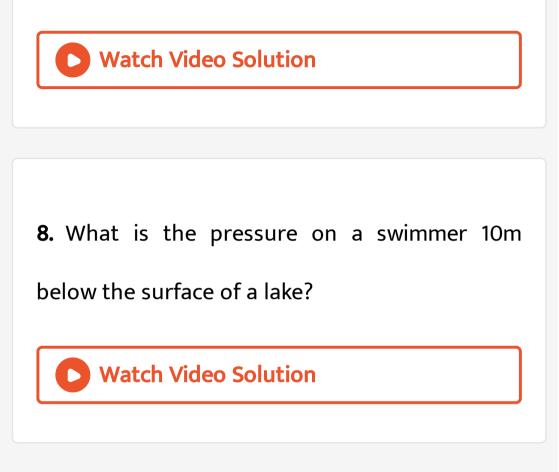**6.** State and explain Pascal's law of transmission of liquid pressure. Explain how this principle is applied in hydraulic lift.

7. Derive Stockes' law by dimensional analysis.

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8. What is the pressure on a swimmer 10m below the surface of a lake?

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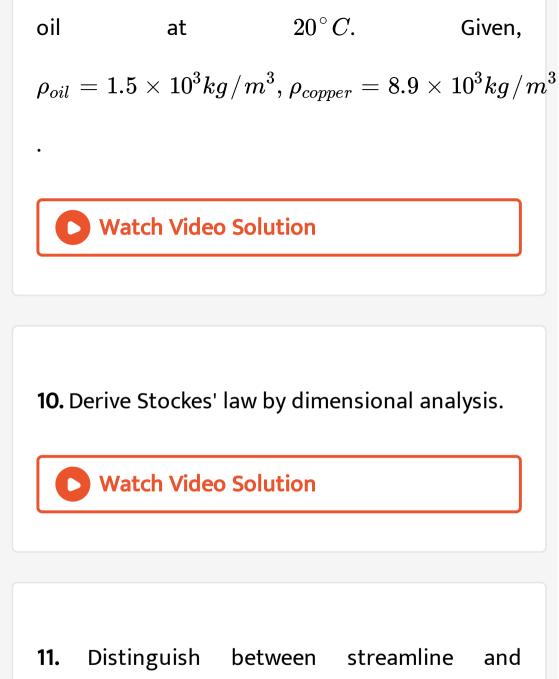**9.** The terminal velocity of a copper ball of radius 2.0 mm falling through a tank of oil at $20°C$ is 6.5 cm/s. Compute the viscosity of the

oil at $20°C$. Given,

$\rho_{oil} = 1.5 \times 10^3 kg/m^3$, $\rho_{copper} = 8.9 \times 10^3 kg/m^3$

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10. Derive Stockes' law by dimensional analysis.

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11. Distinguish between streamline and turbulent flow of a liquid.

12. What is surface tension of a liquid ? Show that the surface tension of a liquid is numerically equal to the sueface energy per unit area.

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13. State Bernoulli's theorem. Establish it on the basis of work-energy theorem.

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14. State and explain Pascal's law of transmission of liquid pressure. Explain how this principle is applied in hydraulic lift.

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15. What is surface tension of a liquid ? Show that the surface tension of a liquid is numerically equal to the sueface energy per unit area.

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16. What is co-efficient of viscosity (n)?

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17. Explain the difference between surface tension and surface energy. What are their units?
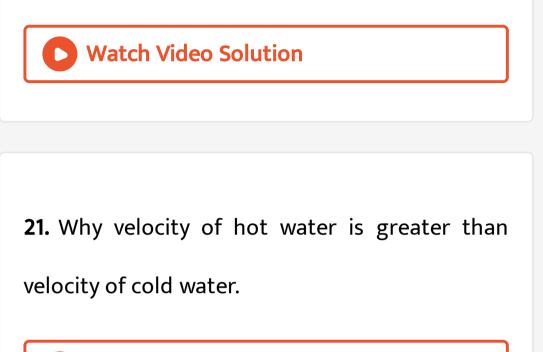
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18. What is the difference between critical velocity and terminal velocity.

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19. State and explain Pascal's law of transmission of liquid pressure. Explain how this principle is applied in hydraulic lift.

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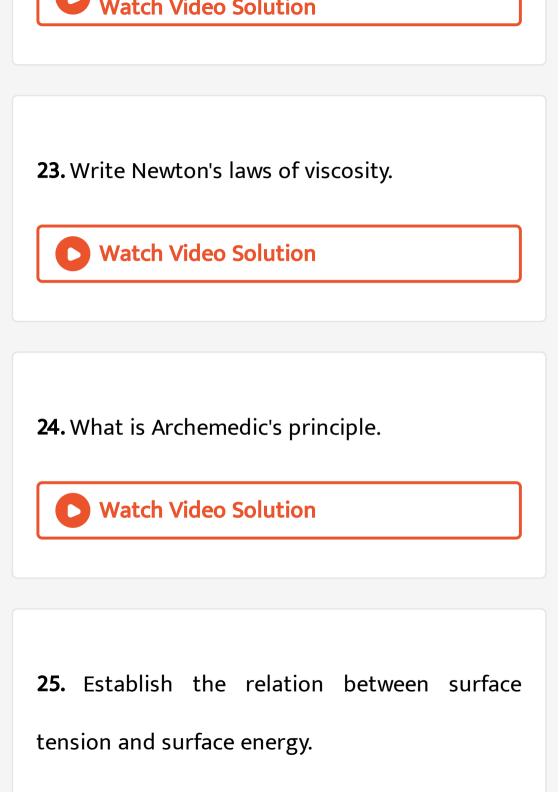
20. Why is meta centre?

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21. Why velocity of hot water is greater than velocity of cold water.

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22. What is Reynold's number? What is its physical significance?

23. Write Newton's laws of viscosity.

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24. What is Archemedic's principle.

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25. Establish the relation between surface tension and surface energy.

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26. Derive the pressure of a liquid in a centrain depth.

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27. Write the different condition of a floating bodies.

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28. Distinguish between streamline and turbulent flow of a liquid.

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29. The dimension of co - efficient of viscocity is

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30. Write about the buoyancy force and viscous force.

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31. Derive the expression of terminal velocity of a body in liquid.

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32. State Bernoulli's theorem. Establish it on the basis of work-energy theorem.

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33. State and obtain Stokes's law by the method of dimensions

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34. What is the difference between critical velocity and terminal velocity.

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35. Write the working principle of Hydraulic press and show that mechancial advantage of hydraulic prss m>1.

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36. In a hydraulic press the ratio of radius of the piston is 16:3 and arm ratio 9:2 calculate the mechanical advatage of the press.

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37. The weight of a body in air 40N. When the body immersed in water the weight 20N and if the body immersed in unknown liquid the weight 30N. What is density of liquid?