





15:02 3G 🌙 📺 •

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Timer

Practice Questions **178:47**

Question 1

Which of the following is true?

- A. The limiting frictional force is found to increase when the block of wood is loaded with weights
- B. The value of the limiting frictional force is unchanged when a block of wood is turned on another side of different surface area.
- C. The frictional force between two surfaces in relative motion always opposes the relative motion.
- D. All of the above
- E. None of the above



ANSWER: D

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Practice Questions **178:45**

Question 2

If a stone of mass m is whirled round in a circle of radius r with a uniform speed, v , then the centripetal force F is given by:

- A. 20 m/s
- B. 10 m/s
- C. 15 m/s
- D. 12 m/s
- E. None of the above



ANSWER: A

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Practice
Questions **178:40**

Timer

Question 3

A body starts from rest with an acceleration of 2 ms^{-2} . What velocity does it attain after 10 s?

- A. 20 m/s
- B. 10 m/s
- C. 15 m/s
- D. 12 m/s
- E. None of the above



ANSWER: A

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Practice
Questions **178:37**

Timer

Question 4

A ball moving with an initial velocity of 5 m/s is accelerated uniformly at the rate of 4 m/s for 15 s in the same direction as it is moving before. Calculate the distance covered by the ball during the period for which it is accelerated

- A. 230 m
- B. 200 m
- C. 525 m
- D. 625 m
- E. None of the above

ANSWER: C

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Practice Questions **178:34**

Question 5

Which of the following is true for a Velocity-Time graph?

- A. The slope at a particular time gives the magnitude of the instantaneous acceleration at the time
- B. If the graph is a straight line, then the acceleration is uniform else non-uniform
- C. The area under the graph is the distance covered
- D. All of the above
- E. None of the above



ANSWER: D

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Practice Questions **178:33**

Question 6

A particle of mass m is given an impulse such that the velocity of the particle changes from v_1 to v_2 . The impulse is equal to

- A. A body can be accelerated by frictional force
- B. There can be zero frictional force
- C. Kinetic friction is greater than rolling friction
- D. Frictional force and area of contact between two surfaces are proportional
- E. None of the above



ANSWER: C

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Practice Questions **178:31**

Question 8

When a man stands on a spring balance, the reading is 75kg. If the man jumps out of the spring what will be the final reading of the spring?

- A. Remains unchanged
- B. Increases
- C. Decreases at first then goes to zero
- D. increases at first then goes to zero
- E. None of the above



ANSWER: D

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Practice Questions **178:30**

Question 7

Which of the following statement is correct?

- A. A body can be accelerated by frictional force
- B. There can be zero frictional force
- C. Kinetic friction is greater than rolling friction
- D. Frictional force and area of contact between two surfaces are proportional
- E. None of the above



ANSWER: C

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Practice Questions **178:26**

Question 9

Which of the following should be constant for a body to have a constant momentum?

- A. Acceleration
- B. Force
- C. Velocity
- D. All of the above
- E. None of the above



ANSWER: D

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Practice Questions **178:25**

Question 10

When two bodies stick together after collision, the collision is said to be

- A. Partially elastic collision
- B. Partially inelastic collision
- C. Total elastic collision
- D. Total inelastic collision
- E. None of the above



ANSWER: D

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Practice Questions **178:23**

Question 11

A body of mass m moving with a constant velocity v hits another body of the same mass moving with the same velocity but in opposite direction and sticks to it. The velocity of the compound body after the collision is?

- A. Twice the initial velocity
- B. Half the initial velocity
- C. Same initial velocity
- D. Zero velocity
- E. Cannot be determined from the given information



ANSWER: D

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Practice Questions **178:18**

Question 12

A 50g bullet moving with a velocity of 10 m/s strikes a block of mass 950g at rest and gets embedded in it. The loss in kinetic energy will be?

- A. 1
- B. 0.95
- C. 0.05
- D. 0.5
- E. No loss of kinetic energy



ANSWER: B

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Practice Questions **178:16**

Question 13

When a force is exerted on a body, which of the following changes?

- A. Direction of motion
- B. Momentum
- C. Kinetic energy
- D. All of the above
- E. None of the above



ANSWER: D



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Practice Questions **178:14**

Question 14

Which of the two statements is/are correct

- A. Rate of change of momentum corresponds to force
- B. Rate of change of momentum corresponds to kinetic energy
- C. All of the above
- D. None of the above
- E. None of the above



ANSWER: A

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Practice Questions **178:12**

Question 15

A stone is released from the window of a train moving along a horizontal straight track. The stone will hit the ground following

- A. Hyperbolic path
- B. Straight path
- C. Circular path
- D. Parabolic path
- E. None of the above



ANSWER: D

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Practice Questions **178:10**

Question 16

The range of a projectile depends on?

- A. 222 m
- B. 150 m
- C. Mass of the projectile
- D. All of the above
- E. None of the above



ANSWER: A



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Practice Questions **178:09**

Question 17

What is the length of a train which crosses a bridge of 150m in 20 sec with a speed of 40 km/hr?

- A. 222 m
- B. 150 m
- C. 72.2 m
- D. 70.5 m
- E. None of the above



ANSWER: C

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Practice Questions **178:07**

Question 18

The velocity of a body of mass 20 kg decreases from 20 m/s to 5 m/s in a distance of 100m. Force on the body is

- A. -27.5 N
- B. -47.5 N
- C. -37.5 N
- D. -67.5 N
- E. None



ANSWER: C

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Practice Questions **178:05**

Question 19

A ball of mass 0.2kg is thrown vertically upwards by applying a force by hand. If the hand moves 0.2 m while applying the force and the ball goes upto 2m height further, find the magnitude of the force. (Take $g = 10 \text{ m/s}^2$)

- A. 16 N
- B. 20 N
- C. 22 N
- D. 4 N
- E. 10 N

ANSWER: C

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Practice Questions **178:04**

Question 20

Same force acts on two bodies of different masses 2kg and 4 kg initially at rest. The ratio of the times required to acquire same final velocity is

- A. 0.084027777777778
- B. 0.04305555555556
- C. 0.042361111111111
- D. 0.17777777777778
- E. 0.12916666666667



ANSWER: B

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Practice Questions **178:02**

Question 21

A 0.5kg ball moving with a speed of 12 m/s strikes a hard wall at an angle of 30° with the wall. It is reflected with the same speed and at the same angle. If the ball is in contact with the wall for 0.025s, the average force acting on the wall is

- A. 96 N
- B. 48 N
- C. 24 N
- D. 12 N
- E. 6 N



ANSWER: C

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Practice Questions **178:01**

Question 22

Two forces A and B are 6 N at 36° to the positive x-axis and 7 N along the negative x-axis respectively, find A+B.

- A. 2.14 N
- B. 2.95 N
- C. 4.12 N
- D. 12.36 N
- E. 12.96 N



ANSWER: C

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Practice Questions **177:59**

Question 24

A wheel accelerates so that its angular speed increases uniformly from 150 to 580 rads s^{-1} with an angular displacement of 100.53 rad. Calculate its angular acceleration.

- A. 320 rad s^{-2}
- B. 1320 rad s^{-2}
- C. 1561 rad s^{-2}
- D. 1650 rad s^{-2}
- E. 4320 rad s^{-2}



ANSWER: C

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Practice Questions **177:57**

Question 23

Suppose you want to place a 1000kg weather satellite into a circular orbit 300km above the surface of the earth of radius 6380 km. What speed must it have? (Take $M_e = 5.97 \times 10^{24}$ kg)

- A. 3440 m s⁻¹
- B. 4440 m s⁻¹
- C. 5920 m s⁻¹
- D. 7720 m s⁻¹
- E. 8920 m s⁻¹



ANSWER: D

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Practice Questions **177:54**

Question 25

Find the apparent weight of a person whose mass is 60 kg in an elevator, when the elevator is stationary.

- A. 588 N
- B. 708 N
- C. 60 N
- D. 51 N
- E. 40 N



ANSWER: A

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Practice Questions **177:50**

Question 26

A car accelerates uniformly from rest to 36 kmh⁻¹ in 4 s. Calculate the magnitude of the acceleration and the distance covered during this 4 s interval.

- A. 2.5 ms⁻², 20 m
- B. 1.5 ms⁻², 10 m
- C. 1.0 ms⁻², 5 m
- D. 0.5 ms⁻², 2.5 m
- E. 0.25 ms⁻², 2.5 m



ANSWER: A

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Practice Questions **177:48**

Question 27

The engine of a car which started from rest and which moved with an acceleration of 2 ms^{-2} was turned off after 3 s. the car accelerated for 10 s at 25 ms^{-2} before brakes are applied after which comes to rest in 3 s later. Calculate the total distance through which the car moved.

- A. 80.75 m
- B. 61.75 m
- C. 50.75 m
- D. 30.75 m
- E. 20.75 m

ANSWER: D

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Practice Questions **177:42**

Question 28

A body slides down a smooth inclined plane of angle 30° to the horizontal. Find the distance covered after 15 s from rest. (take $g = 9.8 \text{ m/s}^2$)

- A. 80.2 m
- B. 490.4 m
- C. 551.3 m
- D. 600.5 m
- E. 690.5 m



ANSWER: C

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Practice Questions **177:40**

Question 29

Find the minimum velocity with which a missile can be projected from a military base to hit a target 500 km away assuming only gravitational force.

- A. 3210.5 ms⁻¹
- B. 2213.6 ms⁻¹
- C. 2010.5 ms⁻¹
- D. 1210.6 ms⁻¹
- E. 221.6 ms⁻¹



ANSWER: B

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Practice Questions **177:38**

Question 30

A car of mass 1380 kg is moving due east with an initial speed of 27 ms^{-1} . After 8 s, the car has slowed down to 17 ms^{-1} . Find the magnitude of the net force that produces the deceleration.

- A. -1.25 N
- B. -1.45 N
- C. -1.73 N
- D. -1.93 N
- E. -2.03 N



ANSWER: C

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Practice Questions **177:36**

Question 31

A uniform rod 1 m long and weighing 30 N is supported in a horizontal position on a pivot with weights of 40 N and 50 N suspended from its ends. Calculate the position of the pivot from the 50 N weight.

- A. 0.54 m
- B. 0.46 m
- C. 0.44 m
- D. 0.36 m
- E. 0.24 m



ANSWER: B

15:03 5 🌟

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Practice Questions

177:34

Question 32

Determine the acceleration due to gravity for a satellite in orbit 200 km above the surface of the earth.

(Take: $g = 9.8 \text{ ms}^{-2}$, $G = 6.67 \times 10^{-11} \text{ N m}^2 \text{ kg}^{-2}$, $M_E = 5.98 \times 10^{24} \text{ kg}$, $R_E = 6.38 \times 10^6 \text{ m}$.)

- A. 9.8 ms^{-2}
- B. 9.5 ms^{-2}
- C. 9.2 ms^{-2}
- D. 8.8 ms^{-2}
- E. 8.2 ms^{-2}



ANSWER: C

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Practice Questions **177:33**

Question 33

Mass is to translational motion as
_____ is to rigid body
rotational motion

- A. Weight
- B. Moment of inertia.
- C. Torque
- D. Angular mass
- E. Inertia



ANSWER: B

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Practice Questions **177:31**

Question 34

A particle of mass 1 kg oscillates with simple harmonic motion along a line. At what location during the motion is its potential energy maximum?

- A. At the highest end
- B. At the lowest end
- C. At t At the two extreme positions.
- D. Mid way between
- E. At any point



ANSWER: C

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Practice Questions **177:29**

Question 35

A satellite is said to be parked when

- A. It has the same period of revolution as the earth
- B. It has the same radius as the earth
- C. It is static
- D. It moves with constant velocity
- E. It has the same mass as the earth



ANSWER: A

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Practice Questions **177:26**

Question 36

A particle in SHM has a period of 0.45s. If the maximum speed attained during the motion is 0.3 m/s. What is the amplitude of the motion?

- A. 0.0215 m
- B. 2.15 m
- C. 0.215 m
- D. 0.00215 m
- E. 0.0125 m



ANSWER: A

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Practice Questions **177:25**

Question 37

A particle moves in a circle of radius 0.5 m. At time t seconds, its angular velocity is $\pi(10 - 2t)$ rad/s. Find its speed and acceleration after 4s

- A. 417 kgm²
- B. 41.7 kgm²
- C. 41.7 kgm²
- D. 4.17 kgm²
- E. 0.417 kgm²



ANSWER: D

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Practice Questions **177:23**

Question 38

Compute the moment of inertial of a uniform rod of length 5 m about an axis through its midpoint, if the mass of the rod is 2 kg

- A. 417 kgm²
- B. 41.7 kgm²
- C. 41.7 kgm²
- D. 4.17 kgm²
- E. 0.417 kgm²



ANSWER: D

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Practice Questions **177:21**

Question 39

Find the work done when a trunk is dragged a distance of 10 m by a force of 50 N applied at

- A. 249 J
- B. 354 J
- C. 474 J
- D. 549 J
- E. 654 J



ANSWER: B

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Practice Questions **177:19**

Question 41

A particle travels with constant speed around a circle of radius r in a time T . Express the particle's centripetal acceleration a in terms of r and T

- A. Stable equilibrium
- B. Unstable equilibrium
- C. Neutral equilibrium
- D. Balanced equilibrium
- E. Uniform equilibrium



ANSWER: B

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Practice Questions **177:18**

Question 40

Calculate the power developed by an 80 kg student who, in 10 seconds, runs up the stairs that have a vertical height of 5.0 m.

- A. 39200 W
- B. 3920 W
- C. 392 W
- D. 39.2 W
- E. 3.92 W



ANSWER: C

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Practice Questions **177:15**

Question 42

A cone standing on its apex is an example of

- A. Stable equilibrium
- B. Unstable equilibrium
- C. Neutral equilibrium
- D. Balanced equilibrium
- E. Uniform equilibrium



ANSWER: B



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Practice Questions **177:13**

Question 43

A 1000 kg car accelerates uniformly from rest to a speed of 30 m /s.

Calculate the kinetic energy gained

- A. 4.5×10^5 J.
- B. 3.5×10^5 J.
- C. 2.5×10^5 J.
- D. 1.5×10^5 J.
- E. 0.5×10^5 J.



ANSWER: A

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Practice Questions **177:12**

Question 44

The earth's mass is approximately 80 times as large as the moon's mass and the moon's orbit radius is approximately 3.8×10^5 km. Calculate the gravitational force of attraction between the two. (Take mass of the earth $M_E = 5.98 \times 10^{24}$ kg)

- A. 2.1×10^{20} J.
- B. 2.4×10^{20} J.
- C. 2.5×10^{20} J.
- D. 3.5×10^{20} J.
- E. 4.5×10^{20} J.

ANSWER: A

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Practice Questions **177:10**

Question 45

The followings are examples of simple harmonic oscillator when given slight displacement except

- A. A mass at the centre of a string under constant tension T
- B. fixed length of non-viscous liquid in a U-tube of constant cross-section.
- C. A rotating rigid body
- D. A hydrometer mass min a liquid of density ρ .
- E. Simple pendulum



ANSWER: C

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Practice Questions **177:09**

Question 46

A mass of 80 kg slides down a smooth inclined plane 16 m high and 80 m long. Neglecting friction, calculate the potential energy of the mass at the top of the slope.

- A. 1.25×10^4 J.
- B. 2.5×10^4 J.
- C. 4.5×10^4 J.
- D. 5.0×10^4 J.
- E. 5.5×10^4 J.



ANSWER: A

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Practice Questions **177:08**

Question 47

When the sum of all the forces acting on a block on an inclined plane is zero, the block

- A. must be at rest
- B. must be accelerating
- C. may be slowing down
- D. may be moving at a constant speed
- E. None of the above



ANSWER: D

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Practice Questions **177:06**

Question 49

A box weighing 46 newton rests on an incline plane that makes an angle of 25° with the horizontal. What is the magnitude of the component of the box's weight perpendicular to the incline?

- A. 19 N
- B. 21 N.
- C. 26 N
- D. 42 N
- E. 52 N



ANSWER: D

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Practice Questions 177:05

Question 48

A skier is going down a slope at constant speed. The coefficient of friction between the skier and the incline is .61. Find the angle of inclination.

- A. 52 *
 - B. 38 *
 - C. 31 *
 - D. 20 *
 - E. 10 *

ANSWER: C

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Practice Questions

177:03

Question 50

An 8.0-newton block is accelerating down a frictionless ramp inclined at 15° to the horizontal. What is the magnitude of the net force causing the block's acceleration?

- A. 0 N
- B. 2.1 N.
- C. 7.7 N
- D. 8.0 N
- E. 9.8 N



ANSWER: C

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Practice Questions **177:00**

Question 50

An 8.0-newton block is accelerating down a frictionless ramp inclined at 15° to the horizontal. What is the magnitude of the net force causing the block's acceleration?

- A. 0 N
- B. 2.1 N.
- C. 7.7 N
- D. 8.0 N
- E. 9.8 N



ANSWER: C

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Practice Questions **176:58**

Question 51

Water flows between two plates of which the upper one is stationary and the lower one is moving with a velocity V . What will be the velocity of the fluid in contact with the upper plate?

- A. V
- B. $V / 2$
- C. $2V$
- D. 0
- E. $V / 3$



ANSWER: D

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Practice Questions **176:56**

Question 52

What is the magnitude of the force required to stretch a 20 cm-long spring, with a spring constant of 100 N/m, to a length of 21 cm?

- A. 1.0 N
- B. 1.01 N
- C. 0.10 N
- D. 1.10 N
- E. 0.01 N



ANSWER: A

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PHY 101 : 61 Practice Questions 176:44

Question 53

A 2.0-m-long wire stretches 1.0 mm when subjected to a load. What is the tensile strain in the wire?

A. 0.0005
B. 0.005
C. 0.05
D. 0.5
E. 0

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ANSWER: A

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Practice

Questions

176:42

Question 55

A rope with Young's modulus

- A. .
- B. .
- C. .
- D. .
- E. m.

ANSWER: B



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Practice

Questions **176:39**

Question 54

The only elastic modulus that applies to fluids is

- A. Young's modulus
- B. Shear modulus
- C. Modulus of rigidity
- D. Bulk modulus
- E. All the above



ANSWER: D



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Practice
Questions **176:30**

Question 56

According to the principle of buoyancy, a body totally or partially immersed in a fluid will be lifted up by a force equal to

- A. The weight of the body
- B. More than the weight of the body
- C. Less than the weight of the body
- D. Weight of the fluid displaced by the body
- E. All the above



ANSWER: D

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Practice

Questions **176:29**

Question 58

Water is flowing through a non-uniform cross-sectional pipe. Where the radius of pipe is 2 cm, velocity of water is 20 cm/s. If another place, where radius of the pipe is 6 cm, find out the velocity of the water.

- A. 2.22 cm/s
- B. 2.22 m/s
- C. 22.2 cm/s
- D. 22.2 m/s
- E. 2.22 mm/s



ANSWER: A

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Practice

Questions **176:27**

Question 57

A hydraulic ram is a device used to

- A. Store the energy of water
- B. Increase the pressure of water
- C. To lift water from deep wells
- D. To lift small quantity of water to a greater height when a large quantity of water is available at a small height
- E. All the above



ANSWER: D

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PHY 101 : 61
Practice Questions 176:25

Question 59

A flow in which the quantity of liquid flowing per second is constant, is called _____ flow.

A. Steady
B. Streamline
C. Unsteady
D. Unsteady
E. All the above

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ANSWER: A

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PHY 101 : 61

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Practice

Questions **176:23**

Question 60

The pressure at depth

- A. Greater than the atmospheric pressure by
- B. Less than the atmospheric pressure by
- C. Equal to the atmospheric pressure
- D. Decreases then increases with depth
- E. All the above



ANSWER: A

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PHY 101 : 61 Timer
Practice Questions **176:21**

Question 61

When the temperature is increased the angle of contact of a liquid

A. Increases
B. Decreases
C. Remains the same
D. First increases and then decreases
E. All the above

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ANSWER: B

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