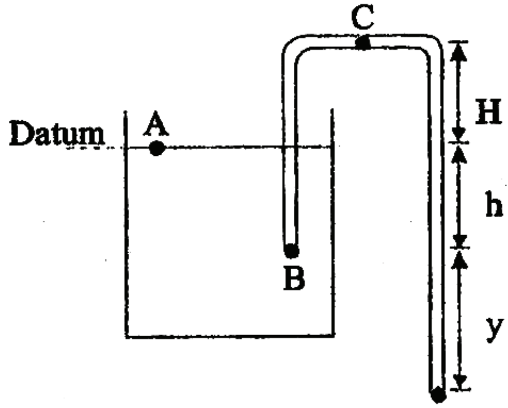
Physics

31. A siphon tube is used to remove liquid from a container as shown in the figure. In order to operate the siphon tube, it must initially be filled with the liquid. Determine the pressure at the point C.(P_0 = atmospheric pressure, r = density of liquid)



1) $P_0 + rg(h+H+y)$ 2) $P_0 - rg(h+H+y)$

3) $P_0 + rg(h-H+y)$ 4) $P_0 - rg(h-H+y)$

32. A syringe of diameter 1 cm having a nozzle of diameter 1 mm, is placed horizontally at a height 5 m from the ground an incompressible non – viscous liquid is filled in the syringe and the liquid is compressed by moving the piston at a speed of 0.5 ms^{-1}, the horizontal distance travelled by the liquid jet is (g = 10 ms^{-2})

1) 50 m 2) 25 m 3) 5 m 4) 30 m

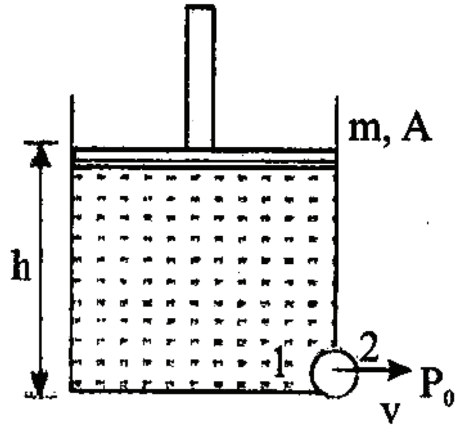
33. Air is streaming past a horizontal aeroplane wing such that the speed of air is 120 m /s over the upper surface and 90 m / s at the lower surface, with respect to the plane. If the density of air is 1.3 kg / m^3, If the wing is 10 m long and has an average width of 2m, calculate the gross lift of the wing. (Due to pressure difference)

1) $8.2\times10^4 N$ 2) $8.8\times10^6 N$ 3) $7\times10^5 N$ 4) $4\times10^{+3} N$

34. A horizontal pipe line carries water in a streamline flow. At a point along the pipe where the cross – sectional area is 10 cm^2, the velocity of water is 1 m / s and the pressure is 2000 Pa. What is the pressure at another point where the cross – sectional area is 5 cm^2.

1) 1000 Pa 2) 500 Pa 3) 1500 Pa 4) 2000 Pa

35. A cylindrical vessel contains a liquid of density ρ upto a height h. The cylinder is closed by a piston of mass m and area of cross section A. There is a small hole at the bottom of the vessel. Find the speed v with which the liquid comes out of the hole.



1) $\sqrt{2\left(gh+\frac{mg}{\rho A}\right)}$ **2)** $\sqrt{\left(gh+\frac{mg}{\rho A}\right)}$ **3)** $\sqrt{2\left(gh-\frac{mg}{\rho A}\right)}$ **4)** $\sqrt{\left(gh-\frac{mg}{\rho A}\right)}$

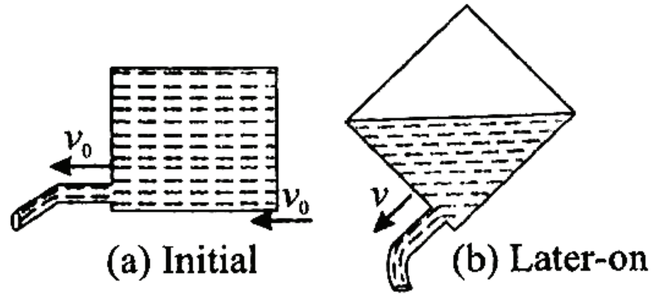
36. Two identical tall jars are filled with water to the brim. The first jar has a small hole on the side wall at a depth h / 3 and the second jar has a small hole on the side wall at a depth of 2h / 3, where 'h' is the height of the jar. The water issuing out from the first jar falls at a distance R_1 from the base and the water issuing out from the second jar falls at a distance R_2 from the base. The correct relation between R_1 and R_2 is

1) $R_1 > R_2$ **2)** $R_1 < R_2$ **3)** $R_2 = 2 \times R_1$ **4)** $R_1 = R_2$

37. A tank with vertical walls is mounted so that its base is at a height H above the horizontal ground. The tank is filled with water to a depth 'h'. A hole is punched in the side wall of the tank at a depth 'x' below the water surface. To have maximum range of the emerging stream, the value of x is

1) $\frac{H+h}{4}$ **2)** $\frac{H+h}{2}$ **3)** $\frac{H+h}{3}$ **4)** $\frac{3(H+h)}{4}$

38. A square box of water has a small hole located in one of the bottom corners. When the box is full and sitting on a level surface, complete opening of the hole results in a flow of water with a speed v_0, as shown. When the box is still half empty, it is titled by 45^0 so that the hole is at the lowest point. Now the water will flow out with a speed of

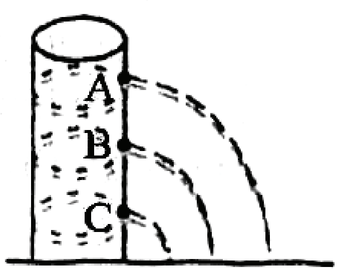


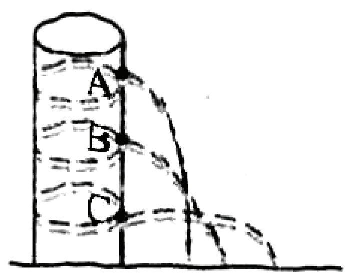
1) v_0 2) $\frac{v_0}{2}$ 3) $\frac{v_0}{\sqrt{2}}$ 4) $\frac{v_0}{\sqrt[4]{2}}$

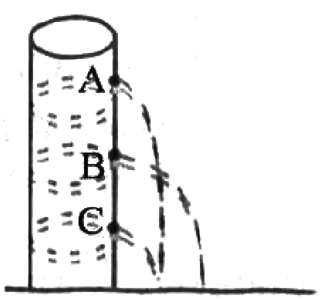
39. A pipe having an internal diameter D is connected to another pipe of same size. Water flows into the second pipe through 'n' holes, each of diameter d. If the water in the first pipe has speed v, the speed of water leaving the second pipe is

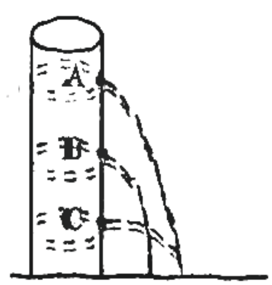
1) $\frac{D^2v}{nd^2}$ 2) $\frac{nD^2v}{d^2}$ 3) $\frac{nd^2v}{D^2}$ 4) $\frac{d^2v}{nD^2}$

40. Water stands at a height of 100 cm in a vessel whose side walls are vertical. A, B and C are holes at height 80 cm, 50 cm, and 20 m respectively from the bottom of the vessel. The correct system of water flowing out is :

1) 

2) 

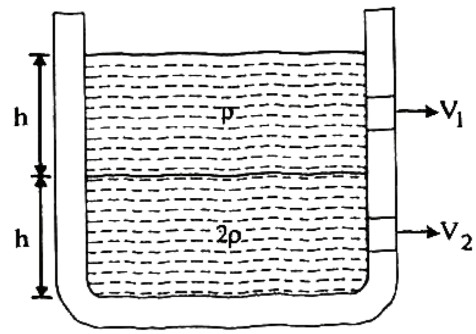
3) 

4) 

41. A cylindrical dum open at the top contains 30 litres of water. It drains out through a small opening at the bottom. 10 litres of water comes out in time t_1, the next 10 litres in further t_2 and the last 10 litres in further time t_3. Then

1) $t_1 = t_2 = t_3$ **2)** $t_1 > t_2 > t_3$ **3)** $t_1 < t_2 < t_3$ **4)** $t_2 > t_1 = t_3$

42. Equal volumes of two immiscible liquids of densities ρ and 2ρ are filled in a vessel as shown in figure. Two small holes are punched at depth $\frac{h}{2}$ and $\frac{3h}{2}$ from the surface of lighter liquid. If v_1 and v_2 are the velocities of efflux at these two holes, then $\frac{v_1}{v_2}$ is



1) $\frac{1}{2\sqrt{2}}$ **2)** $\frac{1}{2}$ **3)** $\frac{1}{4}$ **4)** $\frac{1}{\sqrt{2}}$

43. A cylindrical tank of height H is open at the top end and it has a radius R. Water is filled in it up to a height of h. The time taken to empty the tank through a hole of radius r at its bottom is

1) $\sqrt{\frac{2h}{g}}\left(\frac{R^2}{r^2}\right)$ **2)** $\sqrt{\frac{2H}{g}}\left(\frac{R^2}{r^2}\right)$ **3)** $\sqrt{h}(H)$ **4)** $\sqrt{\frac{2H}{g}}\left(\frac{R}{r}\right)$

44. Water flows at the rate of 2 ms^{-1} through a pipe of radius 2 cm and emerges from a nozzle of radius 1 cm. If the nozzle is directed vertically upwards, water rises to a maximum height of ($g = 10\ ms^{-2}$)

1) 3.2 m **2)** 6.4 m **3)** 1.6 m **4)** 0.8 m

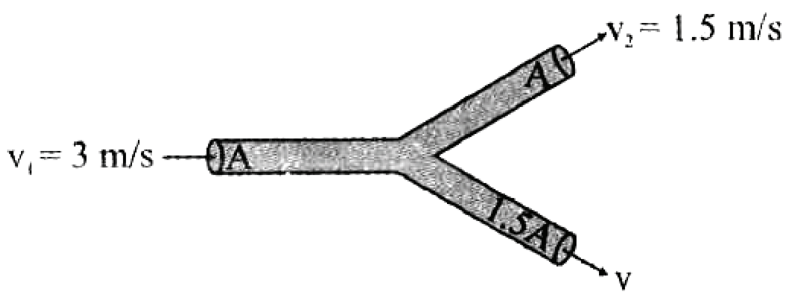
45. A cylindrical tank has a hole of area 1 cm^2 at its bottom. If the water is allowed to flow into the tank from a tube above it at the rate 70 cm^3 / s, then find the maximum height upto which water can rise in the tank

1) $2.5\times10^{-2}m$ **2)** $1.8\times10^{-2}m$ **3)** $3.2\times10^{-2}m$ **4)** $1.5\times10^{-2}m$

46. A manometer connected to a closed tap reads $3.5\times10^5 N/m^2$. When the valve is opened, the reading of manometer falls to $3.0\times10^5 N/m^2$, then velocity of flow of water is

1) 100 m / s **2)** 10 m / s **3)** 1 m / s **4)** $10\sqrt{10}\ m/s$

47. An incompressible liquid flows through a horizontal tube shown in the following figure. Then the velocity v of the fluid is

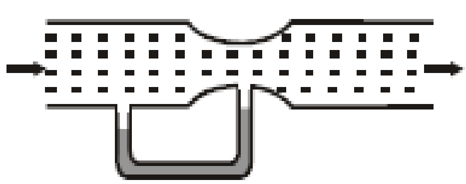


1) 3.0 m / s **2)** 1.5 m / s **3)** 1.0 m / s **4)** 2.25 m / s

48. Which of the following is a characteristic of turbulent flow ?

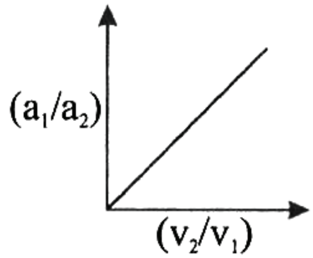
1) velocity more than critical velocity
2) irregular flow
3) molecules crossing from one layer to the other
4) all the above

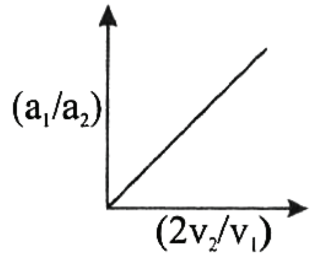
49. Water flows through the tube shown. Area of cross section of wide and narrow part are $5\ cm^2$ & $2\ cm^2$. The rate of flow is $500\ cm^3/\text{sec}$. Find difference in mercury level of U-tube

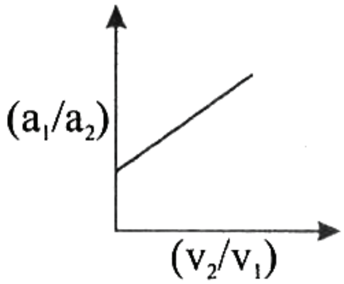


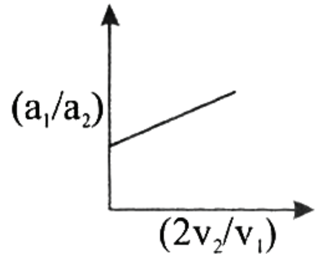
1) 2.9 cm **2)** 1.9 cm **3)** 0.9 cm **4)** None of these

50. A large open tank has two holes in the wall. The top hole is a square hole of side L at a depth y from the surface of water. The bottom hole is a circular hole of radius R at a depth 4y from surface of water. If $R = L/2\sqrt{\pi}$, find the correct graph. V_1 and V_2 are the velocities in top and bottom holes. Areas of the square and circular holes are a_1 and a_2

1) 

2) 

3) 

4) 

51. The dynamic lift of an aeroplane is based on

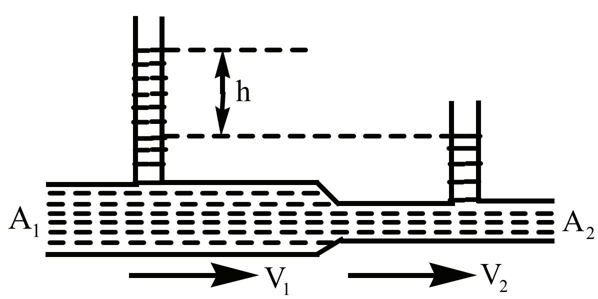
1) Torricelli theorem

2) Bernoulli's theorem

3) Conservation of angular momentum

4) Principle of continuity

52. A liquid flows through a horizontal tube. The velocities of the liquid in the two sections which have areas of cross section A_1 and A_2 are v_1, v_2 respectively. The difference in the levels of liquid in the two vertical tubes is h.



a) The volume of liquid flowing through the tube in unit time is A_1v_1

b) $v_2 - v_1 = \sqrt{2gh}$

c) $v_2^2 - v_1^2 = 2gh$

d) The energy per unit mass of liquid is the same in both the sections of the tube

1) a, b, d are correct **2)** b, c, d are correct

3) a, c, d are correct **4)** only a, d are correct

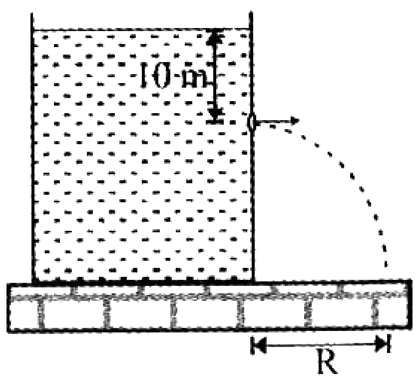
53. Water flows through a non – uniform tube of area of cross sections A, B and C whose values are 25 cm^2, 15 cm^2 and 35 cm^2 respectively. The ratio of the velocities of water at the sections A, B and C is

1) 5 : 3 : 7 **2)** 7 : 3 : 5 **3)** 21 : 35 : 15 **4)** 1 : 1 : 1

54. In a horizontal pipeline of uniform area of cross – section, the pressure falls by 8 Nm^{-2} between two points separated by 1 km. What is change in KE per kg of the oil flowing at these points ? (Given, $\rho_{oil} = 800 kgm^{-3}$)

1) 0.1 JKg^{-1} **2)** 0.001 JKg^{-1} **3)** 1 JKg^{-1} **4)** 0.01 JKg^{-1}

55. A large tank is filled with water (density = $10^3\ kg/m^3$). A small hole is made at a depth 10 m below water surface. The range of water issuing out of the hole is R on the ground. What extra pressure must be applied on the water surface so that the range becomes 2R (take 1 atm = 10^5 Pa and g = 10 m / s^2).(Without change the position of hole)



1) 9 atm **2)** 4 atm **3)** 5 atm **4)** 3 atm

56. The volume of liquid flowing per second out of an orifice at the bottom of the tank does not depend upon

1) the density of the liquid

2) acceleration due to gravity

3) the height of the liquid above orifice

4) the area of the orifice

57. There are two identical small holes, each of area of cross- section 'a' on the opposite sides of a tank containing a liquid of density ρ. The difference in heights between the holes is 'h'. Tank is resting on a smooth horizontal surface. Find the horizontal force which will have to be applied on the tank to keep it in equilibrium.

1) $2\rho agh$ **2)** $\frac{1}{3}\rho agh$ **3)** $\frac{2}{3}a\rho gh$ **4)** $a\rho gh$

58. A container of large uniform cross – sectional area holds two immiscible, non – viscous and incompressible liquids of densities ρ and 4ρ, each of height $\frac{H}{2}$. Determine the position where, a small hole has to be punched, so that the heavier liquid comes out with a maximum range R initially.

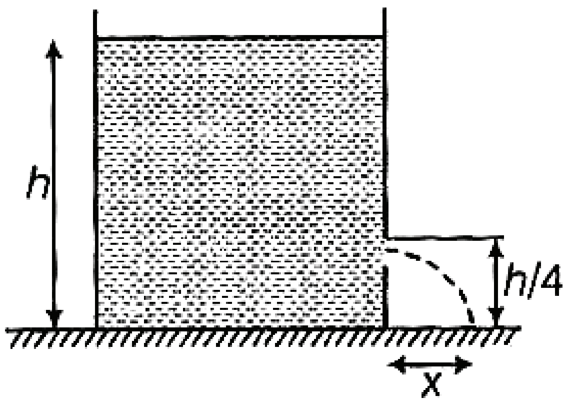
1) At a height $\frac{H}{4}$ from the bottom **2)** At a height $\frac{5}{4}H$ from the bottom

3) At a height $\frac{5}{16}H$ from the bottom **4)** At a height $\frac{7}{18}H$ from the bottom

59. A small hole is made at a height of $\left(1/\sqrt{2}\right)$m from the bottom of a cylindrical water tank. The length of the water column is $\sqrt{2}m$. Find the distance where the water emerging from the hole strikes the ground.

1) 4 m **2)** 2 m **3)** 3 m **4)** $\sqrt{2}$ m

60. Water is filled to a height h in a fixed vertical cylinder placed on a horizontal surface. At time t = 0 a small hole is drilled at a height h / 4 from the bottom of cylinder as shown in the figure. The cross – sectional area of hole is a and the cross – sectional area of cylinder is A and A >> a.



Let the value of horizontal distance of point where the water falls on horizontal surface from the bottom of cylinder be x as shown in the figure. Then, from time t = 0 till water comes out

1) x decreases with time

2) x increases with time

3) x first increases and then decreases with time

4) x first decreases and increases with time

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Key Sheet

Mathematics:

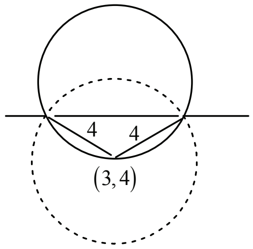
1	4	2	3	3	2	4	4	5	1	6	3
7	3	8	2	9	3	10	4	11	4	12	2
13	4	14	1	15	3	16	4	17	1	18	1
19	2	20	3	21	1	22	3	23	2	24	4
25	1	26	1	27	1	28	2	29	4	30	2

Physics:

31	2	32	1	33	1	34	2	35	1	36	4
37	2	38	4	39	1	40	3	41	3	42	4
43	1	44	1	45	1	46	2	47	3	48	4
49	2	50	2	51	2	52	3	53	3	54	4
55	4	56	1	57	1	58	3	59	4	60	1

Chemistry:

61	3	62	3	63	1	64	1	65	2	66	3
67	2	68	4	69	2	70	2	71	4	72	4
73	1	74	4	75	3	76	3	77	1	78	4
79	4	80	3	81	1	82	2	83	4	84	1
85	2	86	1	87	3	88	1	89	3	90	4



Equation of radical axis of two circles is $S_1 - S_2 = 0$

29. $2g_1g_2 + 2f_1f_2 = 0$
30. $C_1C_2 = r_1 + r_2$

PHYSICS

31. Applying Bernoulli's equation at A and C, we get
$p_A + \frac{1}{2}rv_A^2 + rgy_A = p_C + \frac{1}{2}rv_C^2 + rgy_C$ Here, $y_C = +H; v_C = v$ (according to the continuity equation)
$p_{atm} + 0 + 0 = p_C + \frac{1}{2}rv^2 + rgH$ Or, $p_{atm} = p_C + rg(h+y) + rgH$ Or, $p_C = p_{atm} - rg(h+H+y)$
32. Let A_1 is cross – sectional area of piston of syringe and A_2 the cross – sectional area of nozzle. From principle of continuity for non – viscous liquid. $A_1v_1 = A_2v_2 \Rightarrow \pi r_1^2 \times 0.5 = \pi r_2^2 \times v_2$
Were r_1 – radius of syringe, r_2 – radius of nozzle
$10^{-4} \times \left(\frac{1}{2}\right)^2 \times 0.5 = 10^{-6} \times \left(\frac{1}{2}\right)^2 v_2; v_2 = 50\,ms^{-1}$
From Torricelli's theorem, $h = \frac{1}{2}gt^2, 5 = \frac{1}{2} \times 10 \times t^2, t = 1s$
This is the times taken for the water jet to reach up to the ground. Horizontal distance
$R = v_2 \times t = 50 \times 1 = 50m$
33. According to Bernoulli's equation, $P_1 + \frac{1}{2}\rho v_1^2 = P_2 + \frac{1}{2}\rho v_2^2$
$i.e, P_1 - P_2 = \frac{1}{2}\rho\left(v_2^2 - v_1^2\right) \quad = \frac{1}{2}(1.3)\left(120^2 - 90^2\right) = 4.1 \times 10^3\,N/m^2$
The net uplift due to the difference in pressure is
$F_{up} = \Delta P \times A = \left(4.1 \times 10^3\right)(10 \times 2) = 8.2 \times 10^4\,N$
34. According to equation of continuity $A_1v_1 = A_2v_2;\; v_2 = \frac{10}{5} \times 1 = 2m/s$
Now, according to Bernoulli's equation, $P_1 + \frac{1}{2}\rho v_1^2 = P_2 + \frac{1}{2}\rho v_2^2 (\because horizontal\;\; pipe)$
$2000 + \frac{1}{2}10^3(1)^2 = P_2 + \frac{1}{2}\left(10^3\right)\left(2^2\right); P_2 = 500Pa$
35. Applying Bernoulli's theorem at 1 and 2; difference in pressure energy between 1 and 2 = difference in kinetic energy between 1 and 2
$\left(p_0 + \rho gh + \frac{mg}{A}\right) + 0 = (p_0) + \frac{1}{2}\rho v^2 \quad p_0 + \rho gh + \frac{mg}{A} - p_0 = \frac{1}{2}\rho v^2$
$\rho gh + \frac{mg}{A} = \frac{1}{2}\rho v^2 \Rightarrow \sqrt{2gh + \frac{2mg}{\rho A}} = \sqrt{2\left(gh + \frac{mg}{\rho A}\right)}$
36. $R_1 = v_1t_1; R_2 = v_2t_2$
37. $R = \sqrt{2gx}\sqrt{\frac{2\left(H + (h-x)\right)}{g}}$

38. $V_0 = \sqrt{2gh} \Rightarrow V^1 = \sqrt{2g\frac{h}{\sqrt{2}}} = \frac{V_0}{\sqrt[4]{2}}$.

39. $A_1v_1 = A_2v_2 \qquad \pi\left(\frac{D}{2}\right)^2 v = \pi\left(\frac{d}{2}\right)^2 v^1 \Rightarrow v^1 = \frac{D^2v}{nd^2}$

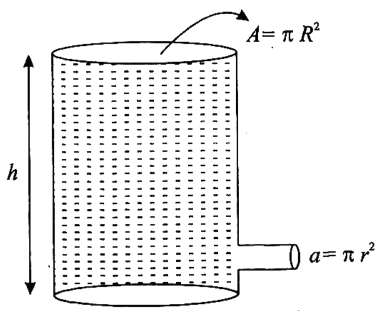
40. $R = u\times\sqrt{\frac{2H}{g}} = \sqrt{2gh}\times\sqrt{\frac{2H}{g}}$

41. Conceptual

42. $P_0 + \rho g\frac{h}{2} = P_0 + \frac{1}{2}\rho v_1^2 \qquad P_0 + \rho g\frac{h}{2}(2\rho)g\frac{h}{2} = P_0 + \frac{1}{2}(2\rho)v_2^2$

$\frac{v_1}{v_2} = \frac{\sqrt{gh}}{\sqrt{2gh}} = \frac{1}{\sqrt{2}}$

43.



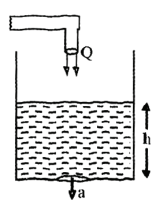
$-\pi R^2\frac{dh}{dt} = \pi r^2\sqrt{2gh}$ or $\frac{dh}{dt} = -\frac{r^2}{R^2}\sqrt{2gh}$

Or $dt = -\frac{R^2}{r^2}\frac{1}{\sqrt{2gh}}dh \therefore \int_0^t dt = \frac{R^2}{r^2\sqrt{2g}}\int_h^0 h^{-1/2}dh$

Or $t = -\frac{R^2}{r^2\sqrt{2g}}\times 2\left[\sqrt{h}\right]_h^0$ or $t = \sqrt{\frac{2h}{g}}\left[\frac{R^2}{r^2}\right]$

44. $r_1^2v_1 = r_2^2v_2$ And $h = \frac{v_2^2}{2g}$

45. As well as height of water in the tank increases, the efflux velocity and hence rate of flow of emerging water also increases. At a certain height h the output become equal to input and the level of water becomes constant.



$\therefore \quad Q_{in} = Q_{out} \qquad Q = a\sqrt{2gh} \qquad h = \frac{Q^2}{2ga^2} \qquad = \frac{\left(70\times10^{-6}\right)^2}{2\times9.8\times\left(1\times10^{-4}\right)^2} = 2.5\times10^{-2}m$

46. Decrease in pressure energy is equal to increase in kinetic energy of water, so

$\frac{1}{2}\rho v^2 = (P_1 - P_2) \qquad \frac{1}{2}\times1000\times v^2 = (3.5-3)\times10^5 \therefore v = 10m/s$

47. $Av = A_1v_1 + A_2 + v_2$ or $A\times3 = A\times1.5 + 1.5A\times v \quad \therefore v = 1m/s$

48. Conceptual

49. $P_1 - P_2 = \frac{1}{2}\rho\left(V_2^2 - V_1^2\right)$ $\rho_{Hg} gH = \frac{1}{2}\rho\left(\frac{Q^2}{A_2^2} - \frac{Q^2}{A_1^2}\right)$

50. $R = L/2\sqrt{\pi}$ $4\pi R^2 = L^2$ or $4\pi R^2\sqrt{2gy} = L^2\sqrt{2gy}$

Or $2a_2V_2 = a_1V_1$ Where $a_1 = L^2; a_2 = \pi R^2$

$V_1 = \sqrt{2gy}; V_2 = \sqrt{\frac{2g(4y)}{}}$; So, $\left(\frac{a_1}{a_2}\right) = \left(\frac{2V_2}{V_1}\right)$

51. Conceptual

52. Rate of flow = A_1v_1 $\frac{P_1}{\rho} + \frac{v_1^2}{2} = \frac{P_2}{\rho} + \frac{v_2^2}{2} \Rightarrow P_1 - P_2 = \frac{\rho}{2}\left(v_2^2 - v_1^2\right)$

$\Rightarrow v_2^2 - v_1^2 = 2gh$ The energy per unit mass of the liquid is the same in both sections.

53. AV = Constant $V_1 : V_2 : V_3 = \frac{1}{A_1} : \frac{1}{A_2} : \frac{1}{A_3}$

54. $p_1 + \frac{1}{2}\rho V_1^2 = p_2 + \frac{1}{2}\rho V_2^2$ (pipe is horizontal)

$p_1 - p_2 = \frac{1}{2}\rho\left(V_2^2 - V_1^2\right)$ $\Rightarrow \frac{1}{2}\left(V_2^2 - V_1^2\right) = \frac{p_1 - p_2}{\rho}$

$\therefore$ Change in KE per kg mass = $\frac{p_1 - p_2}{\rho} = \frac{8}{800} = 10^{-2} Jkg^{-1}$

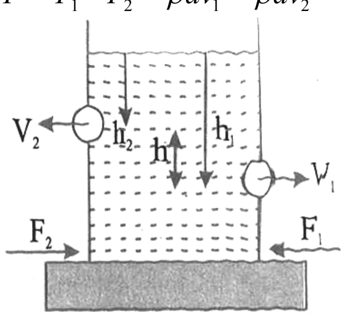
55. Range, $R = vt = \sqrt{2gh} \times t$ ....(i) Also $2R = \sqrt{2gh^1} \times t$ ....(ii)

From the above equations, we get $h^1 = 4h = 40$ m

$\therefore$ Extra height of water = 30 m = 3 atm.

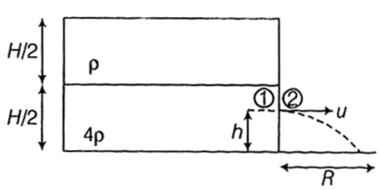
56. Conceptual

57. $F = F_1 - F_2 = \rho a v_1^2 - \rho a v_2^2$



$= \rho a(2gh_1) - \rho a(2gh_2) = 2\rho ag(h_1 - h_2) = 2\rho agh$

58.



On applying Bernoulli's theorem between points (1) and (2), we have

$p_0 + \rho g\frac{H}{2} + 4\rho g\left(\frac{H}{2} - h\right) = p_0 + \frac{1}{2}4\rho u^2$ $\rho g\frac{H}{2} + 2\rho gH - 4\rho gh = 2\rho u^2$

$\frac{5\rho gH}{2} - 4\rho gh = 2\rho u^2$ $\Rightarrow u^2 = \left[\frac{5}{4}gH - 2gh\right]$

$\Rightarrow u^2 = \frac{g}{4}[5H - 8h]$ $\Rightarrow u = \frac{\sqrt{g}}{2}\sqrt{5H - 8h}$ $t = \sqrt{\frac{2h}{g}}$

$R = ut = \frac{\sqrt{g}}{2}\sqrt{5H-8h}.\sqrt{\frac{2h}{g}} = \frac{1}{\sqrt{2}}\sqrt{5Hh-8h^2}$

For R to be maximum, $\frac{dR}{dh} = 0$

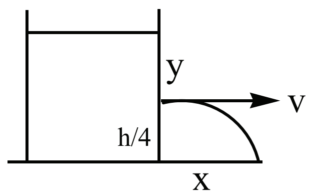
$\frac{dR}{dh} = \frac{1}{\sqrt{2}}.\frac{1}{2\sqrt{5Hh-8h^2}}(5H-16h) = 0$

$\Rightarrow 5H-16h = 0 \qquad \Rightarrow h = \frac{5}{16}H$

59. $R = 2\sqrt{h(H-h)} \qquad = 2\sqrt{\left(\sqrt{2}-\frac{1}{\sqrt{2}}\right)\left(\frac{1}{\sqrt{2}}\right)}$

$= 2\sqrt{1-\frac{1}{2}} \qquad = 2\sqrt{\frac{1}{2}} \qquad = 2.\frac{1}{\sqrt{2}} \qquad = \sqrt{2}m$

60. Time taken to reach the ground is



$T = \sqrt{\frac{2(h/4)}{g}} = \sqrt{\frac{h}{2g}}$ This is constant $v = \sqrt{2gy}$ As y decreases, v also decreases $x = vT = \sqrt{2gy}T$ $\therefore$ As y decreases, x also decreases $\because$ T is constant

CHEMISTRY

61. It has two donor sites $[:C \equiv N:]^{-1}$

62. iii,iv contain (4n+2) $\pi e^{-}s$

63. From 1 removes hydrogen atom produce aromatic ion

64. Nucleophilicity α size In polarprotic solvents

65. $NH_2^{\ominus}$ ($\downarrow$ E.N)

$\begin{matrix} RO^- \\ OH^- \end{matrix}\begin{pmatrix} \text{nucleophilicity} \\ \alpha\,\text{Basic} \end{pmatrix} \rightarrow +I$

$RCO\bar{O} \rightarrow$ Reasonce

66. Conceptual

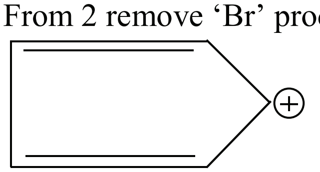
67. Nucleophili city α basic $\alpha \frac{1}{E.N}$

Acidic: HBr > alcohols

68. $(4n+2)\pi e^{-}s$

69. From 2 remove 'Br' produce aromatic ring with (4n+2) $\pi e^{-}s$

70.



$\Rightarrow 4n\pi e^{-}s$

71. Reactivity

charged nucleophile > neutral nucleophile

Final Key

S.NO	SUB	Q.NO	GIVEN KEY	FINAL KEY	REMARKS
3	PHY	49	2	2 or 4	Key Change
4	PHY	50	2	Delete	Graph is not accurate only point will be the answer