Physicsaholics

DPP - 3

Video Solution on Website:- https://physicsaholics.com/home/courseDetails/42

Video Solution on YouTube:- https://youtu.be/IROdXA8sXzY

Written Solution on Website:- https://physicsaholics.com/note/notesDetalis/36

Q 1. Statement: The only way to slow down a moving object is to apply a net force to it.

(a) True (b) False

Q 2. A rider on horse back falls when horse starts running all of a sudden because:

(a) Rider is taken back
(b) Rider is suddenly afraid of falling
(c) Inertia of rest keeps the upper part of body at rest whereas lower part of the body moves forward with the horse.
(d) None of the above.

Q 3. A boy sitting on the topmost berth in the compartment of a train which is just going to stop on a railway station, drops an apple aiming at the open hand of his brother sitting vertically below his hands at a distance of about 2 meter. The apple will fall:

(a) Precisely on the hand of his brother
(b) Slightly away from the hand of his brother in the direction of motion of the train
(c) Slightly away from the hand of his brother in the direction opposite to the direction of motion of the train
(d) None of the above.

Q 4. Statement: Objects in orbit around the Earth (like a satellite) must have a net force acting on them.
(a) True (b) False

Q 5. Which of Newton's Laws gives the reason for why you can feel things that you touch?

(a) First Law (b) Second Law
(c) Third Law (d) None of these

Q 6. You and a friend are pulling on a rope in opposite directions as hard as you can. What is the "equal and opposite force" to the force of your hand pulling on the rope described by Newton's Third Law?

(a) The force of your arm pulling back on your hand
(b) The force of your friend pulling on the rope in the opposite direction
(c) The force of the rope pulling on your hand in the opposite direction
(d) The force of the rope pulling your friend's hand

Q 7. A book is lying on the table. What is the angle between the action of the book on the table and the reaction of the table on the book:

(a) 0^0 (b) 30^0
(c) 45^0 (d) 180^0

Q 8. Action and reaction forces act on:

(a) The same body
(b) The different bodies
(c) The horizontal surface
(d) Nothing can be said

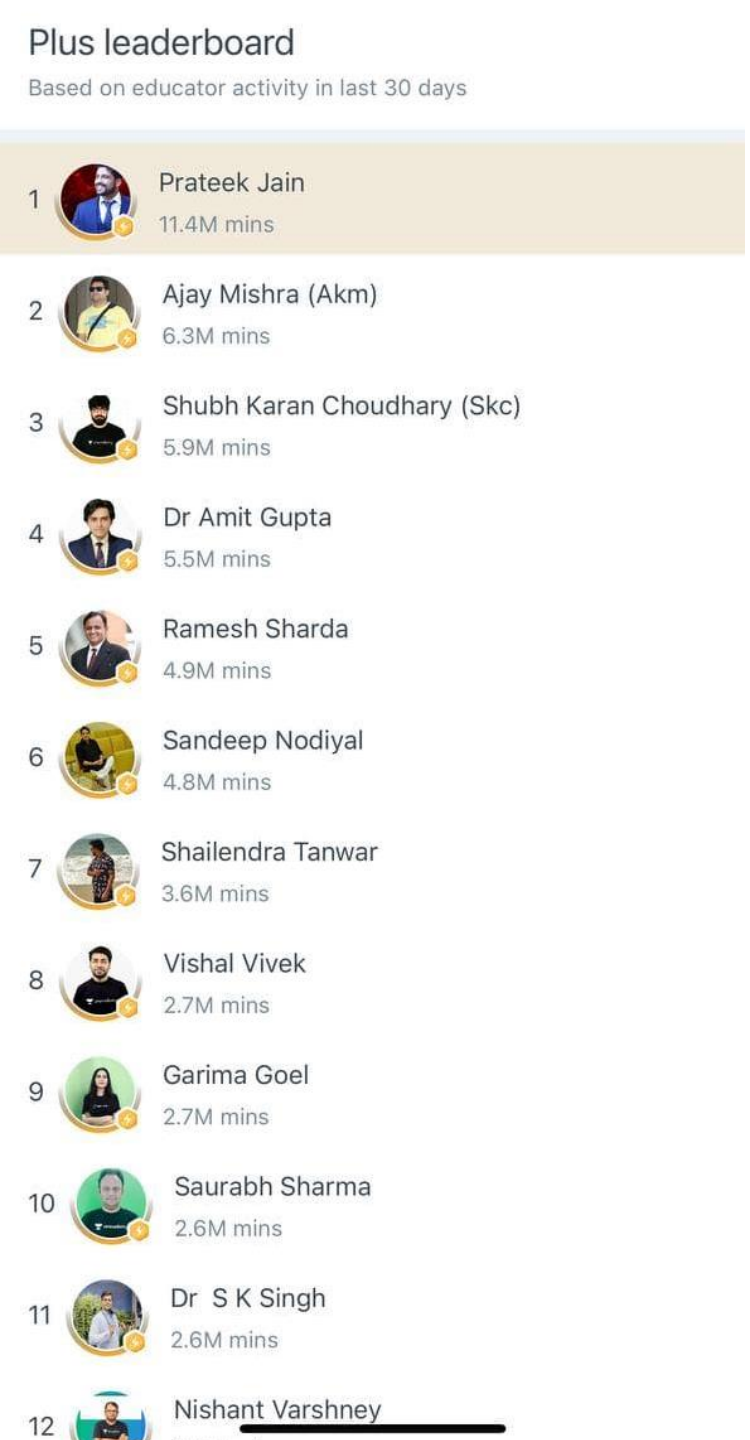
Q 9. You are on a frictionless horizontal plane. How can you get off if no horizontal force is exerted by pushing against the surface:
(a) By jumping
(b) By spitting or sneezing
(c) By rolling your body on the surface
(d) By running on the plane

Q 10. Statement: An object's inertia causes it to come to a rest position.

(a) True (b) False

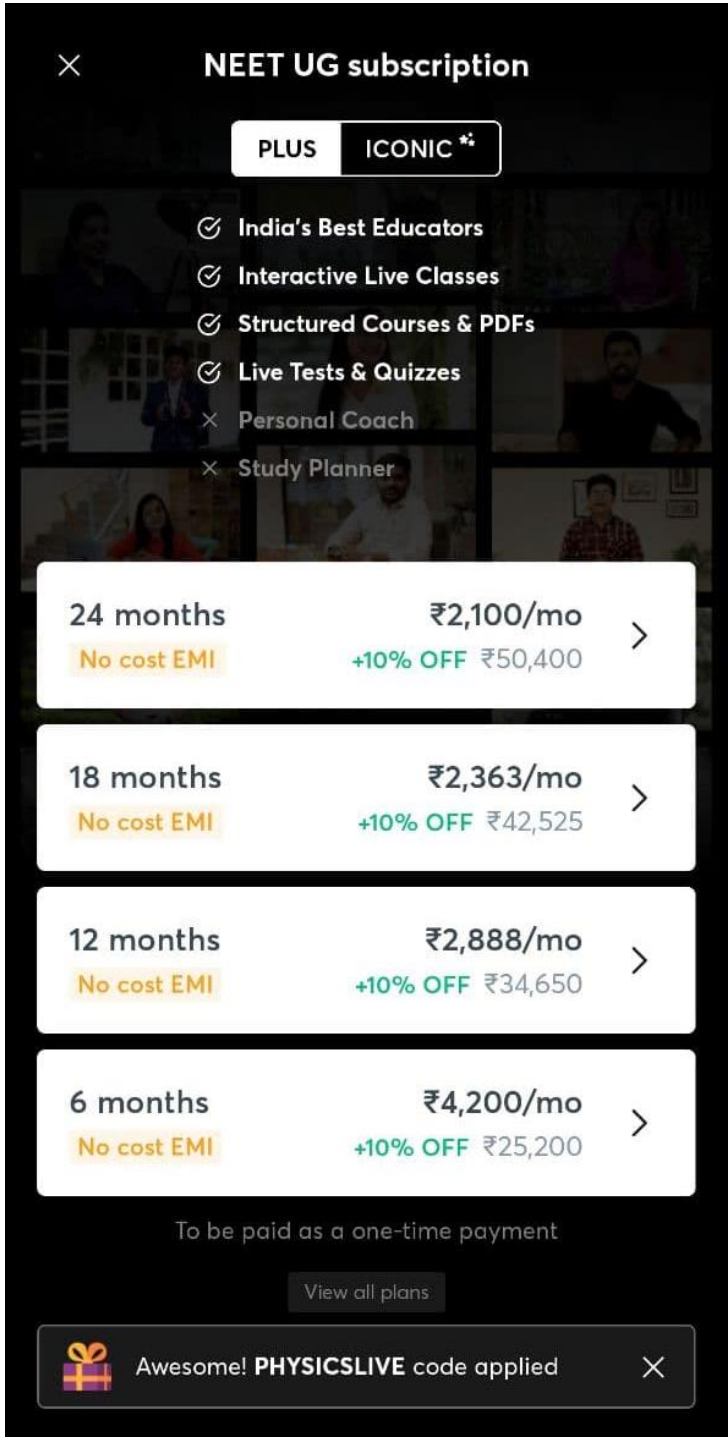
Answer Key

Q.1 a	**Q.2 c**	**Q.3 b**	**Q.4 a**	**Q.5 c**
Q.6 c	**Q.7 d**	**Q.8 b**	**Q.9 b**	**Q.10 b**



PHYSICSLIVE

Use code PHYSICSLIVE to get 10% OFF on Unacademy PLUS and learn from India's Top Faculties.



Written Solution
Physics DPP

DPP-3 NLM: Newton's 1st and 3rd Law

By Physicsaholics Team

Solution: 1

True:
Velocity will only change if a net force is applied on the body.
To slow down the speed of the body, there should be a net force in the opposite direction of its direction of motion.

Ans. a

Solution: 2

Inertia of rest keeps the upper part of body at rest while lower part of the body moves forward with the horse.

Ans. c

Solution: 3

Horizontal velocity of apple will remain same but due to retardation of train, velocity of train and hence velocity of boy w.r.t. ground decreases; so apple falls away from the hand of boy in the direction of motion of the train.

Ans. b

Solution: 4

Explanation:

An object with no net forces acting on it would not have a change in velocity. If it is stationary, it would stay stationary. If it is in motion, it will stay in motion with a fixed velocity (moving in a straight line). This comes directly out of Newton's First Law of Motion.

An object in orbit may have a constant speed, but its direction is constantly changing as it moves in a circle (or ellipse) and, thus, its velocity is also changing (remember, velocity takes into consideration speed and direction). Therefore, there must be a net force acting on it. This is the net force of Earth's gravity acting on the object.

Ans. a

Solution: 5

Explanation:

The reason why you feel something that you touch (where you are applying a very small force), is explained by Newton's Third Law. The thing you are touching is applying an equal and opposite force to your hand (which compresses your finger ever so slightly which activates your "touch" sensors).

Ans. c

Solution: 6

Explanation:

If object A applies a force to object B, then the "equal and opposite force" is the force that B applies to A (same magnitude, but opposite direction). They don't net out with each other because they are acting on two different bodies. Newton's Third Law, therefore, is describing the force of the rope pulling on your hand in the opposite direction.

Ans. c

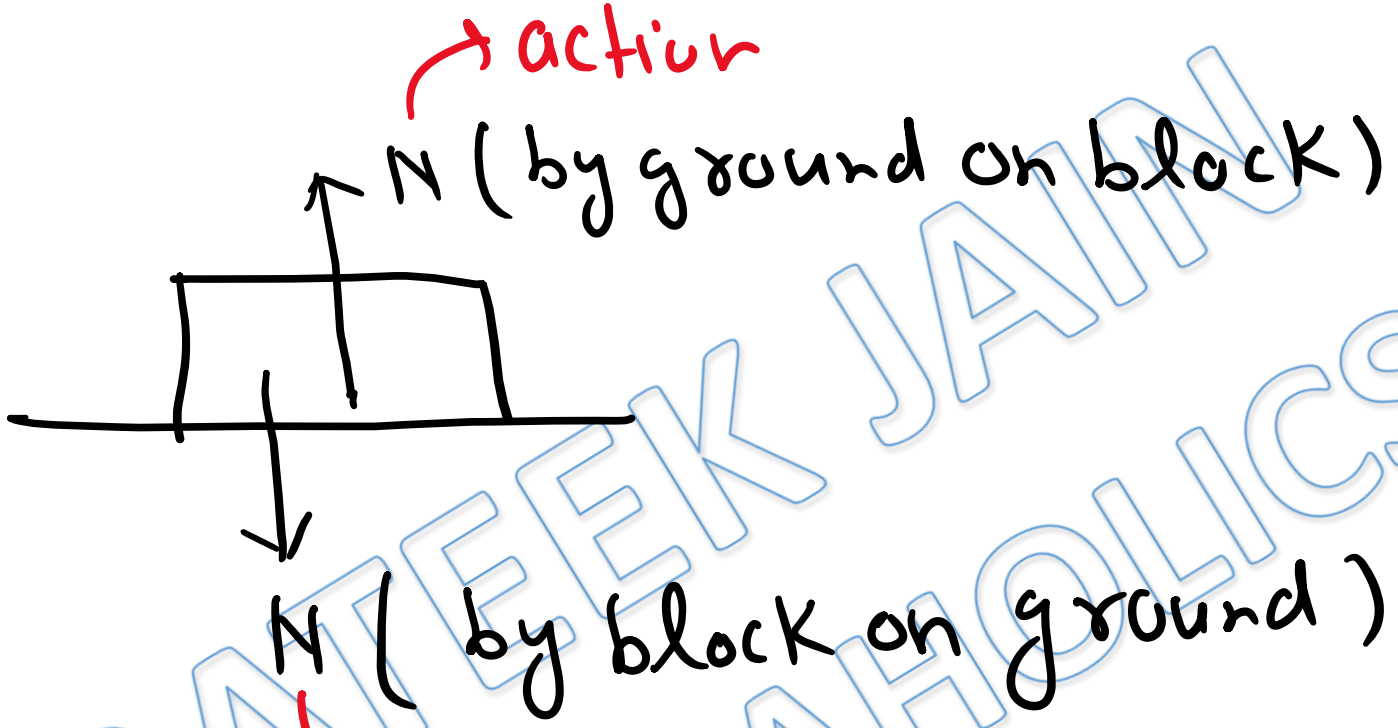
Solution: 7

Explanation:

Since action and reaction acts in opposite direction on same line, hence angle between them is 180^0.

Ans. d

Solution: 8



Action - reaction forces act on different bodies.

Ans (b)

Solution: 9

Explanation:

While splitting or sneezing you will exhale things out with some momentum by applying force on it and in return you will experience a force in the opposite direction according to the Newton′s Third Law of Motion. So, in this way you will acquire a velocity on a frictionless surface and you will be able to get off it.

Ans. b

Solution: 10

Explanation:

Inertia is the tendency of an object to resist change in velocity. It is not a force that causes an object to accelerate or decelerate. A moving object with a lot of inertia (measured by its mass) would actually require more net force to change its velocity in a given amount of time than an object with a low inertia.

Ans. b

For Video Solution of this DPP, Click on below link

Video Solution on Website:- https://physicsaholics.com/home/courseDetails/42

Video Solution on YouTube:- https://youtu.be/IROdXA8sXzY

Written Solution on Website:- https://physicsaholics.com/note/notesDetalis/36

Chalo Niklo