SECTION-A

Q.1. (i) In a capillary tube experiment a vertical 30cm long capillary tube is dipped in water. The water raise up to height of 10cm due to capillary action. If this experiment is conducted in a freely falling elevator the length of the water column becomes.
(a) 10cm  (b) 20cm  (c) 30cm  (d) zero

(ii) The height of water in a capillary tube of radius 2cm is 4cm. What should be the radius of capillary, if the water rises to 8cm in tube?
(a) 1cm  (b) 0.1cm  (c) 20cm  (d) 4cm

(iii) The tip of the nib of a fountain pen is cut, so that
(a) the ink comes in contact with air
(b) capillary rise of the ink takes place
(c) the surface tension acts on the surface of the nib
(d) none of these

(iv) The height of liquid column in the capillary on the surface of the moon if it is h on surface of the earth is
(a) h  (b) \frac{h}{6}  (c) 6h  (d) zero

Q.2. (i) What will happen to the rise of the liquid in a capillary tube if its top end is closed?
(ii) Two capillary tubes have radii in the ratio 1:2. If they are dipped in the same liquid, what will be the ratio of capillary rise in the two tubes?
(iii) Define capillary.

SECTION-B

Q.3. Explain the rise of a liquid in a capillary on the basis of pressure difference.

Q.4. Explain in brief the pressure difference across a curved liquid surface.

Q.5. There is a small hole in a hollow sphere water enters in it. When it is taken to a depth of 40cm under water the surface tension of water is 0.07 N/m. the diameter of the hole is?

Q.6. The U- tube with limbs of diameters 6mm and 3mm contain water of surface tension 7 \times 10^{-2}Nm^{-1}. The angle of contact is zero and density 10^3kg m^{-3}. If g is 10 m s^{-2}, then the difference in levels in the two limbs is?

SECTION-C

Q.7. Obtain the relation between surface tension and rise of a liquid in a capillary tube.
Q.8. The excess pressure inside a soap bubble is twice the excess pressure inside a second soap bubble. The volume of the first bubble is $n$ times the volume of the second where $n$ is?

SECTION-D

Q.9. Derive an expression for excess pressure inside a liquid drop.