# Laws of Motion

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Question 1.
A spring balance is attached to the ceiling of a lift. A man hangs his bag on the spring and the spring reads 49 N, when the lift is stationary. If the lift moves downwards with an acceleration of 5 m/s, the reading of the spring balance will be
(a) 15 N
(b) 24 N
(c) 49 N
(d) 74 N

▼ Answer

Answer: (b) 24 N

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Question 2.
Two forces 6 N and 8 N act at a point O. If the angle between the lines of action of the force is 90°, then their resultant is
(a) 14 N
(b) 12 N
(c) 10 N
(d) 48 N

▼ Answer

Answer: (c) 10 N

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Question 3.
A body of mass 15 kg moving with a velocity of 10 m/s has its velocity reduced to 6 m/s in two seconds. The force that produced this change in velocity is
(a) 60 N
(b) 30 N
(c) 45 N
(d) 20 N

▼ Answer

Answer: (b) 30 N

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Question 4.
The frame of reference attached to a satellite of the earth is
(a) an inertial frame
(b) an absolute frame at rest with respect to the stars
(c) a non – inertial frame
(d) a gravitational frame

▼ Answer

Answer: (c) a non – inertial frame

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Question 5.
A machine gun fires a bullet of mass 40 g with a velocity of 1200 $ms^{-1}$. The man holding it can exert a maximum force on 144 N on the gum. How many bullets can he fire per second at the most?
(a) one

(b) four
(c) two
(d) three

▼ Answer

Answer: (d) three

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Question 6.
A block of mass M is placed on a flat surface. A force is applied to move it parallel to the surface. The frictional force f developed is proportional to the
(a) square of the mass of the body
(b) mass of the body
(c) reciprocal of the mass of the body
(d) reciprocal of the square of the body

▼ Answer

Answer: (b) mass of the body

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Question 7.
A passenger in a moving bus is thrown forward when the bus is suddenly stopped. This is explained
(a) by Newtons first law
(b) by Newtons second law
(c) by Newtons third law
(d) by the principle of conservation of momentum

▼ Answer

Answer: (a) by Newtons first law

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Question 8.
A rocket with a lift-off mass of 3.5 × 10 kg is blasted upwards with an acceleration of 10 m/s². The initial thrust of the blast is (take g = 10 m/s²)
(a) $1.75 \times 10^{5N}$
(b) $3.5 \times 10^{5N}$
(c) $7.0 \times 10^{5N}$
(d) $14 .0 \times 10^{5N}$

▼ Answer

Answer: (c) $7.0 \times 10^{5N}$

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Question 9.
A gun of mass 1000 kg fires a projectile of mass 1 kg with a horizontal velocity of 100 m/s. The velocity of recoil of the gun in the horizontal direction is
(a) 5 m/s
(b) 0.1 m/s
(c) 15 m/s
(d) 20 m/s

▼ Answer

Answer: (b) 0.1 m/s

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Question 10.
A body is sliding down a rough inclined plane which makes an angle of 30 degree with the horizontal. If the co-efficient of friction is 0.26, the acceleration in $m/s^2$ is
(a) 1.95
(b) 2.78
(c) 3.47
(d) 4.6

▼ Answer

Answer: (b) 2.78

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Question 11.
A block of mass M is placed on a flat surface. A force is applied to move it parallel to the surface. The frictional force f developed is proportional to the
(a) square of the mass of the body
(b) mass of the body
(c) reciprocal of the mass of the body
(d) reciprocal of the square of the body

▼ Answer

Answer: (b) mass of the body

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Question 12.
A force of 12 N acts on a body of mass 2 kg. The acceleration produced on the body is
(a) 24 $m/s^2$
(b) 6 $m/s^2$
(c) 14 $m/s^2$
(d) 10 $m/s^2$

▼ Answer

Answer: (b) 6 $m/s^2$

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Question 13.
The mass of a body is 2 kg. It weight is
(a) 19.6 N
(b) 20 N
(c) 30 N
(d) 40 N

▼ Answer

Answer: (a) 19.6 N

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Question 14.
A gun of mass 1000 kg fires a projectile of mass 1 kg with a horizontal velocity of 100 m/s. The velocity of recoil of the gun in the horizontal direction is
(a) 5 m/s
(b) 0 .1 m/s
(c) 15 m/s
(d) 20 m/s

▼ Answer

Answer: (b) 0 .1 m/s

Question 15.
A body of mass 15 kg moving with a velocity of 10 m/s has its velocity reduced to 6 m/s in two seconds. The force that produced this change in velocity is
(a) 60 N
(b) 30 N
(c) 45 N
(d) 20 N

▼ Answer

Answer: (b) 30 N

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Question 16.
A heavy uniform chain lies on horizontal table top. If the coefficient of friction between the chain and the table surface is 0.25, then the maximum fraction of the length of the chain that can hang over the edge of the table is
(a) 20%
(b) 25%
(c) 30%
(d) 35%

▼ Answer

Answer: (a) 20%

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Question 17.
A body is sliding down a rough inclined plane which makes an angle of 30 degree with the horizontal. If the co-efficient of friction is 0.26, the acceleration in $m/s^2$ is
(a) 1.95
(b) 2.78
(c) 3.47
(d) 4.6

▼ Answer

Answer: (b) 2.78

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Question 18.
The mass of a body which is equal to the ratio of the force acting on a body to the acceleration produced in the body is
(a) the gravitational mass
(b) the electromagnetic mass
(c) the internal mass
(d) the inertial mass

▼ Answer

Answer: (d) the inertial mass

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Question 19.
A machine gun fires a bullet of mass 40 g with a velocity of 1200 $ms^{-1}$. The man holding it can exert a maximum force on 144 N on the gum. How many bullets can he fire per second at the most?
(a) one
(b) four

(c) two
(d) three

▼ Answer

Answer: (d) three

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Question 20.
A passenger in a moving bus is thrown forward when the bus is suddenly stopped. This is explained
(a) by Newtons first law
(b) by Newtons second law
(c) by Newtons third law
(d) by the principle of conservation of momentum

▼ Answer

Answer: (a) by Newtons first law

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