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PHYSICS · EAPCET (EAMCET)

Fluid Mechanics

Previous Year Questions with answers

216 questions · **146** papers · **2010–2026** · newest paper first

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What is in this PDF: every Fluid Mechanics question we hold from past AP and TS EAPCET (called EAMCET until 2020 in Andhra Pradesh and 2023 in Telangana) papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

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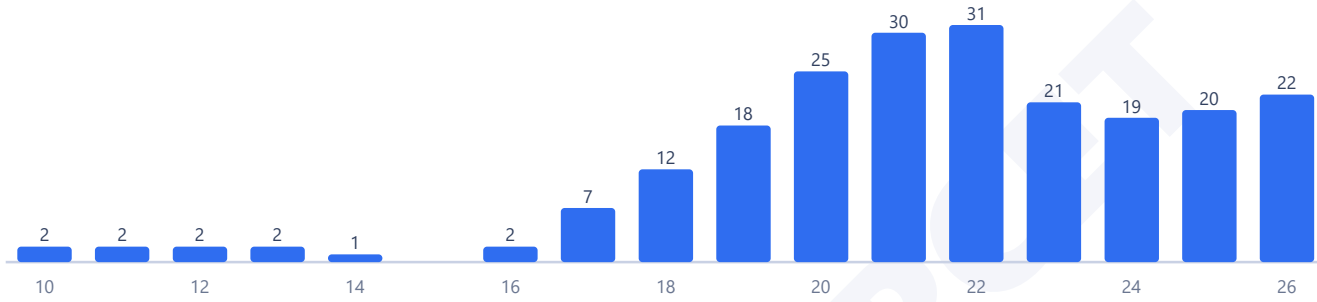
Chapter at a glance

3.7%	216	76 of 77	216 / 0
of Physics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Falling: 1.3 questions per paper in 2024–2026 against 1.7 in 2022–2023.

Questions per year



Counts are the questions we hold: 216 in 146 papers. No question in this chapter was found repeated across papers.

Most-asked topics in this chapter (2010–2026)

Surface Tension	75
Fluid Statics	61
Fluid Dynamics	45
Viscosity	35

How often it comes up

Fluid Mechanics is an active part of Class 11 physics in state engineering examinations. In the papers we hold for AP and TS EAPCET between 2022 and 2026, the chapter contributed 113 questions across 77 papers. That gives an overall rate of 1.5 questions per paper, representing 3.7% of all physics questions in that recent window. Across all years in our archive from 2010 to 2026, Fluid Mechanics delivered 216 questions across 149 papers, maintaining an average of 1.4 questions per paper and a 3.6% subject share. During the earlier period from 2010 to 2021, our archive records 103 questions across 72 papers (3.6% share). In the last three exam years from 2024 to 2026, the chapter provided 61 questions across 46 papers, registering a 3.3% share. The share of the subject in the last three years compared to early papers is about the same, and compared to the recent five-year window it is also about the same.

State-wise records show that TS papers lean more heavily into fluids than AP papers. Between 2022 and 2026, AP EAPCET papers in our set contributed 56 questions across 48 papers, with 47 papers containing at least one question (1.2 per paper, 2.9% subject share). Over the same period, TS EAPCET contributed 57 questions across 29 papers in our set, with all 29 papers featuring the chapter (2.0 per paper, 4.9% subject share). Fluid Mechanics has appeared every year since 2022, though across all 77 recent papers in our collection, one AP paper missed it, so it did not feature in all 77 sittings. The chapter ranks 12th of 28 physics chapters by question share between 2022 and 2026. The busiest single sitting in our collection was 2022, which delivered 31 questions across 16 papers.

Most-asked topics

Questions span four fundamental areas:

- **Surface Tension**: 42 questions in the recent 2022–2026 window and 75 questions across all years in our archive. Major setups include capillary rise, excess pressure across spherical droplets and soap bubbles, work done

blowing bubbles, and the coalescing of smaller droplets into a larger drop.

- **Fluid Statics**: 33 questions between 2022 and 2026 and 61 questions across all years. This includes hydrostatic pressure variation with depth, Pascal's principle in hydraulic presses, Archimedes' principle, and floatation conditions for submerged or layered liquids.
- **Fluid Dynamics**: 21 questions between 2022 and 2026 and 45 questions across all years. The continuity equation, Bernoulli's theorem, Torricelli's law of efflux, and Venturimeter flow measurements form the core of this section.
- **Viscosity**: 17 questions in the recent period and 35 questions across all years. Key concepts test Stokes' law, terminal velocity of falling or rising spheres, Poiseuille's formula, and Reynolds number criteria.

What the questions look like

Surface tension questions provide the largest share of marks and follow familiar arithmetic formats. A classic problem asks for the temperature or work required to split a large liquid drop into thousands of tiny droplets, relying on surface energy conservation $U = T \Delta A$. Capillary rise questions often check what happens when a tube of insufficient length is used or ask for the total mass of the elevated liquid column.

In fluid dynamics, examiners frequently combine Bernoulli's equation with the equation of continuity $A_1 v_1 = A_2 v_2$. You might be asked to find the gauge pressure at a constricted section of a horizontal water main or calculate the efflux speed and horizontal range of a jet issuing from an orifice punctured at depth h below the surface. Floating body problems from fluid statics ask for the fraction of an object's volume projecting above a liquid surface when submerged in multi-density fluids.

How to practise it

Begin with fluid statics and Archimedes' principle. Write buoyancy balance clearly: weight of the body $W = mg$ must balance the upward buoyant force $F_b = V_{in} \rho_{liquid} g$. When working with U-tube manometers containing immiscible liquids, equate pressures at identical horizontal levels in continuous fluid columns.

For surface tension, remember the excess pressure relations: excess pressure is $(\text{two } T) / R$ for a spherical liquid droplet or air bubble inside a liquid, and $(\text{four } T) / R$ for a thin soap bubble having two liquid-air surfaces. For capillary rise, remember that height $h = (2 T \cos \theta) / (r \rho g)$. Notice that the mass of fluid supported inside the tube is $m = \pi r^2 h \rho = (2 \pi r T \cos \theta) / g$, which is directly proportional to radius r, even though the column height h is inversely proportional to r.

Finally, master terminal velocity. The steady speed v_t is proportional to $r^2 (\rho - \sigma) g / \eta$ with a prefactor of two-ninths. Pay close attention to whether the sphere sinks ($\rho > \sigma$) or rises as a bubble ($\rho < \sigma$), and remember that v_t scales with the square of the radius r^2.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

Match the law/ principle with concerned applications

a) Hydraulic Lift	i) Bernoulli's Principle
b) Speed of Efflux	ii) Torricelli's Law
c) Dynamic lift	iii) Stoke's Law
d) Viscous drag force	iv) Pascal's Law

(A) a – i, b – ii, c – iii, d – iv
(B) a – i, b – iv, c – ii, d – iii
(C) a – iv, b – i, c – iii, d – ii
(D) a – iv, b – ii, c – i, d – iii

Answer: (D) a – iv, b – ii, c – i, d – iii · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 2 MCQ

A long cylindrical vessel of glass having a hole of 0.5 mm radius at its bottom is slowly lowered vertically into a deep water bath. If the surface tension of water is $7 \times 10^{-2}\ Nm^{-1}$, then the maximum depth the vessel can be submerged without water entering through the hole is (Acceleration due to gravity = $10\ ms^{-2}$)

(A) 4.2 cm
(B) 5.6 cm
(C) 2.8 cm
(D) 1.4 cm

Answer: (C) 2.8 cm · The council's preliminary key

Q3 AP EAPCET 2026 · 15 May · Shift 1 MCQ

A capillary tube of inner radius 1.5 mm is dipped vertically in water. If the surface tension of water is $7 \times 10^{-2}\ Nm^{-1}$, then the volume of the water that rises in the capillary tube is (Acceleration due to gravity = $10\ ms^{-2}$)

(A) 0.022 cc
(B) 0.066 cc
(C) 0.099 cc
(D) 0.033 cc

Answer: (B) 0.066 cc · The council's preliminary key

Q4 AP EAPCET 2026 · 15 May · Shift 2 MCQ

A vessel contains oil of density $0.8\ gcm^{-3}$ over mercury of density $13.6\ gcm^{-3}$. A homogenous sphere floats with half of its volume immersed in mercury and the other half in oil. Then the density of the

material of the sphere is

(A) $3.3\ gcm^{-3}$
(B) $6.4\ gcm^{-3}$
(C) $7.2\ gcm^{-3}$
(D) $12.8\ gcm^{-3}$

Answer: (C) $7.2\ gcm^{-3}$ · The council's preliminary key

Q5 AP EAPCET 2026 · 14 May · Shift 1 MCQ

A large tank filled with water to a height 'h' is to be emptied through a small hole at the bottom. The ratio of times taken for the level of water to fall from h to $\frac{h}{2}$ and from $\frac{h}{2}$ to zero is

(A) $\sqrt{2}$
(B) $\frac{1}{\sqrt{2}}$
(C) $\sqrt{2}-1$
(D) $\frac{1}{\sqrt{2}-1}$

Answer: (C) $\sqrt{2}-1$ · The council's preliminary key

Q6 AP EAPCET 2026 · 14 May · Shift 2 MCQ

A small sphere of radius 'r' is dropped in a viscous liquid. When it is moving with terminal velocity in the liquid, the relation between the rate of heat produced $\left(\frac{dQ}{dt}\right)$ and 'r' is

(A) $\frac{dQ}{dt} \propto r^2$
(B) $\frac{dQ}{dt} \propto r^5$
(C) $\frac{dQ}{dt} \propto \frac{1}{r^2}$
(D) $\frac{dQ}{dt} \propto \frac{1}{r^5}$

Answer: (B) $\frac{dQ}{dt} \propto r^5$ · The council's preliminary key

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Q7 AP EAPCET 2026 · 13 May · Shift 1 MCQ

Calculate the amount of work done in spraying a drop of a liquid of radius 1 mm into million identical droplets under isothermal conditions.
[surface tension of liquid = $550 \times 10^{-3} Nm^{-1}$]

(A) $6.84 \times 10^{-4} J$
(B) $5.50 \times 10^{-4} J$
(C) $7.25 \times 10^{-4} J$
(D) $3.42 \times 10^{-4} J$

Answer: (A) $6.84 \times 10^{-4} J$ · The council's preliminary key

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Q8 AP EAPCET 2026 · 13 May · Shift 2 MCQ

When a body floats in water and another liquid separately, it floats with one third of its volume outside water and $\frac{3}{4}$ of its volume outside another liquid. The density of the liquid is

(A) $9.4\ \mathrm{g\ cc^{-1}}$
(B) $4\ \mathrm{g\ cc^{-1}}$
(C) $\frac{8}{3}\ \mathrm{g\ cc^{-1}}$
(D) $\frac{3}{8}\ \mathrm{g\ cc^{-1}}$

Answer: (C) $\frac{8}{3}\ \mathrm{g\ cc^{-1}}$ · The council's preliminary key

Q9 AP EAPCET 2026 · 12 May · Shift 1 MCQ

An iceberg floats on sea water of density $\rho = 1.03 \times 10^3 kg\,m^{-3}$. The percentage of total volume of ice above the surface of water is about (Density of ice $\sigma = 0.92 \times 10^3 kg\,m^{-3}$)

(A) 10.7%
(B) 12.5%
(C) 9.8%
(D) 11.3%

Answer: (A) 10.7% · The council's preliminary key

Q10 AP EAPCET 2026 · 12 May · Shift 2 MCQ

A bubble rises in a viscous liquid. If radius of bubble doubles, terminal velocity becomes

(A) Double
(B) Four times
(C) Half
(D) Same

Answer: (B) Four times · The council's preliminary key

Q11 TS EAPCET 2026 · 11 May · Shift 1 MCQ

A uniform cylindrical vessel is filled with two immiscible liquids A and B of densities $750\ \mathrm{kg\,m^{-3}}$ and $1000\ \mathrm{kg\,m^{-3}}$ respectively. The thickness of the liquid layer A is 10 m and the thickness of the liquid layer B which lies at the bottom is 15 m. If the atmospheric pressure is $10^5\ \mathrm{N\,m^{-2}}$, then the ratio of the absolute pressures at the bottom of the vessel and at the interface of the two liquids is (Acceleration due to gravity $= 10\ \mathrm{ms^{-2}}$)

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(A) $10 : 7$
(B) $2 : 1$
(C) $13 : 7$
(D) $3 : 1$

Answer: (C) $13 : 7$ · The council's preliminary key

Q12 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If W is the energy required to form a soap bubble of radius R, then the energy required to increase the radius of that bubble from R to 3R is

(A) 9W
(B) 3W
(C) 8W
(D) 4W

Answer: (C) 8W · The council's preliminary key

Q13 TS EAPCET 2026 · 11 May · Shift 2 MCQ

In a uniform U-tube containing water, if a liquid of density $800\ \mathrm{kg\,m^{-3}}$ is poured into one of its limbs to a height of 25 cm column of liquid, then the rise in water level in the other limb of the tube is

(A) 25 cm
(B) 20 cm
(C) 10 cm
(D) 40 cm

Answer: (C) 10 cm · The council's preliminary key

Q14 TS EAPCET 2026 · 11 May · Shift 2 MCQ

A spherical rain drop of mass 'm' falls vertically through air with a terminal velocity of $0.2\ \mathrm{ms^{-1}}$. If 27 such identical rain drops combine to form a bigger spherical drop, then the terminal velocity of the bigger drop if it falls vertically through air is

(A) $0.9\ \mathrm{ms^{-1}}$
(B) $3.6\ \mathrm{ms^{-1}}$
(C) $5.4\ \mathrm{ms^{-1}}$
(D) $1.8\ \mathrm{ms^{-1}}$

Answer: (D) $1.8\ \mathrm{ms^{-1}}$ · The council's preliminary key

Q15 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If the apparent weight of a cube of mass 400 g immersed in water is 3.36 N, then the density of the material of the cube (in $\mathrm{kg\,m^{-3}}$) is

(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) 8350
(B) 9250
(C) 7500
(D) 6250

Answer: (D) 6250 · The council's preliminary key

Q16 TS EAPCET 2026 · 10 May · Shift 1 MCQ

A liquid of density $800\ \mathrm{kg\,m}^{-3}$ rises 4 cm in a capillary tube of inner radius 0.2 mm. The capillary tube is dipped vertically in the liquid and the angle of contact between the capillary tube and the liquid is 0°. The excess pressure inside the spherical drop of diameter 2 cm of the same liquid is
(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

(A) $9.6\ \mathrm{Nm}^{-2}$
(B) $12.8\ \mathrm{Nm}^{-2}$
(C) $6.4\ \mathrm{Nm}^{-2}$
(D) $3.2\ \mathrm{Nm}^{-2}$

Answer: (C) $6.4\ \mathrm{Nm}^{-2}$ · The council's preliminary key

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Q17 TS EAPCET 2026 · 10 May · Shift 2 MCQ

If the rate of flow of water from a pipe of radius 10 mm is $4.6\pi \times 10^{-6}\ \mathrm{m^3\,s^{-1}}$, then the Reynolds number of the flow is

(Coefficient of viscosity of water = 10^{-3} Pa s)

(A) 500
(B) 1800
(C) 1250
(D) 920

Answer: (D) 920 · The council's preliminary key

Q18 TS EAPCET 2026 · 10 May · Shift 2 MCQ

A water drop when pressed between two parallel glass plates spreads in to a circle of diameter 10 cm. If the surface tension of water is $70 \times 10^{-3}\ \mathrm{N\,m}^{-1}$ and the force required to separate the two glass plates is 2.2 N, then the volume of the drop is nearly

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(A) $5 \times 10^{-4}\ \mathrm{m}^3$
(B) $3.93 \times 10^{-6}\ \mathrm{m}^3$
(C) $62.8 \times 10^{-6}\ \mathrm{m}^3$
(D) $2 \times 10^{-6}\ \mathrm{m}^3$

Answer: (B) $3.93 \times 10^{-6}\ \mathrm{m}^3$ · The council's preliminary key

Q19 TS EAPCET 2026 · 9 May · Shift 1 MCQ

A tank contains 140 cm height of water at the bottom and an oil of density $900\,\mathrm{kg\,m^{-3}}$ to a height of 200 cm above water. If the liquids are immiscible, then the initial velocity of efflux of water through a small opening at the bottom of the tank is (Acceleration due to gravity $= 10\,\mathrm{ms^{-2}}$)

(A) $12\,\mathrm{ms^{-1}}$
(B) $6\,\mathrm{ms^{-1}}$
(C) $4\,\mathrm{ms^{-1}}$
(D) $8\,\mathrm{ms^{-1}}$

Answer: (D) $8\,\mathrm{ms^{-1}}$ · The council's preliminary key

Q20 TS EAPCET 2026 · 9 May · Shift 1 MCQ

If the excess pressure inside a spherical mercury drop is $1240\,\mathrm{N\,m^{-2}}$, then the radius of the mercury drop is
(Surface tension of mercury $= 0.465\,\mathrm{N\,m^{-1}}$)

(A) 0.75 mm
(B) 1.5 mm
(C) 0.375 mm
(D) 2.25 mm

Answer: (A) 0.75 mm · The council's preliminary key

Q21 TS EAPCET 2026 · 9 May · Shift 2 MCQ

Water is flowing through a horizontal pipe AB of non-uniform cross section. Water is entering the pipe at the end A having cross-sectional area of $4\ \mathrm{cm^2}$ at a pressure of $10^5\ \mathrm{Nm^{-2}}$ with a velocity of $20\ \mathrm{ms^{-1}}$ and water is leaving the pipe at the end B having cross-sectional area $8\ \mathrm{cm^2}$. The pressure at the end B of the pipe is

(A) $0.5 \times 10^5\ \mathrm{Nm^{-2}}$
(B) $2.5 \times 10^5\ \mathrm{Nm^{-2}}$
(C) $3.5 \times 10^5\ \mathrm{Nm^{-2}}$
(D) $4.5 \times 10^5\ \mathrm{Nm^{-2}}$

Answer: (B) $2.5 \times 10^5\ \mathrm{Nm^{-2}}$ · The council's preliminary key

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Q22 TS EAPCET 2026 · 9 May · Shift 2 MCQ

If a capillary tube of inner radius 0.5 mm is immersed vertically in water, then the mass of the water risen in the capillary tube is

(Surface tension of water $= 0.07\ \mathrm{Nm^{-1}}$ and acceleration due to gravity $= 10\ \mathrm{ms^{-2}}$)

(A) 33 mg
(B) 11 mg
(C) 22 mg
(D) 44 mg

Answer: (C) 22 mg · The council's preliminary key

Q23 AP EAPCET 2025 · 27 May · Shift 1 MCQ

If two soap bubbles each of radius 2 cm combine in vacuum under isothermal conditions, then the radius of the new bubble formed is

(A) $\sqrt{2}$ cm
(B) $2\sqrt{2}$ cm
(C) 0.5 cm
(D) 2 cm

Answer: (B) $2\sqrt{2}$ cm · The council's preliminary key

Q24 AP EAPCET 2025 · 26 May · Shift 1 MCQ

A wire of length 20 cm is placed horizontally on the surface of water and is gently pulled up with a force of 1.456×10^{-2} N to keep the wire in equilibrium. The surface tension of water is

(A) $0.00364\ \mathrm{N\,m^{-1}}$
(B) $0.0364\ \mathrm{N\,m^{-1}}$
(C) $0.00464\ \mathrm{N\,m^{-1}}$
(D) $0.0864\ \mathrm{N\,m^{-1}}$

Answer: (B) $0.0364\ \mathrm{N\,m^{-1}}$ · The council's preliminary key

Q25 AP EAPCET 2025 · 26 May · Shift 2 MCQ

When the temperature increases, the viscosity of

(A) gases decreases but liquids increases
(B) gases increases but liquids decreases
(C) both gases and liquids increases
(D) both gases and liquids decreases

Answer: (B) gases increases but liquids decreases · The council's preliminary key

Q26 AP EAPCET 2025 · 23 May · Shift 1 MCQ

A mercury drop of radius 1 cm is divided into 10^6 droplets of equal size. If surface tension of mercury is $35 \times 10^{-3}\ \mathrm{Nm}^{-1}$, then the change in suface energy in the process is

(A) 8712 μJ
(B) 8712 erg
(C) 4356 μJ
(D) 4356 erg

Answer: (C) 4356 μJ · The council's preliminary key

Q27 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If two soap bubbles A and B of radii r_1 and r_2 respectively are kept in vaccum at constant temperature, then the ratio of masses of air inside the bubbles A and B is

(A) $\mathrm{r}_2^2 : \mathrm{r}_1^2$
(B) $\mathrm{r}_1^2 : \mathrm{r}_2^2$
(C) $\mathrm{r}_1 : \mathrm{r}_2$
(D) $\mathrm{r}_2 : \mathrm{r}_1$

Answer: (B) $\mathrm{r}_1^2 : \mathrm{r}_2^2$ · The council's preliminary key

Q28 AP EAPCET 2025 · 22 May · Shift 1 MCQ

In a hydraulic lift, if the radius of the smaller piston is 5 cm, and the radius of the larger piston is 50 cm, then the weight that the larger piston can support when a force of 250 N is applied to the smaller piston is

(A) 50 kN
(B) 100 kN
(C) 40 kN
(D) 25 kN

Answer: (D) 25 kN · The council's preliminary key

Q29 AP EAPCET 2025 · 22 May · Shift 2 MCQ

An aeroplane of mass 4.5×10^4 kg and total wing area of $600\ \mathrm{m}^2$ is travelling at a constant height. The pressure difference between the upper and lower surfaces of its wings is
(Acceleration due to gravity = $10\ \mathrm{m\,s}^{-2}$)

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(A) $500\ \mathrm{N\,m^{-2}}$
(B) $825\ \mathrm{N\,m^{-2}}$
(C) $600\ \mathrm{N\,m^{-2}}$
(D) $750\ \mathrm{N\,m^{-2}}$

Answer: (D) $750\ \mathrm{N\,m^{-2}}$ · The council's preliminary key

Q30 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If water flows with a velocity of $20\ \mathrm{cm\,s^{-1}}$ in a pipe of radius $2\ \mathrm{cm}$, then the flow is
(The coefficient of viscosity of water is $10^{-3}\ \mathrm{kg\,m^{-1}\,s^{-1}}$ and density of water is $10^{3}\ \mathrm{kg\,m^{-3}}$).

(A) turbulant
(B) steady flow
(C) non-viscous
(D) unsteady

Answer: (A) turbulant · The council's preliminary key

Q31 AP EAPCET 2025 · 21 May · Shift 2 MCQ

A liquid drop of diameter D splits into 3375 small identical drops. If S is the surface tension of the liquid, then the change in the surface energy in the process is

(A) $44D^2S$
(B) $44\pi D^2S$
(C) $56D^2S$
(D) $56\pi D^2S$

Answer: (A) $44D^2S$ · The council's preliminary key

Q32 TS EAPCET 2025 · 4 May · Shift 1 MCQ

A wooden block of outer volume 1 litre and specific gravity $\frac{3}{4}$ having a cavity floats with half of its volume immersed in water. Then the volume of the cavity is

(A) 250 ml
(B) 500 ml
(C) 333.3 ml
(D) 666.6 ml

Answer: (C) 333.3 ml · The council's preliminary key

Q33 TS EAPCET 2025 · 4 May · Shift 1 MCQ

When 'n' identical mercury drops combine to form a single big drop

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(A) Surface area increases and heat is released
(B) Surface area decreases and heat is released
(C) Surface area increases and heat is absorbed
(D) Surface area decreases and heat is absorbed

Answer: (B) Surface area decreases and heat is released · The council's preliminary key

Q34 TS EAPCET 2025 · 4 May · Shift 2 MCQ

A cube of side 40 cm is floating with $\frac{1}{4}$th of its volume immersed in water. When a circular disc is placed on the cube, it floats with $\frac{2}{5}$th of its volume immersed in water. The mass of the disc is

(A) 6.4 kg
(B) 3.2 kg
(C) 9.6 kg
(D) 1.6 kg

Answer: (C) 9.6 kg · The council's preliminary key

Q35 TS EAPCET 2025 · 4 May · Shift 2 MCQ

The maximum length of water column that can stay without falling in a vertically held capillary tube of diameter $1\,\mathrm{mm}$ and open at both the ends is

(Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$ and surface tension of water $= 0.07\,\mathrm{Nm}^{-1}$)

(A) 2.8 cm
(B) 5.6 cm
(C) 1.4 cm
(D) 0 cm

Answer: (B) 5.6 cm · The council's preliminary key

Q36 TS EAPCET 2025 · 3 May · Shift 1 MCQ

If W_1 is the work done in increasing the radius of a soap bubble from 'r' to '2r' and W_2 is the work done in increasing the radius of the soap bubble from '2r' to '3r', then $W_1 : W_2 =$

(A) $3:5$
(B) $1:1$
(C) $2:3$
(D) $3:4$

Answer: (A) $3:5$ · The council's preliminary key

Q37 TS EAPCET 2025 · 3 May · Shift 2 MCQ

A thin film of water is formed between two straight parallel wires each of length 8 cm separated by distance of 0.6 cm. The work done to increase the distance between the wires to 0.8 cm is

(Surface tension of water $= 0.07\ \mathrm{Nm^{-1}}$)

(A) $33.6\ \mu\mathrm{J}$

(B) $22.4\ \mu\mathrm{J}$

(C) $11.2\ \mu\mathrm{J}$

(D) $44.8\ \mu\mathrm{J}$

Answer: (B) $22.4\ \mu\mathrm{J}$ · The council's preliminary key

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Q38 TS EAPCET 2025 · 3 May · Shift 2 MCQ

A rain drop of diameter 1 mm falls with a terminal velocity of $0.7\ \mathrm{ms^{-1}}$ in air. If the coefficient of viscosity of air is 2×10^{-5} Pa s, the viscous force on the rain drop is

(A) 13.2×10^{-8} N

(B) 6.6×10^{-8} N

(C) 26.4×10^{-8} N

(D) 10.4×10^{-8} N

Answer: (A) 13.2×10^{-8} N · The council's preliminary key

Q39 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The work done in blowing a soap bubble of diameter 3 cm is

(Surface tension of soap solution $= 0.035\ \mathrm{Nm^{-1}}$)

(A) 792 $\mu\mathrm{J}$

(B) 99 $\mu\mathrm{J}$

(C) 396 $\mu\mathrm{J}$

(D) 198 $\mu\mathrm{J}$

Answer: (D) 198 $\mu\mathrm{J}$ · The council's preliminary key

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Q40 TS EAPCET 2025 · 2 May · Shift 1 MCQ

If the terminal velocity of a metal sphere of mass 8 g falling through a liquid is $3\ \mathrm{cm\,s^{-1}}$, then the terminal velocity of another sphere of mass 64 g made of the same metal falling through same liquid is

(A) $6\ \mathrm{cm\,s^{-1}}$

(B) $3\ \mathrm{cm\,s^{-1}}$

(C) $12\ \mathrm{cm\,s^{-1}}$

(D) $18\ \mathrm{cm\,s^{-1}}$

Answer: (C) $12\ \mathrm{cm\,s^{-1}}$ · The council's preliminary key

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Q41 TS EAPCET 2025 · 2 May · Shift 2 MCQ

Water is filled in a tank up to a height of 20 cm from the bottom of the tank. Water flows through a hole of area $1\,\mathrm{mm}^2$ at its bottom. The mass of the water coming out from the hole in a time of 0.6 s is (Density of water $= 1000\,\mathrm{kg\,m^{-3}}$ and acceleration due to gravity $= 10\,\mathrm{ms^{-2}}$)

(A) 1.8 g
(B) 1.2 g
(C) 0.6 g
(D) 2.4 g

Answer: (B) 1.2 g · The council's preliminary key

Q42 TS EAPCET 2025 · 2 May · Shift 2 MCQ

For which of the following Reynold's number, a flow is streamlined?

(A) 900
(B) 2100
(C) 2900
(D) 4000

Answer: (A) 900 · The council's preliminary key

Q43 AP EAPCET 2024 · 23 May · Shift 1 MCQ

Water flows from a tap of diameter 1.5 cm with $7.5 \times 10^{-5}\ \mathrm{m^3 s^{-1}}$. Coefficient of Viscosity of water is 10^{-3} Pas. The flow is

(A) Turbulent with Reynolds number less than 6000
(B) Steady flow with Reynolds number less than 2000
(C) Turbulent with Reynolds number greater than 6000
(D) Steady flow with Reynolds number more than 6000

Answer: (C) Turbulent with Reynolds number greater than 6000 · The council's preliminary key

Q44 AP EAPCET 2024 · 22 May · Shift 1 MCQ

Water is flowing in streamline manner in a horizontal pipe. If the pressure at a point where cross-sectional area is $10\ \mathrm{cm}^2$ and velocity $1\ \mathrm{ms^{-1}}$ is 2000 Pa, then the pressure of water at another point where the cross-sectional area $5\ \mathrm{cm}^2$ is

(A) 2500 Pa
(B) 2000 Pa
(C) 1000 Pa
(D) 500 Pa

Answer: (D) 500 Pa · The council's preliminary key

Q45 AP EAPCET 2024 · 22 May · Shift 2 MCQ

Two cylindrical vessels A and B of different areas of cross-section kept on same horizontal plane are filled with water to the same height. If the volume of water in vessel A is 3 times the volume of water in vessel B, then the ratio of the pressures at the bottom of the vessels A and B is

(A) $1:1$
(B) $1:3$
(C) $1:9$
(D) $1:6$

Answer: (A) $1:1$ · The council's preliminary key

Q46 AP EAPCET 2024 · 21 May · Shift 1 MCQ

A large tank filled with water to a height $'h'$ is to be emptied through a small hole at the bottom. The ratio of the time taken for the level to fall from $'h'$ to $\frac{h}{2}$ and that taken for the level to fall from $\frac{h}{2}$ to '0' is

(A) $\sqrt{2}-1$
(B) $\frac{1}{\sqrt{2}}$
(C) $\sqrt{2}$
(D) $\frac{1}{\sqrt{2}-1}$

Answer: (A) $\sqrt{2}-1$ · The council's preliminary key

Q47 AP EAPCET 2024 · 21 May · Shift 2 MCQ

A spherical ball of radius 1×10^{-4} m and of density $10^4\ \mathrm{kgm^{-3}}$ falls freely under gravity through a distance 'h' before entering a tank of water. After entering water if the velocity of the ball does not change, then 'h' is
(The coefficient of viscosity of water $9.8\times10^{-6}\ \mathrm{Nsm^{-2}}$)

(A) 20.4 cm
(B) 20.4 mm
(C) 20.4 m
(D) 10.2 m

Answer: (C) 20.4 m · The council's preliminary key

Q48 AP EAPCET 2024 · 20 May · Shift 1 MCQ

The radius of cross-section of the cylindrical tube of a spray pump is 2 cm. One end of the pump has 50 fine holes each of radius 0.4 mm. If the speed of flow of the liquid inside the tube is $0.04\ \mathrm{ms^{-1}}$, the speed of ejection of the liquid from the holes is

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(A) $6\ \text{ms}^{-1}$
(B) $2\ \text{ms}^{-1}$
(C) $4\ \text{ms}^{-1}$
(D) $3\ \text{ms}^{-1}$

Answer: (B) $2\ \text{ms}^{-1}$ · The council's preliminary key

Q49 AP EAPCET 2024 · 20 May · Shift 2 MCQ

Two mercury drops, each with same radius r, merged to form a bigger drop. T is the surface tension of mercury, then the surface energy of bigger drop is given by

(A) $2\pi r^2 T$
(B) $2^{5/3}\pi r^2 T$
(C) $2\pi r^2 T^2$
(D) $2^{8/3}\pi r^2 T$

Answer: (D) $2^{8/3}\pi r^2 T$ · The council's preliminary key

Q50 AP EAPCET 2024 · 19 May · Shift 2 MCQ

If S_1, S_2 and S_3 are the tensions at liquid-air, solid-air and solid-liquid interfaces respectively, and θ is the angle of contact at the solid-liquid interface, then

(A) $S_1\cos\theta + S_2\sin\theta = S_3$
(B) $S_1\cos\theta + S_3 = S_2$
(C) $S_2\cos\theta + S_3 = S_1$
(D) $S_3\cos\theta + S_1 = S_2$

Answer: (B) $S_1\cos\theta + S_3 = S_2$ · The council's preliminary key

Q51 AP EAPCET 2024 · 18 May · Shift 1 MCQ

216 small identical liquid drops each of surface area A coalesce to form a bigger drop. If the surface tension of the liquid is T, the energy released in the process is

(A) $360\,AT$
(B) $180\,AT$
(C) $90\,AT$
(D) $120\,AT$

Answer: (B) $180\,AT$ · The council's preliminary key

Q52 TS EAPCET 2024 · 11 May · Shift 1 MCQ

If the excess pressures inside two soap bubbles are in the ratio 2:3, then the ratio of the volumes of the soap bubbles is

(A) 3:2
(B) 9:4
(C) 27:8
(D) 81:16

Answer: (C) 27:8 · The council's preliminary key

Q53 TS EAPCET 2024 · 11 May · Shift 1 MCQ

The velocities of air above and below the surfaces of a flying aeroplane wing are 50 ms^{-1} and 40 ms^{-1} respectively. If the area of the wing is 10 m^2 and the mass of the aeroplane is 500 kg, then as time passes by (density of air = 1.3 $\mathrm{kg\,m}^{-3}$)

(A) the aeroplane will gain altitude
(B) the aeroplane will experience weightlessness
(C) the aeroplane will fly horizontally
(D) the aeroplane will loose altitude

Answer: (A) the aeroplane will gain altitude · The council's preliminary key

Q54 TS EAPCET 2024 · 10 May · Shift 1 MCQ

A big liquid drop splits into 'n' similar small drops under isothermal conditions, then in this process

(A) volume decreases
(B) total surface area decreases
(C) energy is absorbed
(D) energy is liberated

Answer: (C) energy is absorbed · The council's preliminary key

Q55 TS EAPCET 2024 · 10 May · Shift 1 MCQ

A wooden cube of side 10 cm floats at the interface between water and oil with its lower surface 3 cm below the interface. If the density of oil is $0.9\ \mathrm{g\ cm}^{-3}$, the mass of the wooden cube is

(A) 940 g
(B) 900 g
(C) 1000 g
(D) 930 g

Answer: (D) 930 g · The council's preliminary key

Q56 TS EAPCET 2024 · 10 May · Shift 2 MCQ

The work done in blowing a soap bubble of volume V is W. The work done in blowing the bubble of volume 2V from the same soap solution is

(A) $\frac{W}{2}$
(B) $\sqrt{2}\,W$
(C) $(2)^{1/3}W$
(D) $(4)^{1/3}W$

Answer: (D) $(4)^{1/3}W$ · The council's preliminary key

Q57 TS EAPCET 2024 · 10 May · Shift 2 MCQ

Three identical vessels are filled up to the same height with three different liquids A, B and C of densities ρ_A, ρ_B and ρ_C respectively. If $\rho_A > \rho_B > \rho_C$, then the pressure at the bottom of the vessels is

(A) equal in all vessels
(B) maximum in vessel containing liquid C
(C) maximum in vessel containing liquid B
(D) maximum in vessel containing liquid A

Answer: (D) maximum in vessel containing liquid A · The council's preliminary key

Q58 TS EAPCET 2024 · 9 May · Shift 1 MCQ

The height of water level in a tank of uniform cross-section is 5 m. The volume of the water leaked in 5 s through a hole of area $2.4\ \text{mm}^2$ made at the bottom of the tank is (Assume the level of the water in the tank remains constant and acceleration due to gravity $= 10\ \text{ms}^{-2}$)

(A) $90 \times 10^{-6}\ \text{m}^3$
(B) $120 \times 10^{-6}\ \text{m}^3$
(C) $80 \times 10^{-6}\ \text{m}^3$
(D) $40 \times 10^{-6}\ \text{m}^3$

Answer: (B) $120 \times 10^{-6}\ \text{m}^3$ · The council's preliminary key

Q59 TS EAPCET 2024 · 9 May · Shift 1 MCQ

The work done in increasing the diameter of a soap bubble from 2 cm to 4 cm is
(Surface tension of soap solution $= 3.5 \times 10^{-2}\ \text{Nm}^{-1}$)

(A) $528 \times 10^{-6}\ \text{J}$
(B) $264 \times 10^{-6}\ \text{J}$
(C) $132 \times 10^{-6}\ \text{J}$
(D) $178 \times 10^{-6}\ \text{J}$

Answer: (B) $264 \times 10^{-6}\ \text{J}$ · The council's preliminary key

Q60 TS EAPCET 2024 · 9 May · Shift 2 MCQ

The excess pressure inside a soap bubble of radius 0.5 cm is balanced by the pressure due to an oil column of height 4 mm. If the density of the oil is $900\ \mathrm{kg\ m^{-3}}$, then the surface tension of the soap solution is

(Acceleration due to gravity $= 10\ \mathrm{ms^{-2}}$)

(A) $9 \times 10^{-2}\ \mathrm{Nm^{-1}}$

(B) $2.25 \times 10^{-2}\ \mathrm{Nm^{-1}}$

(C) $4.5 \times 10^{-2}\ \mathrm{Nm^{-1}}$

(D) $7 \times 10^{-2}\ \mathrm{Nm^{-1}}$

Answer: (C) $4.5 \times 10^{-2}\ \mathrm{Nm^{-1}}$ · The council's preliminary key

Q61 TS EAPCET 2024 · 9 May · Shift 2 MCQ

Water flows through a horizontal pipe of variable cross-section at the rate of 12π litre per minute. The velocity of the water at the point where the diameter of the pipe becomes 2 cm is

(A) $6\ \mathrm{ms^{-1}}$

(B) $8\ \mathrm{ms^{-1}}$

(C) $4\ \mathrm{ms^{-1}}$

(D) $2\ \mathrm{ms^{-1}}$

Answer: (D) $2\ \mathrm{ms^{-1}}$ · The council's preliminary key

Q62 AP EAPCET 2023 · 19 May · Shift 1 MCQ

Two mercury drops of radii r and 2r merge to form a bigger drop. The surface energy released in the process is nearly

(Surface tension of mercury is S and take $9^{2/3} = 4.326$)

(A) $1.6\pi r^2 S$

(B) $3.2\pi r^2 S$

(C) $17.1\pi r^2 S$

(D) $2.7\pi r^2 S$

Answer: (D) $2.7\pi r^2 S$ · The council's preliminary key

Q63 AP EAPCET 2023 · 18 May · Shift 1 MCQ

A swimming pool has depth of 3 meters. The pressure at the bottom of the pool due to water alone is

(Density of water is $1000\ \mathrm{kg\ m^{-3}}$, Acceleration due to gravity $= 10\ \mathrm{ms^{-2}}$)

(A) 10^4 Pa
(B) 3×10^3 Pa
(C) 29×10^3 Pa
(D) 30×10^3 Pa

Answer: (D) 30×10^3 Pa · The council's preliminary key

Q64 AP EAPCET 2023 · 18 May · Shift 2 MCQ

A 20 g copper block is suspended by a vertical spring causing 1 cm elongation over the natural length of spring. If a beaker of water is placed below the block so that the copper block is completely immersed in the liquid, the elongation of the spring is

(Density of copper 9000 kg m^{-3}, Density of water 1000 kg m^{-3}, $g = 10$ ms^{-2})

(A) 0.25 cm
(B) 0.15 cm
(C) 0.78 cm
(D) 0.89 cm

Answer: (D) 0.89 cm · The council's preliminary key

Q65 AP EAPCET 2023 · 17 May · Shift 1 MCQ

A large open top water tank is completely filled with water. A small hole of diameter 4 mm is made 10 m below the water level. The flow rate of water through the hole is

(Acceleration due to gravity = 10 ms^{-2})

(A) 14.14×10^{-6} m^{3}s^{-1}
(B) 2.1×10^{-6} m^{3}s^{-1}
(C) 1.77×10^{-6} m^{3}s^{-1}
(D) 0.177×10^{-3} m^{3}s^{-1}

Answer: (D) 0.177×10^{-3} m^{3}s^{-1} · The council's preliminary key

Q66 AP EAPCET 2023 · 17 May · Shift 2 MCQ

A steel ball of radius 0.05 cm and density 7.8 g cm^{-3} is dropped into a tank of water. The terminal velocity of the steel ball is

(Density of water $= 1$ g cm^{-3} and viscosity of water $= 0.001$ Pa s)

(A) 3.42 ms^{-1}
(B) 1.81 ms^{-1}
(C) 5.11 ms^{-1}
(D) 3.77 ms^{-1}

Answer: (D) 3.77 ms^{-1} · The council's preliminary key

Q67 AP EAPCET 2023 · 16 May · Shift 1 MCQ

A tank of oil has height of 4 m and density of 850 $\mathrm{kg\,m^{-3}}$. The gauge pressure at the bottom of the tank is

(1 atm = 10^5 Pa, Acceleration due to gravity = 10 $\mathrm{ms^{-2}}$)

(A) 34 kPa
(B) 384 kPa
(C) 284 kPa
(D) 200 kPa

Answer: (A) 34 kPa · The council's preliminary key

Q68 AP EAPCET 2023 · 16 May · Shift 2 MCQ

A capillary tube of radius 0.1 mm is dipped in water. The water rises to a height of 2 cm in the tube. If the surface tension of water is $0.072\ \mathrm{Nm^{-1}}$, the contact angle between water and wall of the tube is

(A) $\theta = \cos^{-1}\left(\frac{1}{3.6}\right)$
(B) $\theta = \cos^{-1}\left(\frac{1}{7.2}\right)$
(C) $\theta = \cos^{-1}\left(\frac{1}{1.8}\right)$
(D) $\theta = \cos^{-1}\left(\frac{1}{6.2}\right)$

Answer: (B) $\theta = \cos^{-1}\left(\frac{1}{7.2}\right)$ · The council's preliminary key

Q69 AP EAPCET 2023 · 15 May · Shift 1 MCQ

A person of height 1.65 m is standing upright. The additional external force required by blood vessel of length 1 cm, diameter 1 mm at feet to balance the pressure compared to similar blood vessel in head is

(Density of blood = $1.1 \times 10^3\ \mathrm{kg\,m^{-3}}$, g = $10\ \mathrm{ms^{-2}}$)

(A) 0.57 N
(B) 5.7 N
(C) 1.85 N
(D) 3.14 N

Answer: (A) 0.57 N · The council's preliminary key

Q70 AP EAPCET 2023 · 15 May · Shift 2 MCQ

The gauge pressure at a depth of 50 m in a sea is

(Density of sea water is 1025 kg $\mathrm{m^{-3}}$ and g = 10 $\mathrm{ms^{-2}}$)

(A) 1025 Pa
(B) 512500 Pa
(C) 20000 Pa
(D) 15000 Pa

Answer: (B) 512500 Pa · The council's preliminary key

Q71 TS EAMCET 2023 · 14 May · Shift 1 MCQ

A cylindrical vessel, open at the top, contains 15 litres of water. Water drains out through a small opening at the bottom. 5 litre of water comes out in time t_1, the next 5 litre in further time t_2, and the last 5 litre in further time t_3, Then

(A) $t_1 < t_2 < t_3$
(B) $t_1 > t_2 > t_3$
(C) $t_1 = t_2 = t_3$
(D) $t_2 > t_1 = t_3$

Answer: (A) $t_1 < t_2 < t_3$ · The council's preliminary key

Q72 TS EAMCET 2023 · 14 May · Shift 1 MCQ

A cylinder of mass m and material density ρ hanging from a string is lowered into a vessel of cross-sectional area A containing a liquid of density σ ($< \rho$) until it is fully immersed. The increase in pressure at the bottom of the vessel is

(A) Zero
(B) $\frac{mg}{A}$
(C) $\frac{mg\rho}{\sigma A}$
(D) $\frac{m\sigma g}{\rho A}$

Answer: (D) $\frac{m\sigma g}{\rho A}$ · The council's preliminary key

Q73 TS EAMCET 2023 · 14 May · Shift 2 MCQ

When a large bubble rises from the bottom of a lake to the surface, the volume of the bubble becomes 5 times its volume at the bottom of the lake. If H is the atmospheric pressure expressed in terms of water column height, then the depth of the lake is
(The temperature of the water in the lake is same at all points)

(A) $2H$
(B) $4H$
(C) $5H$
(D) $3H$

Answer: (B) $4H$ · The council's preliminary key

Q74 TS EAMCET 2023 · 14 May · Shift 2 MCQ

A water drop breaks into 64 identical droplets of each surface area $10^{-7}\ \mathrm{m}^2$. If the surface tension of water is $0.07\ \mathrm{Nm}^{-1}$, the increase in the surface energy in the process is

(A) $158 \times 10^{-9}\ \mathrm{J}$
(B) $432 \times 10^{-9}\ \mathrm{J}$
(C) $216 \times 10^{-9}\ \mathrm{J}$
(D) $336 \times 10^{-9}\ \mathrm{J}$

Answer: (D) $336 \times 10^{-9}\ \mathrm{J}$ · The council's preliminary key

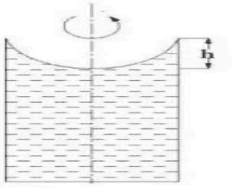
Q75 TS EAMCET 2023 · 13 May · Shift 1 MCQ

A liquid is taken in a long vertical cylindrical vessel and the cylinder is rotated about its vertical axis as shown in the figure. During rotation, the liquid rises along its sides. If the radius of vessel is 0.05 m and speed of rotation is $10\ \mathrm{rad\,s}^{-1}$, then the height difference between the liquid at the centre of the vessel and its sides is
($g = 10\ \mathrm{ms}^{-2}$)

(see the figure above)

A liquid is taken in a long vertical cylindrical vessel and the cylinder is rotated about its vertical axis as shown in the figure. During rotation, the liquid rises along its sides. If the radius of vessel is 0.05 m and speed of rotation is 10 $\mathrm{rad\,s^{-1}}$, then the height difference between the liquid at the centre of the vessel and its sides is
($g = 10\ \mathrm{ms^{-2}}$)

పాడువైన నిలువు స్థూపాకార పాత్రలో ఒక ద్రవమును తీసుకొని పాత్రను నిలువు అక్షం పరంగా పటంలో చూపిన విధంగా భ్రమణం చేసిరి. భ్రమణం చేస్తున్నప్పుడు దాని అంచుల వెంబడి ద్రవం పైకి ఎగబాకుతోంది. ఆ గొట్టం వ్యాసార్ధం 0.05 m మరియు కోణీయ వడి 10 $\mathrm{rad\,s^{-1}}$ అయిన ఆ గొట్టము కేంద్రం వద్ద మరియు ప్రక్కలలో ఉన్న ద్రవం ఎత్తులలోని తేడా
($g = 10\ \mathrm{ms^{-2}}$)



Options :
1. $125 \times 10^{-4}\ \mathrm{m}$
2. $100 \times 10^{-4}\ \mathrm{m}$
3. $50 \times 10^{-4}\ \mathrm{m}$
4. $25 \times 10^{-4}\ \mathrm{m}$

(A) $125 \times 10^{-4}\ \mathrm{m}$
(B) $100 \times 10^{-4}\ \mathrm{m}$
(C) $50 \times 10^{-4}\ \mathrm{m}$
(D) $25 \times 10^{-4}\ \mathrm{m}$

Answer: (A) $125 \times 10^{-4}\ \mathrm{m}$ · The council's preliminary key

Q76 TS EAMCET 2023 · 13 May · Shift 1 MCQ

A vessel having small hole in the bottom has to hold water without leakage, if water is poured to a height of 7 cm. Then the radius of the hole is

[surface tension of water is $0.07\ \mathrm{Nm}^{-1}$, angle of contact is 0° and $g = 10\ \mathrm{ms}^{-2}$]

(A) 1 mm
(B) 2 mm
(C) 4 mm
(D) 0.2 mm

Answer: (D) 0.2 mm · The council's preliminary key

Q77 TS EAMCET 2023 · 13 May · Shift 2 MCQ

The angle of contact is 120° when a cylindrical rod is vertically placed in a liquid. If the same rod is placed horizontally in the liquid, then the angle of contact is

(A) 60°
(B) 30°
(C) 90°
(D) 120°

Answer: (D) 120° · The council's preliminary key

Q78 TS EAMCET 2023 · 13 May · Shift 2 MCQ

In a well the pressure at a point 10 m below the surface of water is $(g = 10\ \mathrm{ms}^{-2})$

(A) $2 \times 10^4\ \mathrm{Nm}^{-2}$
(B) $10^5\ \mathrm{Nm}^{-2}$
(C) $10^4\ \mathrm{Nm}^{-2}$
(D) $2 \times 10^5\ \mathrm{Nm}^{-2}$

Answer: (D) $2 \times 10^5\ \mathrm{Nm}^{-2}$ · The council's preliminary key

Q79 TS EAMCET 2023 · 12 May · Shift 1 MCQ

A straw of circular cross-section of radius R and negligible thickness is dipped vertically into a liquid of surface tension T. If the contact angle between the liquid and the straw material is 53°. The force acting on the straw due to surface tension of the liquid is

$(\cos 53^\circ = 0.6)$

(A) $\frac{12\pi RT}{5}$
(B) $\frac{6\pi RT}{5}$
(C) $\frac{4\pi RT}{5}$
(D) $\frac{3\pi RT}{5}$

Answer: (A) $\frac{12\pi RT}{5}$ · The council's preliminary key

Q80 TS EAMCET 2023 · 12 May · Shift 1 MCQ

A solid metal sphere released in a vertical liquid column has attained terminal velocity in the downward direction. The magnitudes of viscous force, buoyant force and gravitational force acting on it are F_V, F_B and F_W respectively. Then the correct relation between them is

(A) $F_B > F_V = F_W$
(B) $F_W = F_V + F_B$
(C) $F_B = F_W + F_V$
(D) $F_V = F_B + F_W$

Answer: (B) $F_W = F_V + F_B$ · The council's preliminary key

Q81 TS EAMCET 2023 · 12 May · Shift 2 MCQ

If the work done in blowing a soap bubble of radius R is W, then the work done in blowing the soap bubble of radius 2R is

(A) $6W$
(B) $12W$
(C) $4W$
(D) $2W$

Answer: (C) $4W$ · The council's preliminary key

Q82 TS EAMCET 2023 · 12 May · Shift 2 MCQ

Three identical vessels are filled with three liquids A, B, and C with equal masses but having densities ρ_A, ρ_B and ρ_C respectively. If $\rho_A > \rho_B > \rho_C$ then the pressure at the bottom of the vessels will be

(A) Equal in all vessels
(B) Maximum in vessel containing liquid A
(C) Maximum in vessel containing liquid B
(D) Maximum in vessel containing liquid C

Answer: (A) Equal in all vessels · The council's preliminary key

Q83 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

A venturimeter has a pipe diameter of 4 cm and a throat diameter of 2 cm. Velocity of water in the pipe section is 10 m/s. The pressure drop, between pipe section and the throat section is [use density

of water = 1000 Kg/m^3]

(A) 1.5×10^5 Pa

(B) 7.5×10^5 Pa

(C) 75×10^5 Pa

(D) 4.5×10^5 Pa

Answer: (B) 7.5×10^5 **Pa** · The council's preliminary key

Q84 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

A soap bubble of initial radius R is to be blown up. The surface tension of the soap film is T. The surface energy needed to double the diameter of the bubble is

(A) $12\pi R^2T$

(B) $4\pi R^2T$

(C) $16\pi R^2T$

(D) $24\pi R^2T$

Answer: (D) $24\pi R^2T$ · The council's preliminary key

Q85 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

A wide cylindrical vessel 50 cm in height is filled with water and rests on a table. Assuming the viscosity to be negligible, find at what height from the bottom of the vessel a small hole should be made for the water jet coming out of it to hit the surface of the table at the maximum horizontal distance from the vessel.

(A) 15 cm

(B) 35 cm

(C) 25 cm

(D) 10 cm

Answer: (C) 25 cm · The council's preliminary key

Q86 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

A spherical drop of radium r is divided in to 8 equal droplets. If the surface tension is S, then the work done in the process will be

(A) $2\pi r^2S$

(B) $3\pi r^2S$

(C) $4\pi r^2S$

(D) $4\pi r^2S^2$

Answer: (C) $4\pi r^2S$ · The council's preliminary key

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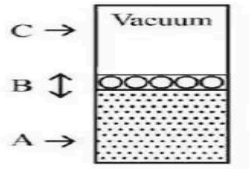
Q87 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

In the figure, the chamber A contains a gas, movable chamber B is placed on the top of the gas and it contains n metal balls. The weight of chamber B is supported by the gas. Chamber C has vacuum. Let the gas be in equilibrium at pressure P. Let P' be the pressure if one of the balls is taken away. Find $(P - P')/P$.

(see the figure above)

0
Correct Marks : 1 Wrong Marks : 0

In the figure, the chamber A contains a gas, movable chamber B is placed on the top of the gas and it contains n metal balls. The weight of chamber B is supported by the gas. Chamber C has vacuum. Let the gas be in equilibrium at pressure P. Let P' be the pressure if one of the balls is taken away. Find (P— P')/ P.



Options :

1. 1
2. n
3. 2n
4. 1/n

(A) 1
(B) n
(C) $2n$
(D) $1/n$

Answer: (D) $1/n$ · The council's preliminary key

Q88 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

A liquid flows steadily through a cylindrical pipe having a radius 2R at a point A and radius R at point B farther along the flow direction. If the velocity at point B is $4v$, what will be the velocity at point A?

(A) $\frac{1}{2}v$
(B) v
(C) $2v$
(D) $3v$

Answer: (B) v · The council's preliminary key

Q89 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

Consider an increase of 1% in each of radius of artery, viscosity of blood and density of blood respectively. The percentage change in flow rate of blood in artery is

(A) 0.25 %
(B) 0.50 %
(C) 1.0 %
(D) 3.0 %

Options (3) or (4) were accepted. More than one answer was accepted. · The council's preliminary key

Q90 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

A metal cube of side 10 cm rests on a film of a liquid of thickness 0.2 mm. If upon applying a horizontal force $\vec{F}$ of magnitude 0.1N the cube slides with a constant speed of 0.08 m/s, then the coefficient of viscosity is

(A) $2.5 \times 10^{-2}\ \frac{\text{Ns}}{\text{m}^2}$
(B) $0.25 \times 10^{-2}\ \frac{\text{Ns}}{\text{m}^2}$
(C) $5 \times 10^{-2}\ \frac{\text{Ns}}{\text{m}^2}$
(D) $0.5 \times 10^{-2}\ \frac{\text{Ns}}{\text{m}^2}$

Answer: (A) $2.5 \times 10^{-2}\ \frac{\text{Ns}}{\text{m}^2}$ · The council's preliminary key

Q91 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

A large storage tank, open to the atmosphere at top and filled with water, develops a small hole in its side at a point 20.0 m below the water level. If the rate of flow from the hole is $3.08 \times 10^{-5}\ \text{m}^3/\text{s}$, then the diameter of the hole is
[Take g = 10 m/s^2]

(A) $1.0\ \text{mm}$
(B) $1.2\ \text{mm}$
(C) $1.4\ \text{mm}$
(D) $1.6\ \text{mm}$

Answer: (C) $1.4\ \text{mm}$ · The council's preliminary key

Q92 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

An air bubble of radius 1 mm is at a depth of 8 cm below the free surface of a liquid column. If the surface tension and density of the liquid is 0.1 N/m and 2000 Kg/m^3, respectively, by what amount is the pressure inside the bubble greater than the atmospheric pressure?
(Take g = 10 m/s^2)

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(A) $1500\ \mathrm{N/m^2}$
(B) $1800\ \mathrm{N/m^2}$
(C) $1600\ \mathrm{N/m^2}$
(D) $1700\ \mathrm{N/m^2}$

Answer: (B) $1800\ \mathrm{N/m^2}$ · The council's preliminary key

Q93 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

A hollow spherical body of outer and inner radii of 4 cm and 2 cm respectively floats half submerged in a liquid of density 2.0 g/cm^3. The density of the material of the sphere is

(A) 1.02 g/cm^3
(B) 1.14 g/cm^3
(C) 1.18 g/cm^3
(D) 1.24 g/cm^3

Answer: (B) 1.14 g/cm^3 · The council's preliminary key

Q94 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

What is the terminal velocity of a rain drop of radius 0.02 mm ?
[Note that the coefficient of viscosity of air is 1.8×10^{-5} N/m^2, density of water is 1000 Kg/m^3. Use g = 10m/s^2 and density of air can be neglected in comparison with density of water]

(A) 4.9 cm/s
(B) 9.8 cm/s
(C) 0.49 cm/s
(D) 49 cm/s

Answer: (A) 4.9 cm/s · The council's preliminary key

Q95 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

The surface tension and vapour pressure of a liquid at $25\ ^\circ\mathrm{C}$ are $8 \times 10^{-2}\ \mathrm{Nm^{-1}}$ and $2.5 \times 10^3\ \mathrm{Pa}$ respectively. The radius of the smallest spherical water droplet which can form without evaporating at $25\ ^\circ\mathrm{C}$ is

(A) $64\ \mu\mathrm{m}$
(B) $30\ \mu\mathrm{m}$
(C) $60\ \mu\mathrm{m}$
(D) $32\ \mu\mathrm{m}$

Answer: (A) $64\ \mu\mathrm{m}$ · The council's preliminary key

Q96 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

A body of volume V floats on water with $\frac{1}{3}$ of its volume above the surface. The volume of the object above the surface when floating on a liquid of specific gravity 1.5 is

(A) $\frac{3V}{8}$
(B) $\frac{4V}{9}$
(C) $\frac{5V}{9}$
(D) $\frac{2V}{3}$

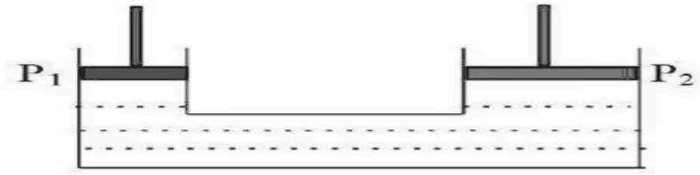
Answer: (C) $\frac{5V}{9}$ · The council's preliminary key

Q97 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

A hydraulic lift is shown in the figure. The radii of the movable pistons P_1 and P_2 are of 2 m & 8 m respectively. If a body of mass 2 kg is placed on piston P_1 then the force on piston P_2 is
(Ignore atmospheric pressure, acceleration due to gravity = $10\ ms^{-2}$)
(see the figure above)

A hydraulic lift is shown in the figure. The radii of the movable pistons P_1 and P_2 are of 2 m & 8 m respectively. If a body of mass 2 kg is placed on piston P_1 then the force on piston P_2 is
(Ignore atmospheric pressure, acceleration due to gravity = $10\ ms^{-2}$)

ఒక హైడ్రాలిక్ లిఫ్ట్ పటంలో చూపిన విధంగా కలదు. కదిలే ముషలకాలు P_1 మరియు P_2 ల వ్యాసార్ధాలు వరుసగా 2 m మరియు 8 m. ముషలకం P_1 పై 2 kg ద్రవ్యరాశి గల వస్తువును ఉంచినపుడు ముషలకం P_2 పై పని చేసే బలం.
(వాతావరణ పీడనాన్ని విస్మరించండి మరియు గురుత్వ త్వరణం = $10\ ms^{-2}$)



Options :
1. 320 N
2. 80 N
3. 1280 N
4. 20 N

(A) 320 N
(B) 80 N
(C) 1280 N
(D) 20 N

Answer: (A) 320 N · The council's preliminary key

Q98 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

Consider a circular ring of radius 1.4 cm lying on the surface of a liquid. If a vertical force of 0.022 N greater than the weight of the ring is required to lift this ring from the liquid surface, then the surface

tension of the liquid is

(A) $0.085\ \mathrm{Nm^{-1}}$
(B) $0.125\ \mathrm{Nm^{-1}}$
(C) $0.250\ \mathrm{Nm^{-1}}$
(D) $0.465\ \mathrm{Nm^{-1}}$

Answer: (B) $0.125\ \mathrm{Nm^{-1}}$ · The council's preliminary key

Q99 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

A large tank open to atmosphere at top and filled with water, develops a small hole in the side at a point 20 m below the water level. If the rate of flow of water from the hole is $3 \times 10^{-3}\ \mathrm{m^3/min}$ then the area of hole is (Acceleration due to gravity = $10\ \mathrm{m\,s^{-2}}$)

(A) $4\ \mathrm{mm^2}$
(B) $1.5\ \mathrm{mm^2}$
(C) $2.5\ \mathrm{mm^2}$
(D) $2\ \mathrm{mm^2}$

Answer: (C) $2.5\ \mathrm{mm^2}$ · The council's preliminary key

Q100 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

The movable cylindrical pistons P_1 and P_2 of a hydraulic lift are of radii 2 m and R respectively. A body of mass 32 kg on piston P_2 is supported by a body of mass 2 kg placed on piston P_1. The value of R is

(A) 8 m
(B) 32 m
(C) 2 m
(D) 16 m

Answer: (A) 8 m · The council's preliminary key

Q101 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

A circular film of a liquid has an area of $10\ \mathrm{cm^2}$. If the work done in making its radius two times the initial radius is 8×10^{-3} J, the surface tension of the liquid is $\left(1+\frac{1}{a}\right)\ \mathrm{Nm^{-1}}$. The value of α is

(A) 5
(B) 4
(C) 3
(D) 2

Answer: (C) 3 · The council's preliminary key

Q102 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

A cylindrical tank having large diameter is filled with water to a height H. A hole of cross-sectional area $5\ \mathrm{cm}^2$ in the tank allows water to drain out. If the water drains out at the rate of $2 \times 10^{-3}\ \mathrm{m}^3\mathrm{s}^{-1}$, then the value of H is
(acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(A) 80 cm
(B) 120 cm
(C) 60 cm
(D) 90 cm

Answer: (A) 80 cm · The council's preliminary key

Q103 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

A cylindrical metal box whose flat surface has an area of $0.01\ \mathrm{m}^2$ rests on liquid of 0.3 mm thickness. If upon applying a horizontal force of magnitude $\frac{1}{3}$ N, the box slides with a constant speed of $0.09\ \mathrm{m\,s}^{-1}$, the coefficient of viscosity of the liquid is nearly

(A) 2.5×10^{-2} Pa.s
(B) 1.1×10^{-1} Pa.s
(C) 1.1×10^{-2} Pa.s
(D) 2.5×10^{-1} Pa.s

Answer: (B) 1.1×10^{-1} Pa.s · The council's preliminary key

Q104 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

Consider two liquids A and B in a U - shaped tube in static equilibrium as shown in the figure. If the density of the liquid A is twice the density of liquid B, then the relation between h_A and h_B is
(see the figure above)

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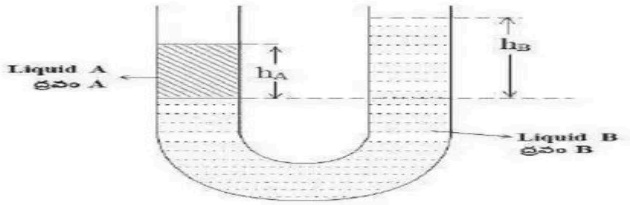
Consider two liquids A and B in a U – shaped tube in static equilibrium as shown in the figure. If the density of the liquid A is twice the density of liquid B, then the relation between h_A and h_B is

పటంలో చూపిన విధంగా ఒక U – ఆకారపు గొట్టంలో రెండు ద్రవాలు A మరియు B స్థితిక సమతా స్థితిలో కలవు. ద్రవం A యొక్క సాంద్రత ద్రవం B యొక్క సాంద్రతకు రెట్టింపు అయిన h_A మరియు h_B మధ్య గల సంబంధం



Options :

1. $h_A = \frac{h_B}{\sqrt{2}}$
2. $h_A = \frac{h_B}{2}$
3. $h_A = \frac{h_B}{3}$
4. $h_A = \frac{h_B}{\sqrt{3}}$

(A) $h_A = \frac{h_B}{\sqrt{2}}$

(B) $h_A = \frac{h_B}{2}$

(C) $h_A = \frac{h_B}{3}$

(D) $h_A = \frac{h_B}{\sqrt{3}}$

Answer: (B) $h_A = \frac{h_B}{2}$ · The council's preliminary key

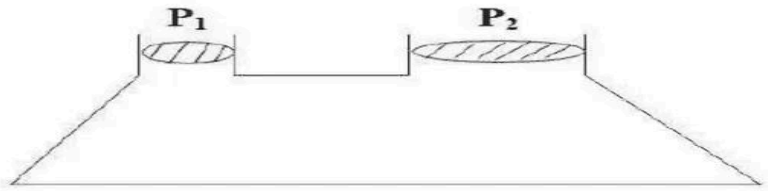
Q105 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

A hydraulic lift is shown in the figure. The radii of the movable pistons P_1 and P_2 are 2 m & 5 m respectively. If a block of mass x is placed on P_2 then the minimum mass that should be kept on P_1 to lift the block on P_2 is

(see the figure above)

A hydraulic lift is shown in the figure. The radii of the movable pistons P_1 and P_2 are 2 m & 5 m respectively. If a block of mass x is placed on P_2 then the minimum mass that should be kept on P_1 to lift the block on P_2 is

ఒక హైడ్రాలిక్ లిఫ్ట్ పటంలో చూపిన విధంగా ఉన్నది. కదిలే ముషలకాలు P_1 మరియు P_2 ల వ్యాసార్ధాలు వరుసగా 2 m మరియు 5 m. P_2 పై x ద్రవ్యరాశి గల దిమ్మెను ఉంచినారు. ఈ దిమ్మెను ఎత్తవలెనన్న P_1 పై ఉంచవలసిన కనిష్ట ద్రవ్యరాశి.



Options :

1. $0.4\,x$
2. $0.16\,x$
3. $0.8\,x$
4. $0.25\,x$

(A) $0.4\,x$
(B) $0.16\,x$
(C) $0.8\,x$
(D) $0.25\,x$

Answer: (B) $0.16\,x$ · The council's preliminary key

Q106 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

A block of wood of volume V floats in water with half of its volume submerged. The same block floats in an oil with 0.8 V volume submerged. If the density of water is $1000\ \mathrm{kg\,m^{-3}}$, then the density of the oil is

(A) $800\ \mathrm{kg\,m^{-3}}$
(B) $600\ \mathrm{kg\,m^{-3}}$
(C) $550\ \mathrm{kg\,m^{-3}}$
(D) $625\ \mathrm{kg\,m^{-3}}$

Answer: (D) $625\ \mathrm{kg\,m^{-3}}$ · The council's preliminary key

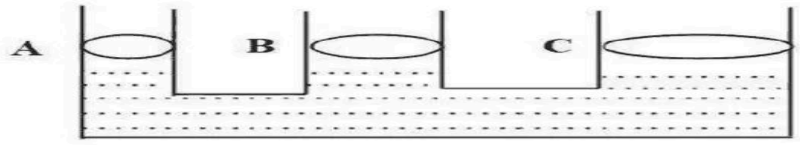
Q107 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

A hydraulic lift is shown in the figure. The movable pistons A, B and C are of radius 10 cm, 100 cm and 5 m respectively. If a body of mass 2 kg is placed on piston A, the maximum masses that can be lifted by piston B and C are respectively

(see the figure above)

A hydraulic lift is shown in the figure. The movable pistons A, B and C are of radius 10 cm, 100 cm and 5 m respectively. If a body of mass 2 kg is placed on piston A, the maximum masses that can be lifted by piston B and C are respectively

ఒక హైడ్రాలిక్ లిఫ్ట్ పటంలో చూపిన విధంగా ఉన్నది. కదిలే ముషలకాలు A, B మరియు C ల వ్యాసార్ధాలు వరుసగా 10 cm, 100 cm మరియు 5 m ముషలకం A పై 2 kg ద్రవ్యరాశి గల ఒక వస్తువును ఉంచిన, ముషలకాలు A మరియు B లు ఎత్త గల గరిష్ట ద్రవ్యరాశులు వరుసగా



Options :

1. 200 kg and 500 kg
   200 kg మరియు 500 kg
2. 20 kg and 50 kg
   20 kg మరియు 50 kg
3. 200 kg and 5000 kg
   200 kg మరియు 5000 kg
4. 2000 kg and 5000 kg
   2000 kg మరియు 5000 kg

(A) 200 kg and 500 kg
(B) 20 kg and 50 kg
(C) 200 kg and 5000 kg
(D) 2000 kg and 5000 kg

Answer: (C) 200 kg and 5000 kg · The council's preliminary key

Q108 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

Energy needed in breaking a liquid drop of radius R, into n smaller drops each of radius r, is

[T - Surface tension of the liquid]

(A) $(4\pi r^2 n - 4\pi R^2)T$
(B) $(\frac{4}{3}\pi r^3 n - \frac{4}{3}\pi R^3)T$
(C) $(4\pi R^2 - 4\pi r^2)nT$
(D) $(4\pi R^2 - n4\pi r^2)/T$

Answer: (A) $(4\pi r^2 n - 4\pi R^2)T$ · The council's preliminary key

Q109 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

An object of mass 10 kg is released from rest in a liquid. If the object moves a distance of 2 m while sinking in time duration of 1s, then the mass of the liquid displaced by the submerged object is

(Acceleration due to gravity = $10\ \mathrm{m\,s^{-2}}$)

(A) $5\ \text{kg}$
(B) $6\ \text{kg}$
(C) $3\ \text{kg}$
(D) $4\ \text{kg}$

Answer: (B) $6\ \text{kg}$ · The council's preliminary key

Q110 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

Statement (A) : When the temperature increases the viscosity of gases increases and the viscosity of liquids decreases.
Statement (B) : Water does not wet an oily glass because cohesive force of oil is less than that of water.
Statement (C) : A liquid will wet a surface of a solid if the angle of contact is greater than 90°.

(A) A, B, and C are false
(B) A and B false, C is true
(C) B and C false, A is true
(D) A and C false, B is true

Answer: (C) B and C false, A is true · The council's preliminary key

Q111 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

In a hydraulic lift, compressed air exerts a force F on a small piston of radius 3 cm. Due to this pressure the second piston of radius 5 cm lifts a load of 1875 kg. The value of F is
(Acceleration due to gravity = $10\ \text{ms}^{-2}$)

(A) 1250 N
(B) 125 N
(C) 6750 N
(D) 675 N

Answer: (C) 6750 N · The council's preliminary key

Q112 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

In a U-shaped tube the radius of one limb is 2 mm and that of other limb is 4 mm. A liquid of surface tension $0.03\ \text{Nm}^{-1}$, density $1500\ \text{kgm}^{-3}$ and angle of contact zero is taken in the tube. The difference in the heights of the levels of the liquid in the two limbs is
(Acceleration due to gravity = $10\ \text{ms}^{-2}$)

(A) 3 mm
(B) 2.5 mm
(C) 1 mm
(D) 1.5 mm

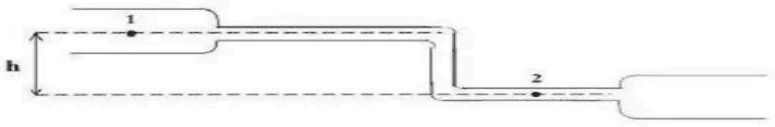
Answer: (C) 1 mm · The council's preliminary key

Q113 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

A steady flow of a liquid of density ρ is shown in figure. At point 1, the area of cross-section is 2A and the speed of flow of liquid is $\sqrt{2}\ \mathrm{ms}^{-1}$. At point 2, the area of cross-section is A. Between the points 1 and 2, the pressure difference is $100\ \mathrm{Nm}^{-2}$ and the height difference is 10 cm. The value of ρ is (Acceleration due to gravity = $10\ \mathrm{ms}^{-2}$)

(see the figure above)

A steady flow of a liquid of density ρ is shown in figure. At point 1, the area of cross-section is 2A and the speed of flow of liquid is $\sqrt{2}$ ms^{-1}. At point 2, the area of cross-section is A. Between the points 1 and 2, the pressure difference is 100 Nm^{-2} and the height difference is 10 cm. The value of ρ is
(Acceleration due to gravity = 10 ms^{-2})
పటంలో చూపిన విధంగా సాంద్రత ρ గల ఒక ద్రవం నిలకడగా ప్రవహించు చున్నది. 1 వ బిందువు వద్ద, మధ్యచ్ఛేద మధ్యచ్ఛేద వైశాల్యం 2 A మరియు ద్రవం యొక్క ప్రవాహపు వడి $\sqrt{2}$ ms^{-1}. 2 వ బిందువు వద్ద మధ్యచ్ఛేద వైశాల్యం A. 1 వ మరియు 2 వ బిందువుల మధ్య పీడన తేడా 100 Nm^{-2} మరియు ఎత్తుల తేడా 10 cm అయిన ρ విలువ
(గురుత్వ త్వరణం = 10 ms^{-2})



Options :
1. 25 kg m^{-3}
2. 30 kg m^{-3}
3. 50 kg m^{-3}
4. 70 kg m^{-3}

(A) $25\ \mathrm{kg\,m^{-3}}$
(B) $30\ \mathrm{kg\,m^{-3}}$
(C) $50\ \mathrm{kg\,m^{-3}}$
(D) $70\ \mathrm{kg\,m^{-3}}$

Answer: (C) $50\ \mathrm{kg\,m^{-3}}$ · The council's preliminary key

Q114 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

Viscosity is _____

(A) Adhesive force
(B) Cohesive force
(C) Long range force
(D) Pressure

Answer: (B) Cohesive force · The council's preliminary key

Q115 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

Increase in pressure at one point of an enclosed liquid in equilibrium at rest is transmitted equally to all other points. This is as per _____

(A) Impulse
(B) Conservation of momentum
(C) Pascal's law
(D) Bernoulli's theorem

Answer: (C) Pascal's law · The council's preliminary key

Q116 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

The flow rate of water from a tap of diameter $1.25\ \text{cm}$ is 3 litres per minute. If coefficient of viscosity of water is $10^{-3}\ \text{Pa.s}$, the nature of flow is _____

(A) Unsteady
(B) Turbulent
(C) Streamlined
(D) Laminar

Answer: (B) Turbulent · The council's preliminary key

Q117 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

A cylindrical tank is filled with water to a level of $3\ \text{m}$. A hole is opened at a height of $52.5\ \text{cm}$ from the bottom. The ratio of the area of the hole to that of the cross-sectional area of the tank is 0.1. The square of the speed with which water will be coming out from the orifice is _____ ($g = 10\ \text{m.s}^{-2}$)

(A) $50\ \text{m}^2.\text{s}^{-2}$
(B) $40\ \text{m}^2.\text{s}^{-2}$
(C) $51.5\ \text{m}^2.\text{s}^{-2}$
(D) $50.5\ \text{m}^2.\text{s}^{-2}$

Answer: (A) $50\ \text{m}^2.\text{s}^{-2}$ · The council's preliminary key

Q118 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

Bernoulli's theorem is a consequence of

(A) Conservation of mass
(B) Conservation of energy
(C) Conservation of linear momentum
(D) Conservation of angular momentum

Answer: (B) Conservation of energy · The council's preliminary key

Q119 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

Hairs of shaving brush cling together when it is removed from water due to _____

(A) Force of attraction between hairs
(B) Surface tension
(C) Viscosity of water
(D) Characteristic property of hairs

Answer: (B) Surface tension · The council's preliminary key

Q120 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

In a vehicle lifter, the enclosed gas exerts a force 'F' on a small piston of $8\ \text{cm}$ diameter. The pressure is transmitted to a second piston of diameter $24\ \text{cm}$. If the mass of the vehicle to be lifted is $1400\ \text{kg}$, then F must at least be _____ $(g = 10\ \text{m.s}^{-2})$

(A) $1600\ N$
(B) $1200\ N$
(C) $1800\ N$
(D) $700\ N$

Answer: (A) $1600\ N$ · The council's preliminary key

Q121 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

A solid float such that its $(1/3)^{rd}$ part is above water surface. Then, the density of solid is

(A) $744\ kg.m^{-3}$
(B) $\frac{1000}{3}\ kg.m^{-3}$
(C) $\frac{2000}{3}\ kg.m^{-3}$
(D) $910\ kg.m^{-3}$

Answer: (C) $\frac{2000}{3}\ kg.m^{-3}$ · The council's preliminary key

Q122 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

A wooden block floating in a bucket of water has $(4/5)^{th}$ of its volume submerged. When certain amount of an oil is poured in to the bucket, it is found that the block is just under the oil surface, with half of its volume under water and the other half in oil. The density of oil used, relative to that of water is ____

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(A) $\frac{1}{4}$
(B) $\frac{3}{5}$
(C) $\frac{2}{5}$
(D) $\frac{5}{3}$

Answer: (B) $\frac{3}{5}$ · The council's preliminary key

Q123 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

Which of the following works on Pascal's law?

(A) Aneroid barometer
(B) Hydraulic lift
(C) Sprayer
(D) Venturimeter

Answer: (B) Hydraulic lift · The council's preliminary key

Q124 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

Bernoulli's theorem is based on the conservation of

(A) Mass
(B) Momentum
(C) Energy
(D) all of the above

Answer: (C) Energy · The council's preliminary key

Q125 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

One thousand small water drops of equal radii combine to form a big drop. The ratio of final surface energy to total initial surface energy is _____

(A) $1000 : 1$
(B) $1 : 1000$
(C) $10 : 1$
(D) $1 : 10$

Answer: (D) $1 : 10$ · The council's preliminary key

Q126 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Assertion (A): At critical temperature, surface tension of liquids become zero.
Reason (R): At critical temperature, intermolecular forces for liquids and gases become equal. Thus, liquids can expand without restriction.

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(A) Both A and R are true and R is a correct explanation for A
(B) Both A and R are true but R is not a correct explanation for A
(C) A is true, R is false
(D) A is false, R is false

Answer: (A) Both A and R are true and R is a correct explanation for A · The council's preliminary key

Q127 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

A glass flask weighing $390\ g$, having internal volume $500\ cc$ just floats when half of it is filled with water. Specific gravity of the glass is _____.

(A) 2.8
(B) 1.8
(C) 1.0
(D) 2.5

Answer: (A) 2.8 · The council's preliminary key

Q128 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

Water does not wet an oily glass because _____.

(A) Cohesive force of oil is greater than adhesive force between oil and glass
(B) Cohesive force of oil is greater than cohesive force of water
(C) Oil repels water
(D) Cohesive force of water is greater than adhesive force between water and oil molecules

Answer: (D) Cohesive force of water is greater than adhesive force between water and oil molecules · The council's preliminary key

Q129 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

What causes the free surface of a liquid to have minimum area?

(A) Viscosity
(B) Surface tension
(C) Diffusion
(D) Pressure

Answer: (B) Surface tension · The council's preliminary key

Q130 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

Assertion (A): The upper surface of the wing of an aeroplane is made convex and the lower surface is made concave.
Reason (R): The air currents at the top have smaller velocity and thus less pressure at the bottom than at the top.

(A) Both A and R are true and R is a correct explanation for A
(B) Both A and R are true but R is not a correct explanation for A
(C) A is true, R is false
(D) A is false, R is false

Answer: (C) A is true, R is false · The council's preliminary key

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Q131 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

The lower end of a capillary tube is dipped into water and it is observed that the water in capillary tube rises by $7.5\ cm$. Find the radius of the capillary tube used, if surface tension of water is $7.5 \times 10^{-2}\ \mathrm{N.m^{-1}}$? Angle of contact between water and glass is 0° and acceleration due to gravity is $10\ \mathrm{m.s^{-2}}$

(A) $0.2\ cm$
(B) $0.1\ cm$
(C) $0.4\ mm$
(D) $0.2\ mm$

Answer: (D) $0.2\ mm$ · The council's preliminary key

Q132 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

An ideal liquid flows through a horizontal tube of variable diameter. The pressure is lowest where the

(A) velocity is highest
(B) velocity is lowest
(C) diameter is largest
(D) velocity is intermediate

Answer: (A) velocity is highest · The council's preliminary key

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Q133 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

Identify the incorrect statement regarding Reynold's number (R_e):

(A) for $R_e < 1000$, flow is laminar
(B) for $1000 < R_e < 2000$, flow is steady
(C) for $R_e > 2000$, flow is turbulent
(D) R_e is a dimensionless number

Answer: (B) for $1000 < R_e < 2000$, flow is steady · The council's preliminary key

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Q134 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The work done in breaking a drop of liquid of radius R (Surface tension T) into 64 equal drops is:

(A) $4\pi R^2T$
(B) $\frac{\pi R^2T}{64}$
(C) $\frac{12\pi T}{R^2}$
(D) $12\pi R^2T$

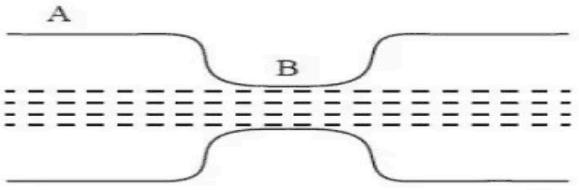
Answer: (D) $12\pi R^2T$ · The council's preliminary key

Q135 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

In a horizontal tube the water pressure changes by 1500 Nm^{-2} between A and B as shown in figure below. The cross sectional areas at A and B of the tube are 40 cm^2 and 20 cm^2 respectively. Find the rate of flow of water through the tube

(see the figure above)

In a horizontal tube the water pressure changes by 1500 Nm^{-2} between A and B as shown in figure below. The cross sectional areas at A and B of the tube are 40 cm^2 and 20 cm^2 respectively. Find the rate of flow of water through the tube



Options :

1. $1000\ cm^3s^{-1}$
2. $2000\ cm^3s^{-1}$
3. $4000\ cm^3s^{-1}$
4. $6000\ cm^3s^{-1}$

(A) $1000\ cm^3s^{-1}$
(B) $2000\ cm^3s^{-1}$
(C) $4000\ cm^3s^{-1}$
(D) $6000\ cm^3s^{-1}$

Answer: (C) $4000\ cm^3s^{-1}$ · The council's preliminary key

Q136 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

A shower head has 25 circular openings, each with radius $1\ \text{mm}$. The shower head is connected to a pipe with radius $2\ \text{cm}$. If the speed of the water in the pipe is $25\ \text{cm/sec}$, what is its speed as it exits the shower head openings?

(A) $1\ \mathrm{m/s}$
(B) $2\ \mathrm{m/s}$
(C) $4\ \mathrm{m/s}$
(D) $5\ \mathrm{m/s}$

Answer: (C) $4\ \mathrm{m/s}$ · The council's preliminary key

Q137 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

A block of material with density $3\ \mathrm{gm/cc}$ is placed on a fluid of density $7\ \mathrm{gm/cc}$. The fraction of volume of the piece of material outside the fluid is

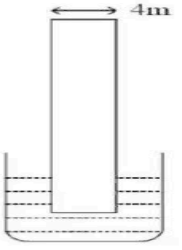
(A) 0.43
(B) 0.57
(C) 0.63
(D) 0.15

Answer: (B) 0.57 · The council's preliminary key

Q138 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

A metal sheet 4 cm on a side and of negligible thickness is attached to a balance and inserted into container fluid. The balance to which metal sheet is attached read 0.50 N and the contact angle is found to be zero. A small amount of oil is then spread over the metal sheet. The contact angle now becomes 180° and the balance now reads 0.49 N. The surface tension of the fluid is
(see the figure above)

A metal sheet 4 cm on a side and of negligible thickness is attached to a balance and inserted into container fluid. The balance to which metal sheet is attached read 0.50 N and the contact angle is found to be zero. A small amount of oil is then spread over the metal sheet. The contact angle now becomes 180° and the balance now reads 0.49 N. The surface tension of the fluid is



Options :

1. $6.25 \times 10^{-2}\ \mathrm{N/m}$
2. $1.25 \times 10^{-1}\ \mathrm{N/m}$
3. $4.25 \times 10^{-2}\ \mathrm{N/m}$
4. $0.1\ \mathrm{N/m}$

(A) 6.25×10^{-2} N/m
(B) 1.25×10^{-1} N/m
(C) 4.25×10^{-2} N/m
(D) 0.1 N/m

Answer: (A) 6.25×10^{-2} **N/m** · The council's preliminary key

Q139 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

Match the columns I and II
A) Stoke's law I) Pressure and energy
B) Turbulence II) Hydraulic lift
C) Bernoulli's Principle III) Viscous drag
D) Pascal's law IV) Reynold's number
The correct match is

(A) A-III, B-IV, C-I, D-II
(B) A-I, B-II, C-III, D-IV
(C) A-II, B-I, C-IV, D-III
(D) A-III, B-IV, C-II, D-I

Answer: (A) A-III, B-IV, C-I, D-II · The council's preliminary key

Q140 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

Liquid A rises to a height of 10 cm in a capillary tube and liquid B falls to a depth of 2 cm in the same tube. The density of A and B are 1 g/cm^3 and 10 g/cm^3 respectively. The contact angle of A and B with the tube is 0° and 135° respectively. If the surface tension of A and B are S_A and S_B then the ratio $\frac{S_B}{S_A}$ is

(A) $\sqrt{2}$
(B) $2\sqrt{2}$
(C) $\frac{1}{\sqrt{2}}$
(D) $\frac{1}{2\sqrt{2}}$

Answer: (B) $2\sqrt{2}$ · The council's preliminary key

Q141 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

A wooden block of density 0.5 g/cc is tied to a string. The other end of the string is fixed to the bottom of a tank. The tank is filled with a liquid of density 1 g/cc. If the tension of the string is 20 N, then the mass of the block is
(Take g = 10 m/s^2)

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(A) 1 kg
(B) 2 kg
(C) 3 kg
(D) 0.5 kg

Answer: (B) 2 kg · The council's preliminary key

Q142 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

A U-shaped tube is partially filled with an incompressible liquid of density $1.2\ \mathrm{g/cm^3}$. Oil which does not mix with the liquid is next poured into left side of the U-tube until the liquid rises by 15 cm on the right side of U-tube. If the density of the oil is $0.9\ \mathrm{g/cm^3}$, the oil level will stand higher than the liquid level of right side of U-tube by

(A) 15 cm
(B) 10 cm
(C) 12 cm
(D) 9 cm

Answer: (B) 10 cm · The council's preliminary key

Q143 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

What is the terminal velocity of air bubble of 1.0 mm in diameter rising in liquid of viscosity $0.85\ \mathrm{Ns/m^2}$ and density $900\ \mathrm{kgm^{-3}}$?
[air density $1.293\ \mathrm{kg/m^3}$, $g = 9\ \mathrm{m/s^2}$]

(A) $V_T = 0.25\ \mathrm{mm/s}$
(B) $V_T = 0.5\ \mathrm{mm/s}$
(C) $V_T = 1.5\ \mathrm{mm/s}$
(D) $V_T = 2.5\ \mathrm{mm/s}$

Answer: (B) $V_T = 0.5\ \mathrm{mm/s}$ · The council's preliminary key

Q144 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

If there were no gravity, which of the following will not be there for a fluid?

(A) Viscosity
(B) Surface tension
(C) Pressure
(D) Archimedes' upward thrust

Answer: (D) Archimedes' upward thrust · The council's preliminary key

Q145 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Two capillary tubes of radii R and $2R$ are dipped in water. The water rises to heights h_1 and h_2 respectively in the two tubes. If m_1 and m_2 be the masses of water ascended in the tubes then $m_1 : m_2 =$

(A) $1 : 2$
(B) $1 : 4$
(C) $1 : \sqrt{2}$
(D) $1 : 8$

Answer: (A) $1 : 2$ · The council's preliminary key

Q146 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

Two thin circular discs A and B of radii $2\ \text{cm}$ and $4\ \text{cm}$ are in a liquid at the same depth. T_A is the thrust on A and T_B thrust on B. Then $T_A : T_B =$

(A) $2 : 1$
(B) $1 : 2$
(C) $4 : 1$
(D) $1 : 4$

Answer: (D) $1 : 4$ · The council's preliminary key

Q147 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

A pressure of $1\ \text{mm}$ of mercury is equivalent to _____

(A) $1\ \text{mPa}$
(B) $13.33\ \text{Pa}$
(C) $133.3\ \text{Pa}$
(D) $1.08\ \text{Pa}$

Answer: (C) $133.3\ \text{Pa}$ · The council's preliminary key

Q148 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

Find the apparent weight of a metallic block of density $5\ \text{g.cm}^{-3}$ and dimensions $5\ \text{cm} \times 5\ \text{cm} \times 5\ \text{cm}$, in water.

(A) $5 \times 5 \times 5 \times 5\ \text{gf}$
(B) $4 \times 4 \times 4 \times 4\ \text{gf}$
(C) $5 \times 4 \times 4 \times 4\ \text{gf}$
(D) $4 \times 5 \times 5 \times 5\ \text{gf}$

Answer: (D) $4 \times 5 \times 5 \times 5\ \text{gf}$ · The council's preliminary key

Q149 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

Bottom of a cylindrical vessel has a hole of area 'A'. If water is filled up to a height 'h', it flows out in 't' seconds. If water is filled to a height '4h', it will flow out in time _____

(A) t
(B) $4t$
(C) $2t$
(D) $\frac{t}{4}$

Answer: (C) $2t$ · The council's preliminary key

Q150 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

Water is flowing through a horizontal pipe in streamline flow. At the narrowest part of the pipe _____

(A) Velocity is max and pressure is min
(B) Pressure is max and velocity is min
(C) Both pressure and velocity are max
(D) Both the velocity and pressure are min

Answer: (A) Velocity is max and pressure is min · The council's preliminary key

Q151 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

A $0.5\ \text{kg}$ block of brass (density $= 8 \times 10^3\ \text{kg.m}^{-3}$) is suspended from a string. What is the tension in the string if the block is completely immersed in water? ($g = 10\ \text{m.s}^{-2}$)

(A) $5\ \text{N}$
(B) $\frac{0.5}{8 \times 10^3}\ \text{N}$
(C) $\frac{5}{8}\ \text{N}$
(D) $\frac{35}{8}\ \text{N}$

Answer: (D) $\frac{35}{8}\ \text{N}$ · The council's preliminary key

Q152 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

Water flows through a hose pipe whose internal diameter is $4\ \text{cm}$ at a speed of $1\ \text{m.s}^{-1}$. If water has to emerge at a speed of $4\ \text{m.s}^{-1}$, the diameter of the nozzle should be

(A) $1\ \text{cm}$
(B) $2\ \text{cm}$
(C) $4\ \text{cm}$
(D) $0.5\ \text{cm}$

Answer: (B) $2\ \text{cm}$ · The council's preliminary key

Q153 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The terminal velocity 'v' of a spherical ball of lead of radius 'R' falling through a viscous liquid varies with 'R' such that

(A) $\frac{V}{R}$ = constant
(B) VR = constant
(C) V = constant
(D) $\frac{V}{R^2}$ = constant

Answer: (D) $\frac{V}{R^2}$ = constant · The council's preliminary key

Q154 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

The radius of the bore of a capillary tube is 'r' and the angle of contact of the liquid is 'θ'. When the tube is dipped in the liquid, the radius of curvature of the meniscus of liquid rising in the tube is

(A) $r \sin\theta$
(B) $\frac{r}{\sin\theta}$
(C) $r \cos\theta$
(D) $\frac{r}{\cos\theta}$

Answer: (D) $\frac{r}{\cos\theta}$ · The council's preliminary key

Q155 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

The coefficient of viscosity of an ideal fluid is _____

(A) equal to 1
(B) zero
(C) infinite
(D) greater than 1

Answer: (B) zero · The council's preliminary key

Q156 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

Two water pipes of diameters $2\ cm$ and $4\ cm$ are separately connected to a main supply line. The velocity of flow of water in the pipe of $2\ cm$ diameter is _____

(A) 4 times that in the other pipe
(B) $\frac{1}{4}$ times that in the other pipe
(C) 2 times that in the other pipe
(D) $\frac{1}{2}$ times that in the other pipe

Answer: (A) 4 times that in the other pipe · The council's preliminary key

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Q157 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

A pure number which determines the type of flow of a liquid through a pipe is known as

(A) Reynold's number
(B) Bernoulli's Number
(C) Pascal's number
(D) Torricelli's number

Answer: (A) Reynold's number · The council's preliminary key

Q158 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

If a vessel containing a fluid of density ρ upto height h is accelerated vertically downwards with acceleration a_0. Then the pressure by fluid at the bottom of vessel is given by the equation _____ (P_0 denotes the atmospheric pressure and 'g' denotes the acceleration due to gravity)

(A) $P = P_0 + \rho g h + \rho h a_0$
(B) $P = P_0 + \rho g h$
(C) $P = P_0 + \rho h(g - a_0)$
(D) $P = P_0 - \rho g h$

Answer: (C) $P = P_0 + \rho h(g - a_0)$ · The council's preliminary key

Q159 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

A fully loaded Boeing air craft has a mass of 3.3×10^5 kg. Its total wing area is 500 m^2. It is in level flight with a speed of 960 kmph. Estimate the pressure difference between the lower and upper surfaces of the wings.

(A) $4.5 \times 10^3\ \mathrm{N.m^{-2}}$
(B) $5.5 \times 10^3\ \mathrm{N.m^{-2}}$
(C) $6.5 \times 10^3\ \mathrm{N.m^{-2}}$
(D) $7.5 \times 10^3\ \mathrm{N.m^{-2}}$

Answer: (C) $6.5 \times 10^3\ \mathrm{N.m^{-2}}$ · The council's preliminary key

Q160 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

A weightless bag is filled with 5 kg of water and is weighed in water using a spring balance. The reading of spring balance is _____

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(A) 5 kg
(B) 2.5 kg
(C) 1.25 kg
(D) 0 kg

Answer: (D) 0 kg · The council's preliminary key

Q161 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

The surface tension of 70 dynes /cm is equal to

(A) 70 N/m
(B) 70×10^{-3} N/m
(C) 7×10^{2} N/m
(D) 7×10^{3} N/m

Answer: (B) 70×10^{-3} N/m · Official TGCHE final key

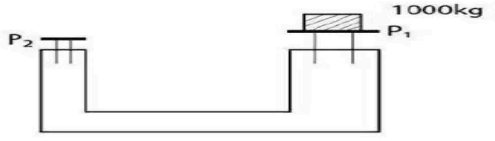
Q162 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

A hydraulic lift as shown in the figure is used to lift a mass of 1000 Kg which is placed on a piston (P_1) of area $1\,\mathrm{m}^2$. If the cross-section area of the piston (P_2) at the other end is $0.01\,\mathrm{m}^2$, then, how much mass needs to be put on it to lift the 1000 kg?
(see the figure above)

Question Number : 96 Question Id : 7196501376 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A hydraulic lift as shown in the figure is used to lift a mass of 1000 Kg which is placed on a piston (P_1) of area $1m^2$. If the cross-section area of the piston (P_2) at the other end is $0.01m^2$, then, how much mass needs to be put on it to lift the 1000 kg?

క్రింది పటంలో చూపిన విధంగా $1m^2$ వైశాల్యం కలిగిన ఒక ముపులకం (P_1) పై ఉంచబడిన 1000 Kg ద్రవ్యరాశిని పైకి లాగుటకు ఒక హైడ్రాలిక్ లిఫ్ట్ ఉపయోగించారు. మరొక చివర ఉన్న (P_2) ముపులకం యొక్క మధ్యచ్ఛేద వైశాల్యం $0.01m^2$ అయితే, దానిపై ఎంత ద్రవ్యరాశిని ఉంచితే, 1000 Kg బరువును ఎత్తవచ్చు?



Options :
1. 1 Kg
2. 10 Kg
3. 50 Kg
4. 100 Kg

(A) 1 Kg
(B) 10 Kg
(C) 50 Kg
(D) 100 Kg

Answer: (B) 10 Kg · Official TGCHE final key

Q163 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

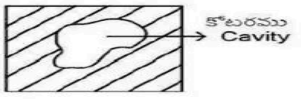
A block of iron contains a hollow cavity as shown below. The block weighs 6000 N in air and 4000 N in water. If the density of iron and water are 6 g/cm^3 and 1 g/cm^3, then the volume of the cavity is (Assume g = 10 m/s^2)
(see the figure above)

Question Number : 96 Question Id : 719650896 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A block of iron contains a hollow cavity as shown below. The block weighs 6000 N in air and 4000 N in water. If the density of iron and water are 6 g/cm^3 and 1 g/cm^3, then the volume of the cavity is
(Assume g = 10 m/s^2)

పటంలో చూపిన విధంగా ఒక ఇనుప దిమ్మెలో బోలు కోటరము కలదు. దిమ్మె గాలిలో 6000 N మరియు నీటిలో 4000 N బరువు తూగుతుంది. ఇనుము సాంద్రత 6 g/cm^3 మరియు నీటి సాంద్రత 1 g/cm^3 అయితే కోటరము యొక్క ఘన పరిమాణం
(g = 10 m/s^2 అనుకోండి)



Options :

1. 0.05 m^3
2. 0.5 m^3
3. 0.25 m^3
4. 0.1 m^3

(A) 0.05 m^3
(B) 0.5 m^3
(C) 0.25 m^3
(D) 0.1 m^3

Answer: (D) 0.1 m^3 · Official TGCHE final key

Q164 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

The change in surface energy when a big spherical drop of radius R is split into n spherical droplets of radius r is
(T = surface tension)

(A) $4R^2\left(n^{2/3}-1\right)T$
(B) $4R^2\pi\left(n^{1/3}-1\right)T$
(C) $4\pi R^2\left(n^{-1/3}-1\right)T$
(D) $4\pi R^2\left(n^{-2/3}-1\right)T$

Answer: (B) $4R^2\pi\left(n^{1/3}-1\right)T$ · Official TGCHE final key

Q165 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

A meniscus (sic) drop of radius 1 cm is sprayed into 10^6 droplets of equal size. Calculate the energy expended if surface tension of mercury is 435×10^{-3} N/m

(A) 54.1×10^{-3} J
(B) 64.1×10^{-3} J
(C) 74.1×10^{-3} J
(D) 84.1×10^{-3} J

Answer: (A) 54.1×10^{-3} J · Official TGCHE final key

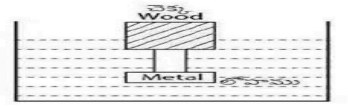
Q166 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

A cubical block of wood having mass of 160 gm has a metal piece fastened underneath as shown in the figure. Find the maximum mass of the metal piece which will allow the block to float in water. Specific gravity of wood is 0.8 and that metal is 10 and density of water = 1gm/cc.
(see the figure above)

Question Number : 96 Question Id : 7196505776 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A cubical block of wood having mass of 160 gm has a metal piece fastened underneath as shown in the figure. Find the maximum mass of the metal piece which will allow the block to float in water. Specific gravity of wood is 0.8 and that metal is 10 and density of water = 1gm/cc.

160 gm ద్రవ్యరాశి గల ఒక ఘనాకార చెక్క దిమ్మెకు పటంలో చూపినట్లు లోహపు ముక్క దాని క్రింద కట్టబడింది. ఆ చెక్క దిమ్మె నీటిపై తేలునట్లు ఉండడానికి, కావలసిన లోహపు ముక్క యొక్క గరిష్ట ద్రవ్యరాశి కనుక్కోండి. చెక్క వాస్తవ గురుత్వము 0.8, లోహపు వాస్తవ గురుత్వము 10 మరియు నీటి సాంద్రత = 1gm/cc.



Options :
1. 55.5 gm
2. 44.4 gm
3. 33.3 gm
4. 66.6 gm

(A) 55.5 gm
(B) 44.4 gm
(C) 33.3 gm
(D) 66.6 gm

Answer: (B) 44.4 gm · Official TGCHE final key

Q167 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The speed of the water in a river is 'V' near the surface. If the coefficient of viscosity of water is 'η' and the depth of the river is 'H', then the shearing stress between the horizontal layers of water is

(A) $\eta\frac{H}{V}$
(B) $\eta\frac{V}{H}$
(C) $\frac{V}{\eta H}$
(D) $\eta V H$

Answer: (B) $\eta\frac{V}{H}$ · Official TGCHE final key

Q168 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

Consider a steady flow of oil in a pipeline. The cross-sectional radius of the pipeline decreases gradually as $r = r_0 e^{-\alpha x}$ where $\alpha = \frac{1}{3}m^{-1}$ and x is the distance from the pipeline inlet. If R_1 is the Reynold's number for a certain pipeline cross-section at a distance x_1 meter from the inlet and R_2 is for distance $(x_1 + 3)$ metre, then the ratio $\frac{R_1}{R_2}$ is

(A) $\frac{1}{e}$
(B) e
(C) $\frac{1}{e^3}$
(D) $\frac{1}{e^6}$

Answer: (A) $\frac{1}{e}$ · Official TGCHE final key

Q169 TS EAMCET 2019 · 6 May · Shift 1 MCQ

Consider a water droplet of diameter 0.2 mm where the outside pressure is 1.5 N/cm^2 at 25 °C. The pressure inside the droplet, when the surface tension at 25 °C is 0.08 N/m, is

(A) 0.32 N/cm^2
(B) 1.18 N/cm^2
(C) 1.82 N/cm^2
(D) 1.66 N/cm^2

Answer: (D) 1.66 N/cm^2 · Official TGCHE final key

Q170 TS EAMCET 2019 · 6 May · Shift 1 MCQ

A hydrophilic surface is characterized by contact angle at the water-solid interface. The value of contact angle should be

(A) $> 90^\circ$
(B) $< 90^\circ$
(C) $= 90^\circ$
(D) $= 180^\circ$

Answer: (B) $< 90^\circ$ · Official TGCHE final key

Q171 TS EAMCET 2019 · 6 May · Shift 1 MCQ

Pressure at the Earth's surface is $p_0 = 10^5$ Pa and the density of air at Earth's surface is $\rho_0 = 1.4$ kg/m^3. At height 'h' from the surface of Earth the density of air is reduced to $\frac{\rho_0}{2}$, the value of 'h' is (Assume that the temperature is constant through out the earth's atmosphere and let $\ln(2) = 0.7$

(A) 10,500 m
(B) 5,000 m
(C) 1,500 m
(D) 2,800 m

Answer: (B) 5,000 m · Official TGCHE final key

Q172 TS EAMCET 2019 · 4 May · Shift 1 MCQ

A water tank kept on the ground has an orifice of 2 mm diameter on the vertical side. What is the minimum height of the water above the orifice for which the output flow of water is found to be turbulent? (Assume $g = 10\ \mathrm{m/s^2}$, $\rho_{\text{water}} = 10^3\ \mathrm{kg/m^3}$, viscosity = 1 centi poise)

(A) $3\ \mathrm{cm}$
(B) $4\ \mathrm{cm}$
(C) $6\ \mathrm{cm}$
(D) $2\ \mathrm{cm}$

Answer: (C) $6\ \mathrm{cm}$ · Official TGCHE final key

Q173 TS EAMCET 2019 · 4 May · Shift 1 MCQ

A copper ball of radius 3.0 mm falls in an oil tank of viscosity 1 kg/m-s. Then, the terminal velocity of the copper ball will be (Density of oil = $1.5 \times 10^3\ \mathrm{kg/m^3}$, Density of Copper = $9 \times 10^3\ \mathrm{kg/m^3}$ and $g = 10\ \mathrm{m/s^2}$)

(A) $18 \times 10^{-2}\ \mathrm{m/s}$
(B) $25 \times 10^{-2}\ \mathrm{m/s}$
(C) $15 \times 10^{-2}\ \mathrm{m/s}$
(D) $20 \times 10^{-2}\ \mathrm{m/s}$

Answer: (C) $15 \times 10^{-2}\ \mathrm{m/s}$ · Official TGCHE final key

Q174 TS EAMCET 2019 · 4 May · Shift 2 MCQ

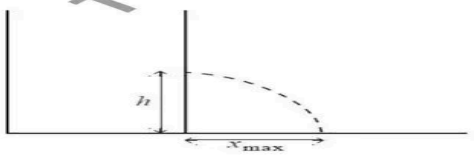
A cylindrical vessel of height 50 cm is filled with water and rests on a table. A small hole is made at the height 'h' from the bottom of the vessel so that the water jet could hit the table surface at a maximum distance x_{max} from the vessel as shown in the figure. The value of x_{max} will be (Neglect the viscosity of water)

(see the figure above)

Question Number : 95 Question Id : 7512364895 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cylindrical vessel of height 50 cm is filled with water and rests on a table. A small hole is made at the height 'h' from the bottom of the vessel so that the water jet could hit the table surface at a maximum distance x_{max} from the vessel as shown in the figure. The value of x_{max} will be (Neglect the viscosity of water)

ఎత్తు 50 cm గల స్థూపాకార పాత్రను నీటితో నింపి బల్లపైన నిశ్చలంగా ఉంచినారు. పటంలో చూపినట్లుగా, నీటిధార బల్లతలంపై గరిష్ఠదూరం x_{max} వద్ద పడేటట్లు పాత్ర అడుగుభాగం నుంచి 'h' ఎత్తులో ఒక చిన్న రంధ్రాన్ని చేసారు. అయితే x_{max} విలువ. (సరైన సమాధానాన్ని ఎంపిక చేయండి)



Options :
1. 15 cm
2. 35 cm
3. 50 cm
4. 40 cm

(A) 15 cm
(B) 35 cm
(C) 50 cm
(D) 40 cm

Answer: (C) 50 cm · Official TGCHE final key

Q175 TS EAMCET 2019 · 4 May · Shift 2 MCQ

A cubical block of wood, of length 10 cm, floats at the interface between oil of density 800 kg/m^3 and water. The lower surface of the block is 1.5 cm below the interface. If the depth of water is 10 cm below the interface and oil is upto 10 cm above the interface then the difference in pressure at the lower and the upper face of the wooden block is (Assume density of water $= 1000$ kg/m^3 and $g = 10$

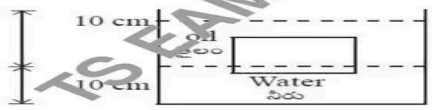
m/s^2)

(see the figure above)

Question Number : 96 Question Id : 7512364896 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cubical block of wood, of length 10 cm, floats at the interface between oil of density 800 kg/m^3 and water. The lower surface of the block is 1.5 cm below the interface. If the depth of water is 10 cm below the interface and oil is upto 10 cm above the interface then the difference in pressure at the lower and the upper face of the wooden block is (Assume density of water = 1000 kg/m^3 and g = 10 m/s^2)

10 cm పొడవున్న ఘనాకార కర్రదిమ్మ 800 kg/m^3 సాంద్రతగల తైలం మరియు నీటి ఉమ్మడి తలం వద్ద తేలుతుంది. దిమ్మ క్రింద తలం ఉమ్మడి తలానికి 1.5 cm క్రిందకు ఉన్నది. ఉమ్మడి తలానికి క్రిందనున్న నీటిలోతు 10 cm మరియు తలానికి పైనున్న తైలం ద్రవం ఎత్తు 10 cm అయితే కర్ర దిమ్మ క్రింద తలం మరియు పైతలంల వద్ద గల పీడనాల తేడా (నీటి సాంద్రత = 1000 kg/m^3 మరియు g = 10 m/s^2 గా అనుకొనుము)



TS EAMCET 2019

Options :

1. 850 Pa
2. 780 Pa
3. 800 Pa
4. 830 Pa

(A) 850 Pa

(B) 780 Pa

(C) 800 Pa

(D) 830 Pa

Answer: (D) 830 Pa · Official TGCHE final key

Q176 TS EAMCET 2019 · 3 May · Shift 1 MCQ

The tension in a massless cable connected to an iron ball of 100 kg when it is submerged in sea water is ($\rho_{\text{iron}} = 8 \times 10^3$ kg/m^3 and $\rho_{\text{sea water}} = 1000$ kg/m^3, $g = 10$ m/s^2)

(A) 950 N

(B) 846 N

(C) 875 N

(D) 933 N

Answer: (C) 875 N · Official TGCHE final key

Q177 TS EAMCET 2019 · 3 May · Shift 2 MCQ

A cylindrical tank with a large diameter is filled with water. Water drains out through a hole at a bottom of the tank. If the cross-sectional area of the hole is 6 cm^2 then the drainage rate (in m^3/s) when the depth of the water is 0.2 m, is

(A) 1.0×10^{-3}
(B) 8.2×10^{-2}
(C) 2.2×10^{-3}
(D) 1.2×10^{-3}

Answer: (D) 1.2×10^{-3} · Official TGCHE final key

Q178 TS EAMCET 2019 · 3 May · Shift 2 MCQ

The surface tension of the soap water solution is $\frac{1}{10\pi}$ N/m. The free energy of the surface layer of a soap bubble of diameter 5 mm will be

(A) 2.5×10^{-6} J
(B) 1×10^{-7} J
(C) 8×10^{-6} J
(D) 5×10^{-6} J

Answer: (D) 5×10^{-6} J · Official TGCHE final key

Q179 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

Two tubes of same length and diameters 4 mm and 8 mm are joined together to form a U-shaped tube open at both the ends. If the U-tube contains water, then the difference between the levels of water in the two limbs of the tube is
(Surface Tension of water at the temperature of experiment is 7.3×10^{-2} Nm^{-1}, angle of contact $= 0^{\circ}$, density of water $= 1.0 \times 10^{3}$ $\mathrm{kg\,m}^{-3}$ and acceleration due to gravity $= 10$ ms^{-2})

(A) 3.65 mm
(B) 36.5 mm
(C) 0.365 mm
(D) 365 mm

Answer: (A) 3.65 mm · Official APSCHE final key

Q180 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

A rain drop of radius r is falling through air, starting from rest. The work done by all the forces on the drop, when it attains terminal velocity, is proportional to

(A) r^3
(B) r^7
(C) r^5
(D) r^4

Answer: (B) r^7 · Official APSCHE final key

Q181 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

A sphere of radius R has a concentric spherical cavity of radius r. The relative density of the material of the sphere is σ. It just floats when placed in tank full of water. The value of $\frac{R}{r}$ is

(A) $\left(\frac{\sigma}{\sigma-1}\right)^{\frac{1}{3}}$
(B) $\left(\frac{\sigma-1}{\sigma}\right)^{\frac{1}{3}}$
(C) $\left(\frac{\sigma}{\sigma-1}\right)^{\frac{1}{2}}$
(D) $\left(\frac{\sigma-1}{\sigma}\right)^{\frac{1}{2}}$

Answer: (A) $\left(\frac{\sigma}{\sigma-1}\right)^{\frac{1}{3}}$ · Official APSCHE final key

Q182 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

A liquid drop of density ρ is floating half immersed in a liquid of surface tension S and density $\frac{\rho}{2}$. If the surface tension S of liquid is numerically equal to 10 times of acceleration due to gravity, then the diameter of the drop is

(A) $\sqrt{\frac{20}{\rho}}$
(B) $\sqrt{\frac{80}{\rho}}$
(C) $\sqrt{\frac{60}{\rho}}$
(D) $\sqrt{\frac{40}{\rho}}$

Answer: (B) $\sqrt{\frac{80}{\rho}}$ · Official APSCHE final key

Q183 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

Two capillary tubes of same length each of 50 cm but of different radii 4 mm and 2 mm are connected in series. When water flows, the pressure difference between the ends of the arrangement is P. Then the pressure difference between the ends of the first tube is

(A) $\frac{P}{2}$
(B) $\frac{P}{17}$
(C) $\frac{P}{4}$
(D) $\frac{P}{8}$

Answer: (B) $\frac{P}{17}$ · Official APSCHE final key

Q184 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

A long cylindrical glass vessel has a pin hole of diameter 0.2 mm at its bottom. The depth to which the vessel can be lowered vertically in a deep water bath without the water entering into the vessel is (Surface tension of water $= 0.07\ \mathrm{Nm}^{-1}$, Acceleration due to gravity $= 10\ \mathrm{ms}^{-2}$)

EdLoop EAPCET

(A) 14 cm
(B) 7 cm
(C) 21 cm
(D) 28 cm

Answer: (A) 14 cm · Official APSCHE final key

Q185 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

The radius of a soap bubble is r and the surface tension of the soap solution is S. The electric potential to which the soap bubble be raised by charging it so that the pressure inside the bubble becomes equal to the pressure outside the bubble is
(ϵ_0 - permittivity of free space)

(A) $\sqrt{\frac{Sr}{8\epsilon_0}}$
(B) $\sqrt{\frac{Sr}{4\epsilon_0}}$
(C) $\sqrt{\frac{4Sr}{\epsilon_0}}$
(D) $\sqrt{\frac{8Sr}{\epsilon_0}}$

Answer: (D) $\sqrt{\frac{8Sr}{\epsilon_0}}$ · Official APSCHE final key

Q186 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

A cylindrical tank has a hole of area $2\ \text{cm}^2$ at its bottom. If water is poured into the tank from a tube above it at the rate of $100\ \text{cm}^3\ \text{s}^{-1}$, then the maximum height upto which water can rise in the tank is (Acceleration due to gravity = $10\ \text{ms}^{-2}$)

(A) $2.5\ \text{cm}$
(B) $1.25\ \text{cm}$
(C) $5.5\ \text{cm}$
(D) $3.5\ \text{cm}$

Answer: (B) $1.25\ \text{cm}$ · Official APSCHE final key

Q187 TS EAMCET 2018 · 7 May · Shift 1 MCQ

Consider an air bubble of radius 2 mm in a liquid at a depth of 5 cm below the free surface. The density of the liquid is 1000 kg/m^3 and the surface tension is 0.1 N/m. The pressure inside the air bubble is greater than the pressure at the free surface of the liquid by (Take $g = 10\ \text{m/sec}^2$)

(A) 500 Pa
(B) 600 Pa
(C) 700 Pa
(D) 800 Pa

Answer: (B) 600 Pa · The council's preliminary key

Q188 TS EAMCET 2018 · 7 May · Shift 1 MCQ

A cylindrical vessel is filled with water upto the height 1 m from the base. A small orifice is opened at some height in the cylinder and the water level is reduced to height of orifice in 20 sec. If the base area of the cylinder is 100 times the area of orifice, then the height of orifice from the base is (Take $g = 10\ \mathrm{m/sec^2}$)

(A) 80 cm
(B) 60 cm
(C) 40 cm
(D) 20 cm

Answer: (A) 80 cm · The council's preliminary key

Q189 TS EAMCET 2018 · 5 May · Shift 1 MCQ

What is the rate at which a trapped bubble of 2.0 mm diameter rises slightly through a solution of density $13.6 \times 10^3\ \mathrm{kg/m^3}$ and coefficient of viscosity 1.5 centi poise. Assume the density of air is negligible and $g = 10\ \mathrm{m/s^2}$

(A) $20\ \mathrm{m/s}$
(B) $2\ \mathrm{m/s}$
(C) $0.2\ \mathrm{m/s}$
(D) $0.02\ \mathrm{m/s}$

Answer: (A) $20\ \mathrm{m/s}$ · The council's preliminary key

Q190 TS EAMCET 2018 · 4 May · Shift 1 MCQ

Consider a vessel filled with a liquid upto height H. The bottom of the vessel lies in the X-Y plane passing through the origin. The density of the liquid varies with Z-axis as $\rho(z) = \rho_0 \left[2 - \left(\frac{z}{H}\right)^2\right]$. If P_1 and P_2 are the pressures at the bottom surface and top surface of the liquid, the magnitude of $(P_1 - P_2)$ is :

(A) $\rho_0 g H$
(B) $\frac{8}{5}\rho_0 g H$
(C) $\frac{3}{2}\rho_0 g H$
(D) $\frac{5}{3}\rho_0 g H$

Answer: (D) $\frac{5}{3}\rho_0 g H$ · The council's preliminary key

Q191 TS EAMCET 2018 · 4 May · Shift 1 MCQ

An air bubble rises from the bottom of a water tank of height 5 m. If the initial volume of the bubble is 3 mm^3. What will be its volume as it reaches the surface. Assume that its temperature does not change.
[$g = 9.8\ m/s^2$, 1 atm $= 10^5$ Pa, density of water = 1 gm/cc]

(A) 1.5 mm^3
(B) 4.5 mm^3
(C) 9 mm^3
(D) 6 mm^3

Answer: (B) 4.5 mm^3 · The council's preliminary key

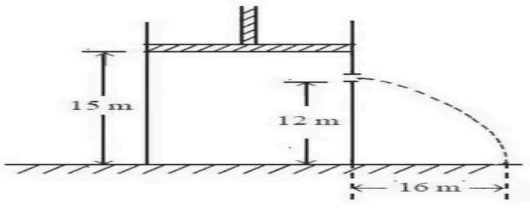
Q192 TS EAMCET 2018 · 4 May · Shift 2 MCQ

A tank of height 15 m and cross-section area $10\ m^2$ is filled with water. There is a small hole of cross-section area 'a' which is much smaller than the container, located at a height of 12 m from the base of the container. How much force should be applied with a piston at the top level, so that the water coming out of the hole hits the ground at a distance of 16 m. (Take density of water = 1000 kg/m^3)
(see the figure above)

Question Number : 96 Question Id : 4928631856 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

A tank of height 15 m and cross-section area 10 m^2 is filled with water. There is a small hole of cross-section area 'a' which is much smaller than the container, located at a height of 12 m from the base of the container. How much force should be applied with a piston at the top level, so that the water coming out of the hole hits the ground at a distance of 16 m. (Take density of water = 1000 kg/m^3)

15 m ఎత్తు మరియు 10 m^2 మధ్యచ్ఛేద వైశాల్యంగల ఒక తొట్టిను నీటితో నింపినారు. తొట్టి అడుగు భాగం నుండి 12 m ఎత్తులో 'a' మధ్యచ్ఛేద వైశాల్యముగల ఒక చిన్న రంధ్రము ఉన్నది. తొట్టి మధ్యచ్ఛేద వైశాల్యం కంటే రంధ్రపు మధ్యచ్ఛేద వైశాల్యము చాలా తక్కువ. రంధ్రమునుండి బయటకు వచ్చు నీరు భూమిని 16 m దూరంలో తాకవలెనంటే పై స్థాయిలోగల పెష్టనుపై అనువర్తితము చేయవలసిన బలము (నీటి సాంద్రత = 1000 kg/m^3 గా తీసుకొనుము)



Options :
1. 233 kN
2. 200 kN
3. 320 kN
4. 400 kN

(A) 233 kN
(B) 200 kN
(C) 320 kN
(D) 400 kN

Answer: (A) 233 kN · The council's preliminary key

Q193 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

When a soap bubble of radius 0.2 mm is charged, it experiences an outward electrostatic pressure of magnitude $\frac{\sigma^2}{2\epsilon_0}$ where $\sigma = 20\ \mu\text{Cm}^{-2}$ is the surface charge density. If the excess pressure inside the soap bubble due to the surface tension is same as this electrostatic pressure, then the surface tension of the soap solution is
($\epsilon_0 = 8.85 \times 10^{-12}\ \text{C}^2\text{N}^{-1}\text{m}^{-2}$)

(A) $8.85 \times 10^{-4}\ \text{Nm}^{-1}$
(B) $12.4 \times 10^{-4}\ \text{Nm}^{-1}$
(C) $11.3 \times 10^{-4}\ \text{Nm}^{-1}$
(D) $90 \times 10^{-4}\ \text{Nm}^{-1}$

Answer: (C) $11.3 \times 10^{-4}\ \text{Nm}^{-1}$ · The council's preliminary key

Q194 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

A liquid is filled in a tank up to a height of 5 m and the bottom of the tank is at 5 m height from the ground. A hole is punched to the tank so that the liquid comming out touches the ground at maximum horizontal distance. Then the maximum horizontal distance is

(A) $10\ \text{m}$
(B) $2.5\ \text{m}$
(C) $5\ \text{m}$
(D) $15\ \text{m}$

Answer: (A) $10\ \text{m}$ · The council's preliminary key

Q195 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

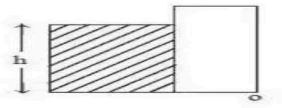
Water stands upto height 'h' behind the dam as shown in the figure. The front view of the dam gate is also shown in the adjoining figure. Density of water is 'ρ' and acceleration due to gravity is 'g'. If atmospheric pressure force is also considered, the point of application of total force acting on the dam due to water above 'o' is _____

(see the figure above)

Question Number : 94 Question Id : 4557344094 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Water stands upto height 'h' behind the dam as shown in the figure. The front view of the dam gate is also shown in the adjoining figure. Density of water is 'ρ' and acceleration due to gravity is 'g'. If atmospheric pressure force is also considered, the point of application of total force acting on the dam due to water above 'o' is _____

పటంలో చూపినట్లుగా ఒక ఆనకట్ట ప్రక్కన నీరు 'h' ఎత్తు వరకు నిలబడి ఉన్నది. ఆనకట్ట గేటు ముందు భాగం (దృశ్యం) ప్రక్క పటంలో చూపినట్లుగా ఉంటుంది. నీటి సాంద్రత 'ρ' మరియు గురుత్వ త్వరణం 'g'. వాతావరణ పీడన బలాన్ని కూడా పరిగణిస్తే, 'o' కు పైన నీటి వలన ఆనకట్టపై మొత్తం బలం పనిచేసే బిందువు _____



Side view of dam gate
ఆనకట్ట గేటు ప్రక్క దృశ్యం



Front view of dam gate
ఆనకట్ట గేటు ముందు దృశ్యం

Options :

1. $\frac{h}{4}$
2. $\frac{h}{3}$
3. h
4. $\frac{h}{2}$

(A) $\frac{h}{4}$
(B) $\frac{h}{3}$
(C) h
(D) $\frac{h}{2}$

Answer: (B) $\frac{h}{3}$ · The council's preliminary key

Q196 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

Two solid spheres of radii 2 mm and 4 mm are tied to the two ends of a light string and released in a liquid of specific gravity 1.3 and coefficient of viscosity 1 Pa s. The string is just taut when the two spheres are completely in the liquid. If the density of the materials of the two spheres is $2800\ \text{kgm}^{-3}$, the terminal velocity of the system of the spheres is
$(g = 10\ \text{ms}^{-2})$

(A) $2\ \text{cms}^{-1}$
(B) $4\ \text{cms}^{-1}$
(C) $4\ \text{ms}^{-1}$
(D) $2\ \text{ms}^{-1}$

Answer: (B) $4\ \text{cms}^{-1}$ · The council's preliminary key

Q197 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

A body is suspended by a light string. The tensions in the string when the body is in air, when the body is totally immersed in water and when the body is totally immersed in a liquid are respectively $40.2\ \text{N}$, $28.4\ \text{N}$ and $16.6\ \text{N}$. The density of the liquid is _____

(A) $1200\ \mathrm{kgm^{-3}}$
(B) $1600\ \mathrm{kgm^{-3}}$
(C) $2000\ \mathrm{kgm^{-3}}$
(D) $2400\ \mathrm{kgm^{-3}}$

Answer: (C) $2000\ \mathrm{kgm^{-3}}$ · The council's preliminary key

Q198 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

A spherical body of density ρ is floating half immersed in a liquid of density d. If σ is the surface tension of the liquid, then the diameter of the body is

(A) $\sqrt{\frac{3\sigma}{g(2\rho-d)}}$
(B) $\sqrt{\frac{6\sigma}{g(2\rho-d)}}$
(C) $\sqrt{\frac{4\sigma}{g(2\rho-d)}}$
(D) $\sqrt{\frac{12\sigma}{g(2\rho-d)}}$

Answer: (D) $\sqrt{\frac{12\sigma}{g(2\rho-d)}}$ · The council's preliminary key

Q199 TS EAMCET 2017 · 12 May · Offline MCQ

A horizontal pipeline carrying gasoline has a cross-sectional diameter of $5\ \mathrm{mm}$. If the viscosity and density of the gasoline are 6×10^{-3} Poise and $720\ \mathrm{kg/m^3}$ respectively, the velocity after which the flow becomes turbulent is

(A) $> 1.66\ \mathrm{m/s}$
(B) $> 3.33\ \mathrm{m/s}$
(C) $> 1.6 \times 10^{-3}\ \mathrm{m/s}$
(D) $> 0.33\ \mathrm{m/s}$

Answer: (D) $> 0.33\ \mathrm{m/s}$ · The council's preliminary key

Q200 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

Fully filled open water tank has two holes on either sides of its walls. One is a square hole of side x cm at a depth of 2 m from the top, and the other hole is equilateral triangle of side 4 cm at a depth of 6 m from the top. If the rate of flow of water is same from both the holes, then 'x' is

(A) $12\ \mathrm{cm}$
(B) $3.46\ \mathrm{cm}$
(C) $6.92\ \mathrm{cm}$
(D) $1.73\ \mathrm{cm}$

Answer: (B) $3.46\ \mathrm{cm}$ · The council's preliminary key

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Q201 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

In S.I. system, the total energy of the free surface of a liquid drop is 2π times the surface tension of the liquid. The diameter of the drop is _____

(A) $\sqrt{3}\,\mathrm{m}$
(B) $\sqrt{2}\,\mathrm{m}$
(C) $\sqrt{5}\,\mathrm{m}$
(D) $\sqrt{7}\,\mathrm{m}$

Answer: (B) $\sqrt{2}\,\mathrm{m}$ · The council's preliminary key

Q202 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

A large vessel with a small hole at the bottom is filled with water and kerosine with kerosine floating on water. The length of water column is 20 cm and that of kerosine is 25 cm. The velocity with which water flows out of the hole is (density of kerosine = 0.8 $\mathrm{g\,cm^{-3}}$, neglect viscous force).

(A) $5.6\ \mathrm{ms^{-1}}$
(B) $0.7\ \mathrm{ms^{-1}}$
(C) $2.8\ \mathrm{ms^{-1}}$
(D) $1.4\ \mathrm{ms^{-1}}$

Answer: (C) $2.8\ \mathrm{ms^{-1}}$ · The council's preliminary key

Q203 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

In a cylinder provided with a piston, air is under pressure P_1 at a constant temperature 't'. A soap bubble with radius 'r' and surface tension 'T' is lying inside the cylinder. To reduce the radius of the soap bubble to half, the required air pressure inside the cylinder is

(A) $8P_1 + \frac{24T}{r}$
(B) $8P_1 + \frac{3T}{r}$
(C) $8P_1 + \frac{2T}{r}$
(D) $8P_1 + \frac{12T}{r}$

Answer: (A) $8P_1 + \frac{24T}{r}$ · The council's preliminary key

Q204 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

A number of small water droplets of surface tension 'T', each of radius 'r' are combined to form a single drop of radius 'R'. If the released energy is converted into kinetic energy, then the velocity acquired by the bigger drop is _____ (ρ - density of water)

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(A) $\sqrt{\frac{R-r}{\rho r R}}$

(B) $\frac{6TrR}{\rho(R-r)}$

(C) $\sqrt{\frac{6T}{\rho}\left(\frac{R-r}{rR}\right)}$

(D) $\frac{6T(R-r)}{\rho R}$

Answer: (C) $\sqrt{\frac{6T}{\rho}\left(\frac{R-r}{rR}\right)}$ · The council's preliminary key

Q205 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

An aircraft of mass 3×10^5 kg with total wing area $400\ \mathrm{m}^2$ is in a level flight at a speed of $540\ \mathrm{km\ h}^{-1}$. The density of air at its height is $1.2\ \mathrm{kg\ m}^{-3}$. The fractional increase in the speed of the air on the upper surface of its wings relative to the lower surface is _____ ($g = 10\ \mathrm{ms}^{-2}$)

(A) 0.727

(B) 0.344

(C) 0.048

(D) 0.277

Answer: (D) 0.277 · The council's preliminary key

Q206 TS EAMCET 2016 · 15 May · Offline MCQ

A soap bubble of radius 1.0 cm is formed inside another soap bubble of radius 2.0 cm. The radius of an another soap bubble which has the same pressure difference as that between the inside of the smaller and outside of large soap bubble, in meters is

(A) 6.67×10^{-3}

(B) 3.34×10^{-3}

(C) 2.23×10^{-3}

(D) 4.5×10^{-3}

Answer: (A) 6.67×10^{-3} · Official TGCHE final key

Q207 AP EAMCET 2016 · 29 Apr · Offline MCQ

A sphere of material of relative density 8 has a concentric spherical cavity and just sinks in water. If the radius of the sphere is 2 cm, then the volume of the cavity is

(A) $\frac{76}{3}\ \text{cm}^3$
(B) $\frac{79}{3}\ \text{cm}^3$
(C) $\frac{82}{3}\ \text{cm}^3$
(D) $\frac{88}{3}\ \text{cm}^3$

Answer: (D) $\frac{88}{3}\ \text{cm}^3$ · The council's preliminary key

Q208 AP EAMCET 2014 · 22 May · Offline MCQ

When a big drop of water is formed from n small drops of water, the energy loss is 3E, where E is the energy of the bigger drop. If R is the radius of the bigger drop and r is the radius of the smaller drop, then number of smaller drops (n) is

(A) $\frac{4R}{r^2}$
(B) $\frac{4R}{r}$
(C) $\frac{2R^2}{r}$
(D) $\frac{4R^2}{r^2}$

Answer: (D) $\frac{4R^2}{r^2}$ · The council's preliminary key

Q209 AP EAMCET 2013 · 10 May · Offline MCQ

A capillary tube of radius 'r' is immersed in water and water rises to a height of 'h'. Mass of water in the capillary tube is 5×10^{-3} kg. The same capillary tube is now immersed in a liquid whose surface tension is $\sqrt{2}$ times the surface tension of water. The angle of contact between the capillary tube and this liquid is 45°. The mass of liquid which rises into the capillary tube now is, (in kg)

(A) 5×10^{-3}
(B) 2.5×10^{-3}
(C) $5\sqrt{2} \times 10^{-3}$
(D) 3.5×10^{-3}

Answer: (A) 5×10^{-3} · The council's preliminary key

Q210 AP EAMCET 2013 · 10 May · Offline MCQ

The terminal velocity of a liquid drop of radius 'r' falling through air is v. If two such drops are combined to form a bigger drop, the terminal velocity with which the bigger drop falls through air is (Ignore any buoyant force due to air)

(A) $\sqrt{2}\,v$
(B) $2\,v$
(C) $\sqrt[3]{4}\,v$
(D) $\sqrt[3]{2}\,v$

Answer: (C) $\sqrt[3]{4}\,v$ · The council's preliminary key

Q211 AP EAMCET 2012 · 12 May · Offline MCQ

Drops of liquid of density 'd' are floating half immersed in a liquid of density ρ. If the surface tension of the liquid is T, then the radius of the drop is

(A) $\sqrt{\frac{3T}{g(3d-\rho)}}$
(B) $\sqrt{\frac{6T}{g(2d-\rho)}}$
(C) $\sqrt{\frac{3T}{g(2d-\rho)}}$
(D) $\sqrt{\frac{3T}{g(4d-3\rho)}}$

Answer: (C) $\sqrt{\frac{3T}{g(2d-\rho)}}$ · Official APSCHE final key

Q212 AP EAMCET 2012 · 12 May · Offline MCQ

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

(A) $\frac{D^2v}{nd^2}$
(B) $\frac{nD^2v}{d^2}$
(C) $\frac{nd^2v}{D^2}$
(D) $\frac{d^2v}{nD^2}$

Answer: (A) $\frac{D^2v}{nd^2}$ · Official APSCHE final key

Q213 AP EAMCET 2011 · 8 May · Offline MCQ

If two soap bubbles of different radii are connected by a tube, then :

(A) Air flows from bigger bubble to the smaller bubble till sizes become equal
(B) Air flows from bigger bubble to the smaller bubble till sizes are interchanged
(C) Air flows from smaller bubble to bigger
(D) There is no flow of air

Answer: (C) Air flows from smaller bubble to bigger · The council's preliminary key

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Q214 AP EAMCET 2011 · 8 May · Offline MCQ

A large open tank has two holes in the wall. One is a square hole of side 'L' at a depth 'y' from the top and the other is a circular hole of radius R at a depth '4y' from the top. When the tank is completely filled with water, the quantities of water flowing out per second from the two holes are the same. Then value of R is :

(A) $\frac{L}{\sqrt{2\pi}}$

(B) $2\pi L$

(C) $L\sqrt{\frac{2}{\pi}}$

(D) $\frac{L}{2\pi}$

Answer: (A) $\frac{L}{\sqrt{2\pi}}$ · The council's preliminary key

Q215 AP EAMCET 2010 · 30 May · Offline MCQ

The excess pressure inside a spherical soap bubble of radius 1 cm is balanced by a column of oil (Sp. gr. = 0.8), 2 mm high, the surface tension of the bubble is :

(A) $3.92\ \mathrm{N/m}$

(B) $0.0392\ \mathrm{N/m}$

(C) $0.392\ \mathrm{N/m}$

(D) $0.00392\ \mathrm{N/m}$

Answer: (B) $0.0392\ \mathrm{N/m}$ · Official APSCHE final key

Q216 AP EAMCET 2010 · 30 May · Offline MCQ

Water from a tap emerges vertically downwards with initial velocity 4 ms^{-1}. The cross-sectional area of the tap is A. The flow is steady and pressure is constant throughout the stream of water. The distance h vertically below the tap, where the cross-sectional area of the stream becomes $\left(\frac{2}{3}\right)$A, is (g = 10 m/s^2) :

(A) 0.5 m

(B) 1 m

(C) 1.5 m

(D) 2.2 m

Answer: (B) 1 m · Official APSCHE final key