Q.1 The surface tension of a liquid at its boiling point:

(1) Becomes zero

(2) Becomes infinity

(3) is equal to the value at room temperature

(4) is half to the value at the room temperature

Q.2 The adjoining diagram shows three soap bubbles A, B and C prepared by blowing the capillary tube A, B and C prepared by blowing the capillary tube fitted with stop cocks S, S_1, S_2 and S_3 With stop cock S closed and stop
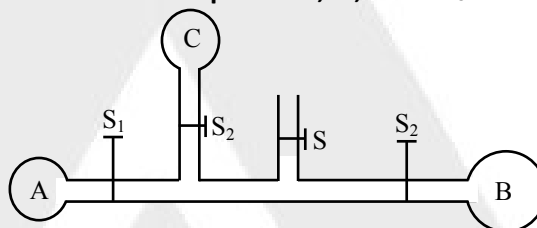
clocks S_1, S_2 and S_3 opened

(1) B will start collapsing with volumes of A and C increasing

(2) C will start collapsing with volumes of A and B increasing

(3) C and A will both start collapsing with the volume of B increasing

(4) Volumes of A, B and C will become equal at equilibrium

Q.3 Pressures inside two soap bubbles are 1.01 and 1.02 atmospheres. Ratio between their volumes is

(1) 102 : 101   (2) $(102)^3 : (101)^3$

(3) 8 : 1   (4) 2 : 1

Q.4 The height of which water rises in a capillary will be-

(1) Maximum at 4ºC   (2) Maximum at 0ºC

(3) Minimum at 0ºC   (4) Minimum at 4ºC

Q.5 When a capillary tube of glass dipped in mercury then-

(1) Mercury level rises in tube

(2) Mercury rises in tube and come out

(3) Mercury level in tube descendes
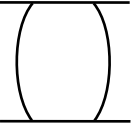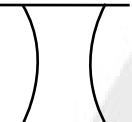
(4) Level of mercury neither ascends or descends

Q.6 Two soap bubbles each of radius r are touching each other. The radius of curvature of the common surface will be-

(1) Infinite   (2) 2r   (3) r   (4) $\dfrac{r}{2}$

Q.7 The lower end of a capillary tube touches a liquid whose angle of contact is 90º. The liquid

(1) will neither rise nor will fall inside the tube.

(2) will rise inside the tube.

(3) will rise to the top of the tube

(4) will be depressed inside the tube

Q.8 If a water drop is kept between two glass plates, then its shape is:

(1)   (2)

(3)   (4) None of these

Q.9 Water rises in a capillary upto a height h. If now this capillary is tilted by an angle of 45º, then the length of the water column in the capillary becomes-

(1) 2h   (2) $\dfrac{h}{2}$

(3) $\dfrac{h}{\sqrt{2}}$ (4) $h\sqrt{2}$

Q.10 If the surface tension of water is 0.06 N m⁻¹, then the capillary rise in a tube of diameter 1 mm is (θ = 0º)

(1) 1.22 cm   (2) 2.44 cm

(3) 3.12 cm   (4) 3.86 cm

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Q.11 The radii of two soap bubbles are in the ratio 2 : 1. the excess pressures will be in the ratio-

(1) 1 : 2   (2) 2 : 1   (3) 1 : 4   (4) 4 : 1

Q.12 A big drop of radius R is formed by 1000 small droplets of water of radius r. The radius of each small drop is-

(1) $\dfrac{R}{1000}$ (2) $\dfrac{R}{500}$ (3) $\dfrac{R}{100}$ (4) $\dfrac{R}{10}$

Q.13 At which temperature, surface tension of water will be minimum-

(1) 4ºC   (2) 25ºC   (3) 50ºC   (4) 75ºC

Q.14 A liquid drop of diameter D breaks into 27 tiny drops. The resultant change in energy is-

(1) $2\pi TD^2$ (2) $4\pi TD^2$

(3) πTD^2 (4) None of these

Q.15 There are two liquid drops of different radii. The excess pressure inside over the outside is:

(1) More in the big drop

(2) More in the small drop

(3) Equal in both drops

(4) There is no excess pressure inside the drops

Q.16 If a capillary of radius r is dipped in water, the height of water that rises in it is h and its mass is M. If the radius of the capillary is doubled the mass of water that rises in the capillary will be

(1) 4M   (2) 2M   (3) M   (4) $\dfrac{M}{2}$

Q.17 A soap bubble in vacuum has a radius of 3 cm and another soap bubble in vacuum has a radius of 4 cm. If the two bubbles coalesce under isothermal condition, then the radius of the new bubble is:

(1) 2.3 cm   (2) 4.5 cm (3) 5 cm   (4) 7 cm

Q.18 The spherical shape of rain-drop is due to

(1) Density of the liquid

(2) Surface tension

(3) Atmospheric pressure

(4) Gravity

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Q.19 In a capillary tube, water rises by 1.2 mm. The height of water that will rise in another capillary tube having half the radius of the first, is:

(1) 1.2 mm   (2) 2.4 mm

(3) 0.6 mm   (4) 0.4 mm

Q.20 Water rises to a height h in a capillary at the surface of earth. On the surface of the moon the height of water column in the same capillary will be:

(1) 6h   (2) 1/6 h

(3) h   (4) Zero

Q.21 Shape of meniscus for a liquid of zero angle of contact is-   ]

(1) plane   (2) parabolic

(3) hemi-spherical   (4) cylindrical

Q.22 Due to capillary action a liquid will rise in a tube if angle of contact is

(1) acute   (2) obtuse

(3) 90º   (4) 180º

Q.23 If the difference between pressure inside and outside of a soap bubble is 6 mm of water and its radius is 8 mm. What is the surface tension in dynes per cm.

(1) 116   (2) 256

(3) 378   (4) 450

Q.24 Two droplets merge with each other and from a large droplet. In this process:

(1) Energy is liberated

(2) Energy is absorbed

(3) Neither liberated nor absorbed

(4) Some mass is converted into energy

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Q.25 Two capillary tubes of same diameter are put vertically one each in two liquids whose relative densities are 0.8 and 0.6 and surface tension are 60 dyne/cm and 50 dyne/cm respectively. Ratio of heights of liquids in the two tubes h_1/h_2 is:

(1) $\dfrac{10}{9}$ (2) $\dfrac{3}{10}$ (3) $\dfrac{10}{3}$ (4) $\dfrac{9}{10}$

Q.26 The property utilized in the manufacture of lead shots is:

(1) Specific weight of liquid lead

(2) Specific gravity of liquid lead

(3) Compressibility of liquid lead

(4) Surface tension of liquid lead

Q.27 An air bubble is lying just below the surface of water. The surface tension of water is $70 \times 10^{-3} \, Nm^{-1}$ and atmospheric pressure is $1.013 \times 10^5 \, Nm^{-2}$. If the radius of bubble is 1mm then the pressure inside the bubble will be

(1) 1.0270×10^5 Pa   (2) 1.0160×10^5 Pa

(3) 1.0144×10^5 Pa   (4) 1.0131×10^5 Pa

Q.28 Surface tension of a liquid is 5 N/m. If its thin film is made in a ring of area $0.02 \, m^2$, then its surface energy will be-

(1) 5×10^{-2} Joule   (2) 2.5×10^{-2} Joule

(3) 3×10^{-1} Joule   (4) 2×10^{-1} Joule

Q.29 If one end of capillary tube is dipped into water then water rises up to 3 cm. If the surface tension of water is 75×10^{-3} N/m then the diameter of capillary rube will be-

(1) 0.1 mm   (2) 0.5 mm

(3) 1 mm   (4) 2 mm

Q.30 If the surface tension of a liquid is T and its surface area is increased by A, then the surface energy of that surface will be increased by-

(1) AT   (2) A/T   (3) A^2T (4) A^2T^2

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	3	3	4	31	1	1	3	4	2
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	1	4	4	1	2	2	3	2	2	1
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	3	1	1	1	4	4	3	4	3	1