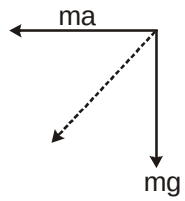
EXERCISE – II MULTIPLE CHOICE QUESTIONS

1. Pressure at the bottom = $2h\rho g$
force at the bottom = $2h\rho gA$
At balancing condition
Downward force by vessel wall + W = F
$\Rightarrow$ F.W. = F_D

2.



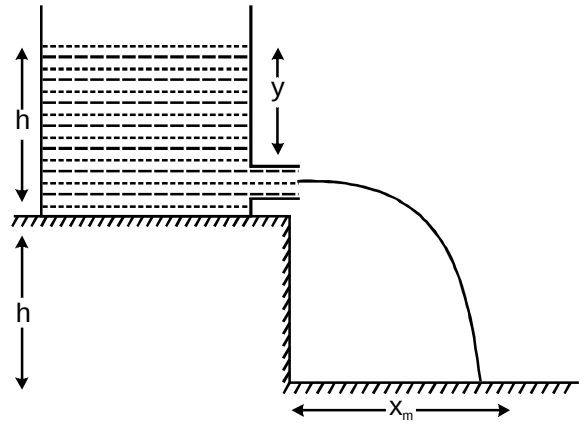
$\tan\theta = \frac{a}{g}$ (backward)

3. $W_B = W_1$
$W_a = W$
Buoyancy due to air = W
$\Rightarrow$ When air inside the balloon
$W = W_2$
Buoyancy eliminate the effect of air inside the balloon
$\Rightarrow W_1 = W_2$
So, $W_2 = W_1 + W$

4. Balance B reads = 5 Kg + Buoyancy
A reads = 2 Kg $-F_B$

5. (A) Slphon works when $h_3 > O$
This will create a pressure difference
(B) $P_3 = P_0 = P_2 + \rho gh_3$
$P_2 = P_0 - \rho gh_3$
(C) $P_3 = P_0$

6.



$x = \sqrt{2gy}\sqrt{\frac{2(2n-y)}{g}}$

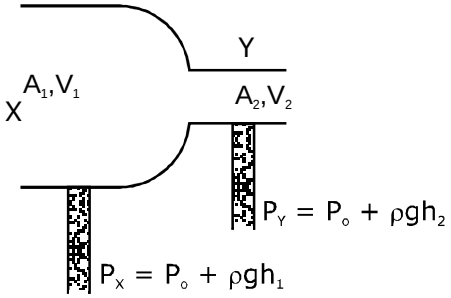
for $x_m \Rightarrow \frac{dx}{dy} = 0$

$\Rightarrow y = h$

7. $F = \rho av^2$
$P = Fv = \rho av^3$

8. $x = \sqrt{2gy}\sqrt{\frac{2(H-y)}{g}}$

9.



From $A_1v_1 = A_2v_2$
$v_2 > v_1$
From Bernoulli's

$P_x + \frac{1}{2}\rho v_1^2 = P_Y + \frac{1}{2}\rho v_2^2$