Mechanical Properties of Fluids

Question 1.
Plants get water through the roots because of
(a) Capillarity
(b) Viscosity
(c) Gravity
(d) Elasticity

▼ Answer

Answer: (a) Capillarity

Question 2.
Water rises up to a height h1 in a capillary tube of radius r. the mass of the water lifted in the capillary tube is M. if the radius of the capillary tube is doubled, the mass of water that will rise in the capillary tube will be
(a) M
(b) 2M
(c) M/2
(d) 4M

▼ Answer

Answer: (b) 2M

Question 3.
A number of small drops of mercury coalesce adiabatically to form a single drop. The temperature of drop
(a) Increases
(b) Is infinite
(c) Remains unchanged
(d) May decrease or increase depending upon size

▼ Answer

Answer: (d) May decrease or increase depending upon size

Question 4.
When a soap bubble is charged
(a) It contracts
(b) It expands
(c) It does not undergo any change in siz
(d) None of these

▼ Answer

Answer: (b) It expands

Question 5.
A liquid is kept in a glass vessel. If the liquid solid adhesive force between the liquid and the vessel is very weak as compared to the cohesive force in the liquid, then the shape of the liquid surface near the solid should be
(a) Concave
(b) Convex

(c) Horizontal
(d) Almost vertical

▼ Answer

Answer: (b) Convex

Question 6.
A capillary tube is placed vertically in a liquid. If the cohesive force is less than the adhesive force, then
(a) The meniscus will be convex upwards
(b) The liquid will wet the solid
(c) The angle of contact will be obtuse
(d) The liquid will drip in the capillary tube

▼ Answer

Answer: (b) The liquid will wet the solid

Question 7.
When there are no external forces, the shape of a liquid drop is determined by
(a) Surface tension of the liquid
(b) Density of liquid
(c) Viscosity of liquid
(d) Temperature of air only

▼ Answer

Answer: (a) Surface tension of the liquid

Question 8.
Water can rise up to a height of 12 cm in a capillary tube. If the tube is lowered to keep only 9 cm above the water level then the water at the upper end of the capillary will
(a) Overflow
(b) From a convex surface
(c) From a flat surface
(d) From a concave surface

▼ Answer

Answer: (c) From a flat surface

Question 9.
Rain drops are spherical in shape because of
(a) Surface tension
(b) Capillary
(c) Downward motion
(d) Acceleration due to gravity

▼ Answer

Answer: (a) Surface tension

Question 10.
When the angle of contact between a solid and a liquid is 90°, then
(a) Cohesive force > Adhesive force
(b) Cohesive force < Adhesive force

(c) Cohesive force = Adhesive force
(d) Cohesive force >> Adhesive force

▼ Answer

Answer: (c) Cohesive force = Adhesive force

Question 11.
When a capillary tube is immersed vertically in water the capillary rise is 3 cm. if the same capillary tube is inclined at angle of 60° to the vertical, the length of the water column in the capillary tube above that of the outside level is
(a) 6 cm
(b) 1 cm
(c) 8 cm
(d) Zero

▼ Answer

Answer: (a) 6 cm

Question 12.
Water rises in a capillary tube to a certain height such that the upward force due to surface tension is balanced by 75×10^{-4} N, forces due to the weight of the liquid. If the surface tension of water is 6×10^{-2} N/m, the inner-circumference of the capillary must be
(a) 1.25×10^{-2} m
(b) 0.50×10^{-2} m
(c) 6.5×10^{-2} m
(d) 12.5×10^{-2} m

▼ Answer

Answer: (d) 12.5×10^{-2} m

Question 13.
Plants get water through the roots because of
(a) Capillarity
(b) Viscosity
(c) Gravity
(d) Elasticity

▼ Answer

Answer: (a) Capillarity

Question 14.
A soap bubble (surface tension 30×10^{-3} N/m) has radius 2 cm. the work done in bobbling the radius is
(a) Zero
(b) 1.1355×10^{-4} J
(c) 2.261×10^{-4} J
(d) 4.532×10^{-4} J

▼ Answer

Answer: (d) 4.532×10^{-4} J

Question 15.
Surface tension of a soap solution is 1.9×10^{-2} N/m. work done in blowing a bubble of 2.0 cm diameter will be
(a) 7.6×10^{-6} p J
(b) 15.2×10^{-6} p J
(c) 1.9×10^{-6} p J
(d) 1×10^{-4} p J

▼ Answer

Answer: (b) 15.2×10^{-6} p J

Question 16.
One end of a towel dips into a bucket full of water and other end hangs over the bucket. It is found that after some time the towel becomes fully wet. It happens
(a) Because viscosity of eater is high
(b) Because of the capillary action of cotton threads
(c) Because of gravitational force
(d) Because of evaporation of water.

▼ Answer

Answer: (b) Because of the capillary action of cotton threads

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Question 17.
A drop of oil is placed on the surface of water. Which of the following statement is correct?
(a) It will remain on it as a sphere
(b) It will spread as a thin layer
(c) It will partly be as spherical droplets and partly as thin film
(d) It will float as distorted drop on the water surface.

▼ Answer

Answer: (b) It will spread as a thin layer

Question 18.
Pressure inside two soap bubbles is 1.01 and 1.02 atmospheres. ratio between their volume is
(a) 102 : 101
(b) (102)3 : (101)3
(c) 8 : 1
(d) 2 : 1

▼ Answer

Answer: (c) 8 : 1

Question 19.
Water rises up to a height of 4 cm, in a capillary tube immersed vertically in water. What will be the length of water column in the capillary tube, if the tube is immersed in water, at an angle of 60° with the vertical?
(a) 4 cm
(b) 6 cm
(c) 8 cm
(d) 2 cm

▼ Answer

Answer: (c) 8 cm

Question 20.
For tap water and clean glass, the angle of contact is
(a) 0°
(b) 90°
(c) 140°
(d) 8°

▼ Answer

Answer: (d) 8°
