PHYSICS

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WORK, ENERGY AND POWER

Multiple Choice Questions

1. A uniform force of $\left(2\hat{i} + \hat{j}\right)$ N acts on a particle of mass 1 kg. The particle displaces

from position $\left(3\hat{j}+\hat{k}\right)$ m to $\left(5\hat{i}+3\hat{j}\right)$ m.

The work done by the force on the particle is

A. 9 J

B. 6 J

C. 10 J

D. 12 J

Answer: C

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2. A ball of mass 1 kg and another of mass 2 kg are dropped from a tall building whose height is 80 m. After, a fall of 40 m each towards Earth, their respective kinetic energies will be in the ratio of

A. $\sqrt{2}:1$

B. $1:\sqrt{2}$

C. $2:1$

D. $1:2$

Answer: D

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3. A body of mass 1 kg is thrown upwards with a velocity $20ms^{-1}$. It momentarily comes to rest after attaining a height of 18 m. How much energy is lost due to air friction ? (Take $g = 10ms^{-2}$)

A. 20 J

B. 30 J

C. 40 J

D. 10 J

Answer: A

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4. An engine water continuously through a hose. Water leaves the hose with a velocity v and m is the mass per unit length of the kinetic energy is imparted to water ?

A. $\frac{1}{2}mv^2$

B. mv^3

C. $\frac{3}{2}mv^2$

D. $\frac{5}{2}mv^2$

Answer: A::B::C

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5. A body of mass 4 m is lying in xy - plane at rest. It suddenly explodes into three pieces. Two pieces each of mass m move perpendicular to each other with equal speed

v. The total kinetic energy generated due to explosion is

A. mv^2

B. $\frac{3}{2}mv^2$

C. $2mv^2$

D. $4mv^2$

Answer: B

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6. The potential energy of a system increases, if work is done

A. by the system against a conservative force

B. by the system against a non-conservative force

C. upon the system by a conservative force

D. upon the system by a non-conservative force

Answer: A

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7. What is the minimum velocity with a body of mass m must enter a vertical loop of radius R so that it can complete the loop ?

A. $\sqrt{2gR}$

B. $\sqrt{3gR}$

C. $\sqrt{5gR}$

D. $\sqrt{gR}$

Answer: C

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8. The work done by the conservative force for a closed path is

A. always negative

B. zero

C. always positive

D. not defined

Answer: B

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9. If the linear momentum of the object in increased by 0.1%, then the kinetic energy is increased by :

A. 0.1%

B. 0.2%

C. 0.4%

D. 0.01%

Answer: B

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10. If the potential energy of the particle is $\alpha - \frac{\beta}{2}x^2$, then force experienced by the particle is:

A. $F = \frac{\beta}{2}x^2$

B. $F = \beta x$

C. $F = -\beta x$

D. $F = -\frac{\beta}{2}x^2$

Answer: C

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11. A wind - powered generator converts wind energy into electric energy. Assume that the energy intercepted by its blades into electrical energy. For wind speed v, the electrical power output will be proportional to,

A. v

B. v^2

C. v^3

D. v^4

Answer: C

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12. Two equal masses m_1 and m_2 are moving along the same straight line with velocities $5ms^{-1}$ and $-9ms^{-1}$ respectively. If the collision is elastic, then calculate the velocities after the collision of m_1 and m_2, respectively

A. $-4ms^{-1}$ and $10ms^{-1}$

B. $10ms^{-1}$ and $0ms^{-1}$

C. $-9ms^{-1}$ and $5ms^{-1}$

D. $5ms^{-1}$ and $1ms^{-1}$

Answer: C

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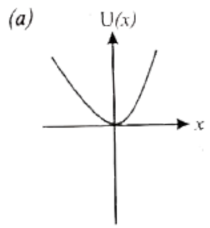
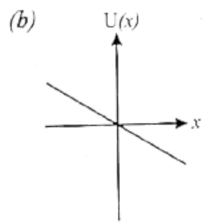
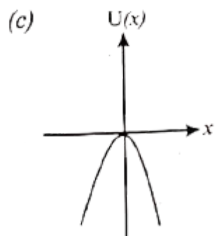
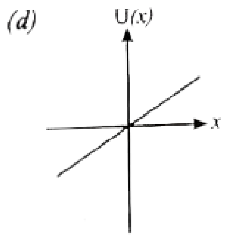
A. 

B. 

C. 

D. 

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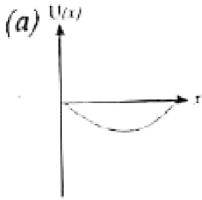
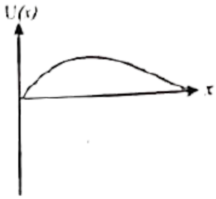
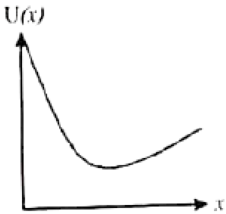
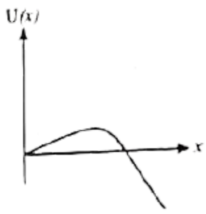
A. 

B. 

C. 

D. 

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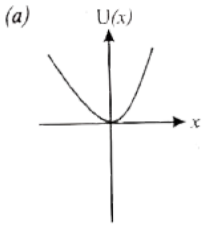
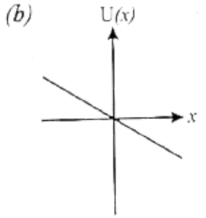
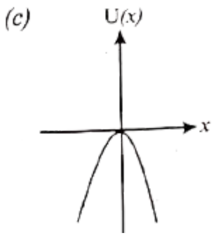
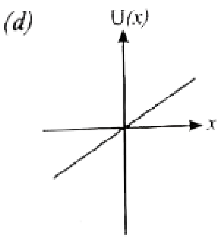
A. 

B. 

C. 

D. 

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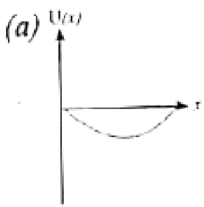
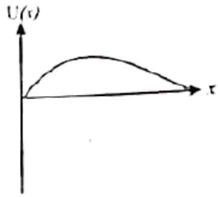
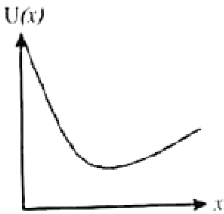
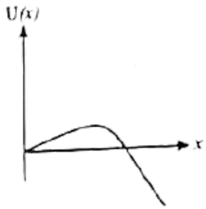
A. 

B. 

C. 

D. 

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Short Answer Questions

1. Explain how the definition of work in physics is different from general perception.

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2. Write the various types of potential energy. Explain the formulae.

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3. Write the differences between conservative and Non - conscrvative force. Give two examples each.

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4. Explain the characteristics of elastic and inelastic collision.

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5. Define the following.

Coefficient of restitution

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6. Define the following.

Power

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7. Define the following.

Law of conservation of energy

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Loss of kinetic energy in inelastic collision

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9. State the factors on which the work done by the force depends on.

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11. How can an object move with zero acceleration (constant velocity) when the external force is acting on the object ?

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12. A light body and a heavy body have the same kinetic energy. Which one will have greater momentum?

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13. What sort of energy is associated with a flying bird in air?

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14. Can a body have energy without momentum?

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15. What is meant conservative force?

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16. What is non-conservative force?

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17. Express a unit of electrical energy in terms of joule.

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18. What is a perfect inelastic collision ? Derive the expression of the common velocity after collision.

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19. What do you mean by "Perfect elastic"?

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20. Write three conditions under which work done is zero.

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21. Discuss the results of work-Energy theorem.

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41. Write three conditions under which work done is zero.

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42. Discuss the results of work-Energy theorem.

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Long Answer Questions

1. Explain with graphs the difference between work done by a constant force and by a variable force.

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2. State and explain work energy principle. Mention any three examples for it.

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3. Arrive at an expression for power and velocity. Give some examples for the same.

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4. Arrive at an expression for elastic collision in Dimension and discuss various case.

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5. What is inelastic collision ? In which way it is different from elastic collision. Mention few examples in day to life for inelastic collision.

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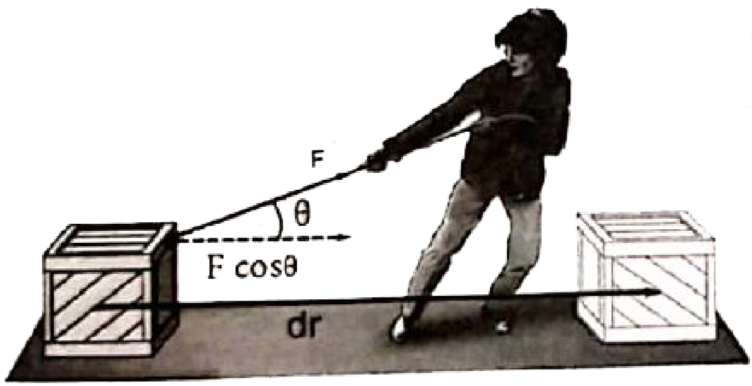
6. Give the expression for work done if angle between force $\overrightarrow{F}$ and displacement $\overrightarrow{s}$ is θ. Also find the dimensions and SI unit of work.



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7. What is meant by positive work, negative work and zero work? Give one example of each.

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8. Derive the relation between momentum and kinetic energy.

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9. Derive an expression for the gravitational potential energy of a body of mass 'm' raised to a height 'h' above the earth's surface.

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10. Derive an expression for the potential energy of an elastic stretched spring.

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11. Discuss the force - displacement graph for a spring.

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12. Draw a graph showing the variation of K.E and P.E with respect to displacement for a spring mass system.

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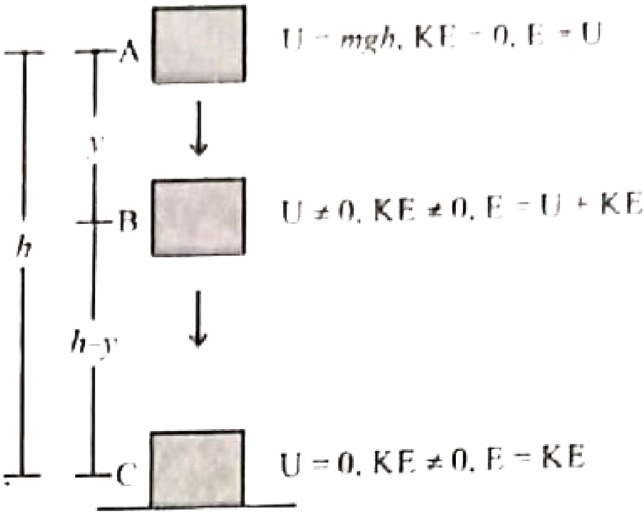
13. Show graphically that the total energy of a body falling freely under gravity is constant.



Conservation of energy

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14. A small body tied to one end of the string is whirled in a vertical circle. Find the velocity and tension at the lowest and highest point of the circle respectively.

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15. Prove that bodies of identical masses exchange their velocities after head-on elastic collision.

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16. A lighter body collides with much more massive body at rest. Prove that the direction of lighter body is reversed and massive body remains at rest.

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17. Two bodies of identical masses with 2^{nd} body at rest collides with 1^{st} body, prove that the velocities of the bodies are reversed.

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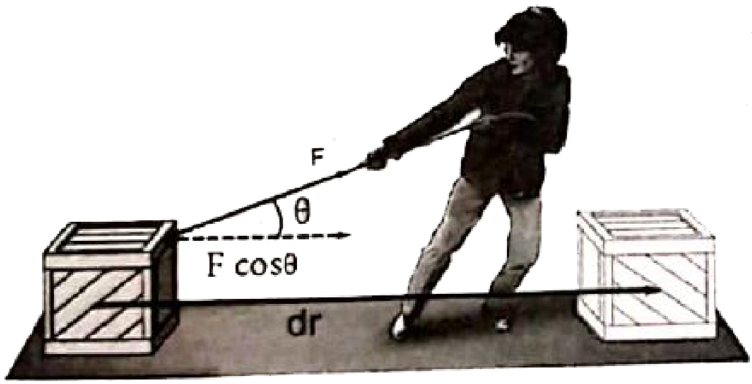

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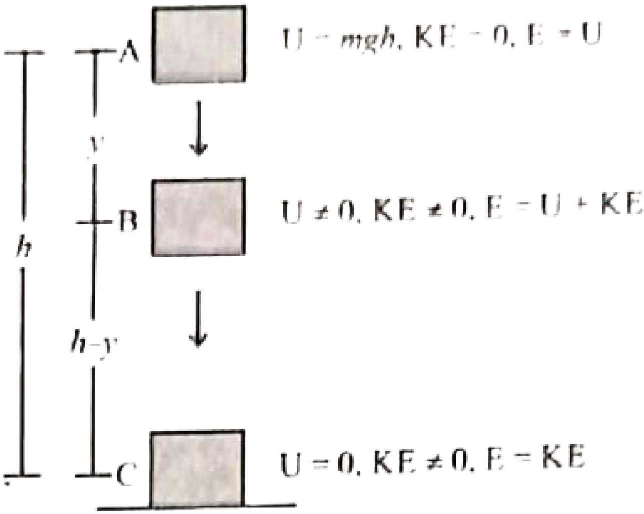

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Numerical Problems

1. Calculate the work done by a force of 30 N in lifting load of 2g to a height of 10 m $(g = 10ms^{-2})$.

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2. A ball with a velocity of $5ms^{-1}$ impinges at angle of 60° with the vertical on a smooth horizontal plane. If the coefficient of restitution is 0.5, find the velocity and direction after the impact.

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3. A bob of mass m is attached to one end of the rod of negligible mass and length r, the other end of which is pivoted freely at a fixed centre O as shown in the figure. What initial speed must be given to the object to reach the top of the circle?

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4. Two different unknown masses A and B collide. A is initially at rest when B has a speed v. After collision B has a speed v/2 and moves at right angles to its original direction of motion. Find the direction in which A moves after collision.

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5. A bullet of mass 20 g strikes a pendulum of mass 5kg. The centre of mass of pendulum rises a vertical distance of 10 cm. If the bullet gets embedded into the pendulum, calculate its initial speed.

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6. When a force $\overrightarrow{F} = \left(\hat{i} + 2\hat{j} + 3\hat{k}\right)$ is applied to body, it undergoes a displacement along a vector $\overrightarrow{s} = \left(2\hat{i} - \hat{j} + 6\hat{k}\right)$. Calculate the work done by the body.

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7. A body is displaced $10\hat{j}$ under the force of $-2\hat{i}+15\hat{j}+6\hat{k}N$. Calculate the work done.

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8. In some demonstration, a police officer fires a bullet of mass 50.0g with speed $200ms^{-1}$ on soft plywood of thickness 2.00 cm. The bullet emerges with only 10% of its initial kinetic energy. What is the emergent speed of the bullet?

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9. A body of mass 5 kg initially at rest is subjected to a force of 20N. What is the kinetic energy acquired by the body at the end of 10s?

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10. A ball of mass m is pushed down the wall of hemispherical bowl from point A. It just rises up to edge Q of the bowl. Find the speed at which ball is pushed down.

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11. A body of mass 0.3 kg is taken up an inclined plane of length 10m and height 5 m and then allowed to slide down to bottom again. Find

work done by frictional force over the round trip if $\mu = 0.15$.

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12. A body of mass 0.3 kg is taken up an inclined plane of length 10 m and height 5 m and then allowed to slide down to bottom again. Find

kinetic energy at the end of the trip.

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13. A ball of mass 0.1 kg collides elastically with a ball of unknown mass at rest. If 0.1 kg ball rebounds at 1/3 of original speed, find the mass of another ball.

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14. If a particle elastically collides obliquely with a particle of same mass at rest then show that they move perpendicular to each other after collision in two dimension.

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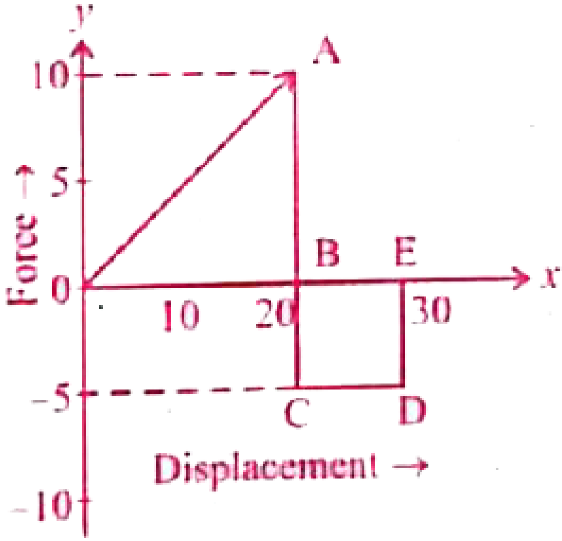
15. Calculate work done from the graph.



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16. What is the stopping distance for a vehicle of mass m moving with speed v along a level road, if the co-efficient of friction between the tyres and the road is μ?

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17. A gardener pushes a lawn roller through a distance of 20m. If he applies a force of 20 kg wt in a direction inclined at 60° to the grounds, find the work done by him. Take $g = 9.8 ms^{-2}$.

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18. A particle moves along the x-axis from $x = 0$ to $x = 5m$ under the influence of a force given by $F = 7 - 2x + 3x^2$. Find the work done in the process.

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19. A bullet weighing 10g is fined with a velocity of $800ms^{-1}$. After passing through a mud wall 1m thick, its velocity decreases to $100ms^{-1}$. Find the average resistance offered by the mud wall.

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20. A vehicle of mass 15 quintal climbs up a hill 200m high. It then moves on a level road with speed of $30ms^{-1}$. Calculate the potential energy gained by it and its total mechanical energy while running on the top of the hill.

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21. A body of mass 2kg is resting on a rough horizontal surface. A force of 20N is now applied to it for 10s, parallel to the surface. If the coefficient of kinetic friction between the surfaces of contact is 0.2. Calculate

Work done by the applied force in 10s

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26. A 10kg ball and 20kg ball approach each other with velocities $20ms^{-1}$ and $10ms^{-1}$

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Watch Video Solution

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39. Calculate the work done by a force of 30 N in lifting load of 2g to a height of 10 m $(g = 10 ms^{-2})$.

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40. A ball with a velocity of $5ms^{-1}$ impinges at angle of 60° with the vertical on a smooth horizontal plane. If the coefficient of restitution is 0.5, find the velocity and direction after the impact.

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41. A bob of mass m is attached to one end of the rod of negligible mass and length r, the other end of which is pivoted freely at a fixed centre O as shown in the figure. What initial speed must be given to the object to reach the top of the circle? (Hint: Use law of conservation of energy). Is this speed less or greater than speed obtained in the section 4.2.9?

View Text Solution

42. Two different unknown masses A and B collide. A is initially at rest when B has a speed

v. After collision B has a speed v/2 and moves at right angles to its original direction of motion. Find the direction in which A moves after collision.

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43. A bullet of mass 20 g strikes a pendulum of mass 5kg. The centre of mass of pendulum rises a vertical distance of 10 cm. If the bullet gets embedded into the pendulum, calculate its initial speed.

Watch Video Solution

44. When a force $\vec{F} = \left(\hat{i} + 2\hat{j} + 3\hat{k}\right)$ is applied to body, it undergoes a displacement along a vector $\vec{s} = \left(2\hat{i} - \hat{j} + 6\hat{k}\right)$. Calculate the work done by the body.

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45. A body is displaced $10\hat{j}$ under the force of $-2\hat{i} + 15\hat{j} + 6\hat{k}N$. Calculate the work done.

Watch Video Solution

46. In some demonstration, a police officer fires a bullet of mass 50.0g with speed $200ms^{-1}$ on soft plywood of thickness 2.00 cm. The bullet emerges with only 10% of its initial kinetic energy. What is the emergent speed of the bullet?

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47. A body of mass 5 kg initially at rest is subjected to a force of 20N. What is the kinetic energy acquired by the body at the end of 10s?

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48. A ball of mass m is pushed down the wall of hemispherical bowl from point A. It just rises up to edge Q of the bowl. Find the speed at which ball is pushed down.

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49. A body of mass 0.3 kg is taken up an inclined plane of length 10m and height 5 m and then allowed to slide down to bottom again. Find

work done by frictional force over the round trip if $\mu = 0.15$.

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50. A body of mass 0.3 kg is tken up an inclined plane of length to m and height 5 m and then

allowed to slide down to bottom again. Find kinetic energy at the end of the trip.

View Text Solution

51. A ball of mass 0.1 kg collides elastically with a ball of unknown mass at rest. If 0.1 kg ball rebounds at 1/3 of original speed, find the mass of another ball.

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52. If a particle elastically collides obliquely with a particle of same mass at rest then show that they move perpendicular to each other after collision in two dimension.

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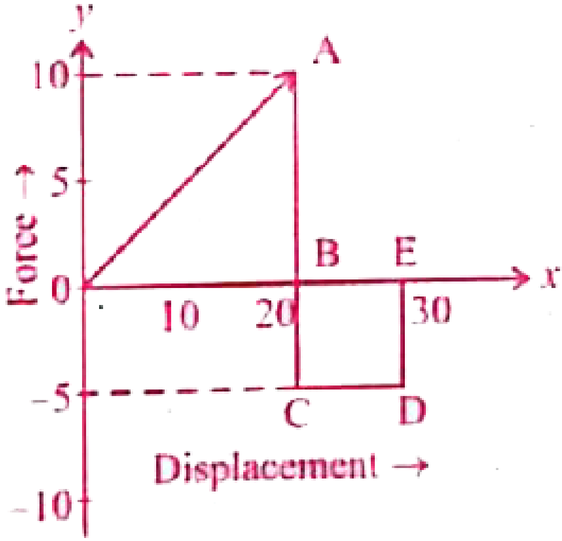
53. Calculate work done from the graph.



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54. What is the stopping distance for a vehicle of mass m moving with speed v along a level road, if the co-efficient of friction between the tyres and the road is μ?

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55. A gardener pushes a lawn roller through a distance of 20m. If he applies a force of 20 kg wt in a direction inclined at 60° to the grounds, find the work done by him. Take $g = 9.8 ms^{-2}$.

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56. A particle moves along the x-axis from $x = 0$ to $x = 5m$ under the influence of a force given by $F = 7 - 2x + 3x^2$. Find the work done in the process.

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57. A bullet weighing 10g is fined with a velocity of $800 ms^{-1}$. After passing through a mud wall 1m thick, its velocity decreases to $100 ms^{-1}$. Find the average resistance offered by the mud wall.

Watch Video Solution

58. A vehicle of mass 15 quintal climbs up a hill 200m high. It then moves on a level road with speed of $30ms^{-1}$. Calculate the potential energy gained by it and its total mechanical energy while running on the top of the hill.

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Conceptual Questions

1. A spring which is initially in un-streatched condition, is first stretched by a length x and again by a further length x. The work done in the first case W_1 is one third of the work done in second case W_2. True of false ?

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2. Which is conserved in inelastic collision ? Total energy (or) Kinetic energy ?

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3. Is there any net work done by external forces on a car moving with a constant speed along a straight road ?

Watch Video Solution

4. A car starts from rest and moves on a surface with uniform acceleration. Draw the graph of kinetic energy versus displacement. What information you can get from that graph ?

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5. A charge particle moves towards another charged particle. Under what conditions the total momentum and the total energy of the system conserved ?

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6. Can a body have energy without momentum?

Watch Video Solution

7. Is whole of the kinetic energy lost in any perfectly inelastic collision?

Watch Video Solution

8. A porter moving vertically up the stairs with a suitcase on his head does work. Give reason.

Watch Video Solution

9. When an arrow is shot, where from the arrow will acquire its kinetic energy?

Watch Video Solution

10. When is the exchange of energy maximum during an elastic collision.

Watch Video Solution

11. A spark is produced, when two stones are struck against each other. Why?

Watch Video Solution

12. Two bodies of unequal masses have same linear momentum, which one has greater kinetic energy?

Watch Video Solution

13. Why a metal ball rebounds better than a rubber ball?

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14. Draw a graph showing the variation of potential energy of an object thrown vertically upward by a boy with respect to its height.

Watch Video Solution

15. If energy is neither created nor destroyed, what happens to the so much energy spent against friction?

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16. The earth moving around the sun in a circular orbit is acted upon by a force and hence work must be done on the earth. Do you agree with this statement?

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17. Suppose that the earth revolves around the sun in a perfectly circular orbit. Does the sun do any work on the earth?

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Multiple Choice Questions Other Important Questions Answers

1. A particle is acted upon by a force of constant magnitude which is always perpendicular to the velocity of the particle, the motion of the particles takes place in a plane. It follows that:

A. its kinetic energy is constant

B. its acceleration is constant

C. its velocity is constant

D. it moves in a straight line

Answer: A

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2. You lift a heavy book from the floor of the room and keep it in the book shelf having a height 2m. In this process you take 5 seconds. The work done by you will depend upon:

A. mass of the book and time taken

B. weight of the book and height of the book-shelf

C. height of the book-shelf and time taken

D. mass of the book, height of the book-shelf and time taken

Answer: B

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3. A man starts walking from a point on the surface of earth (assumed smooth) and reaches diagonally opposite point. What is the nature of work done by him?

A. zero

B. positive

C. negative

D. nothing can be said

Answer: A

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4. Which one of the following is not a conservative force?

A. Gravitational force

B. Electrostatic force between two changes

C. Magnetic force between two magnetic dipoles

D. Frictional force

Answer: D

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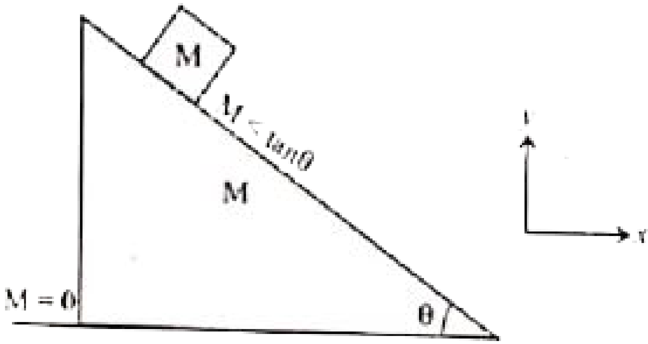
5. Choose the correct option:



A. momentum is conserved in x-direction

B. momentum is conserved in y-direction

C. mechanical energy is conserved

D. work done by internal forces is zero

Answer: A

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6. In the following question, a statement of Assertion is followed by a statement of Reason.

Assertion: When a body moves along a circular path, the work done by a centripetal force is zero.

Reason: The centripetal force is utilised in moving the body along the circular path and hence the work is done.

Choose one of the following statements is correct?

A. Both assertion and reason are true and reason is the correct explanation of the assertion

B. Both assertion and reason are true but reason is not correct explanation of the assertion

C. Assertion is true but reason is false

D. Both assertion and reason are false

Answer: C

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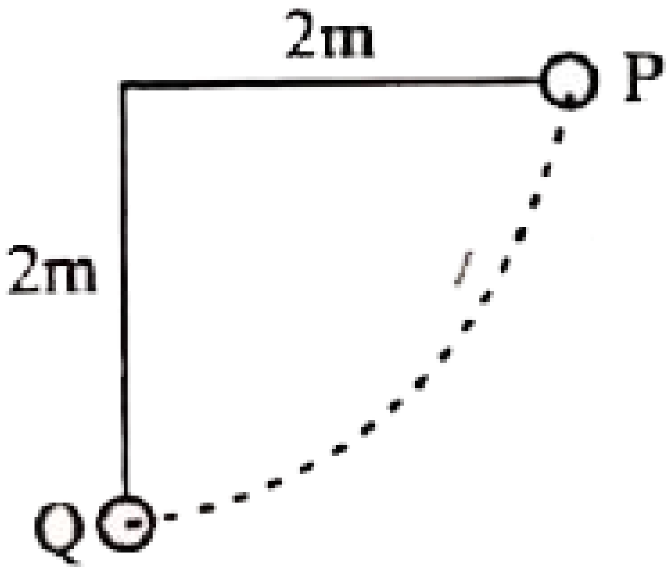
7. The bob of a pendulum of length 2 m lies at P. When it reaches Q it loses 10% of its total energy due to air resistance. For this event, which of the following is a correct statement.



A. The velocity at Q is $1m/s$

B. The velocity at Q is $6m/s$

C. The acceleration at Q is $3m/s^2$

D. The acceleration at Q is $6m/s^2$

Answer: B

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8. Match the parameters given in column I with the expressions given in column II.

Column I	Column II
1. Elastic potential energy	(i) mgh
2. Kinetic energy	(ii) $F.s$
3. Potential energy	(iii) $F.s \cos \theta$
4. Work done by a constant force	(iv) $\frac{1}{2} mv^2$
	(v) $\frac{1}{2} kx^2$
	(vi) $F \cos \theta (r_1 - r_2)$

A. 1 - (i), 2 - (iii), 3 - (ii), 4 - (vi)

B. 1 - (ii), 2 - (v), 3 - (i), 4 - (iv)

C. 1 - (vi), 2 - (iv), 3 - (ii), 4 - (i)

D. 1 - (v), 2 - (iv), 3 - (i), 4 - (vi)

Answer: D

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9. A body of mass 1kg begins to more under the action of a time dependent force $F = \left(2t\hat{i} + 3t^2\hat{j}\right)N$ where $\hat{i}$ and $\hat{j}$ are unit vectors along x and y axes. What power will be developed by a force at time t?

A. $(2t^3 + 3t^5)w$

B. $(2t^2 + 3t^3)w$

C. $(2t^2 + 4t^4)w$

D. $(2t^3 + 3t^4)w$

Answer: A

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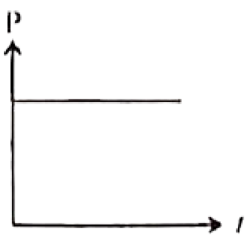
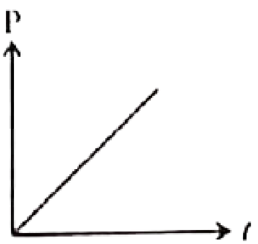
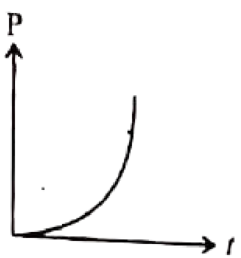
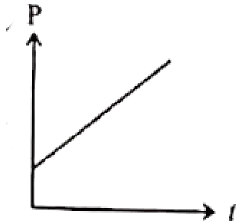
10. The body moves under the action of constant force along a straight line. The instantaneous power developed by this force with time 't' is correctly represented by:

A. 

B. 

C. 

D. 

Answer: B

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11. Which one of the following statement is an incorrect statement?

A. work done by a force $W = F.\,dr\cos\theta$

B. kinetic energy = $\frac{p^2}{2m}$

C. Potential energy of a body moving with constant velocity is

$$U = \int F_{ext} . \, d\overrightarrow{r}$$

D. Power = Force $\times$ Velocity

Answer: B

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12. The spring of the watch when wound possesses....................energy.

A. kinetic

B. potential

C. neither (a) nor (b)

D. both (a) and (b)

Answer: B

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13. A light and heavy body have equal momentum, which has greater K.E?

A. the light body

B. the heavy body

C. both have equal K.E

D. data insufficient

Answer: A

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14. A light body and a heavy body have the same kinetic energy. Which one will have greater momentum?

A. the light body

B. the heavier body

C. both have same momentum

D. data insufficient

Answer: B

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15. Same retarding force is applied to stop the train in certain distance. When the speed is doubled, how is this distance changed?

A. Remain same

B. Gets doubled

C. Gets halved

D. Gets four times

Answer: D

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16. Law of conservation of linear momentum is applicable even in those cases where:

A. Newton's I law of motion does not hold good

B. Newton's II law of motion does not hold good

C. Newton's III law of motion does not hold good

D. None of these

Answer: A

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17. In the following question, a statement of Assertion is followed by a statement of Reason. Mark the correct choice.

Assertion: In an elastic collision of two billiard balls are in contact with each other. During the short time of collision, kinetic energy is conserved.

Reason: Energy, spent against friction does not follow the law of conservation of energy

A. Both assertion and reason are true and reason explains assertion correctly.

B. Both assertion and reason are true but reason does not explain assertion correctly

C. Assertion is true but reason is false

D. Assertion is false but reason is also false

Answer: D

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18. If the force and the displacement are in the same direction, then the work done is:

A. F.S

B. $-F. S$

C. 0

D. F / S

Answer: A

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19. If the force and the displacement are at an angle of 180°, then work done is:

A. F.S

B. $-F.\,S$

C. 0

D. $F - S$

Answer: B

Watch Video Solution

20. Which one of the following statements is incorrect?

A. When a shell is exploded into four unequal parts linear momentum is conserved

B. For a perfect elastic collision the coefficient of restitution is unity

C. In an inelastic collision total kinetic energy is conserved

D. When a body undergoes a vertical circular motion, the minimum speed at the highest point is $v > \sqrt{5gr}$ to stay in the circular path.

Answer: C

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21. When a body does some work, we can say that work done by the body is

A. work

B. no work

C. positive work

D. negative work

Answer: C

Watch Video Solution

22. A body is said to be doing a negative work if :

A. it does work in the direciton of force

B. work is done against a force

C. work is done by a force

D. it does no work

Answer: B

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23. Consider the following two statements.

(A) Linear momentum of a system of particles is zero

(B) Kinetic energy of a system of particles is zero. Then.

A. A does not imply B , B does not imply A

B. A implies B but B does not imply A

C. A does not imply B but B implies A

D. A implies B and B implies A

Answer: C

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24. From the following statements select the incorrect statements.

A. 1 giga watt = 10^9 watt

B. 1 electrical unit = $36 \times 10^6 J$

C. 1 mega watt = 10^6 watt

D. 1 horse power = 746 W

Answer: B

Watch Video Solution

25. If a stone is released from a tower, then its total energy during its fall.

A. increases

B. decreases

C. remains constant

D. first increases then remains constant

Answer: C

Watch Video Solution

26. Two springs have their force constants k_1 and $k_2 (k_2 > k_1)$. When they are stretched by the same force _____ .

A. no work is done in case of both the springs

B. equal work is done in case of both the springs

C. more work is done in case of second spring

D. more work is done in case of first spring

Answer: C

Watch Video Solution

27. Which of the following statements is wrong?

A. K.E of a body is dependent on the direction of motion

B. In an elastic collision of two bodies, the momentum and energy of each body is conserved

C. If two protons are brought towards each other,the P.E. of the system increases

D. A body can have energy without momentum

Answer: A

Watch Video Solution

28. A rock of mass m dropped to the ground from a height h. A second rock with mass 2m is dropped from the same height. When second rock strikes the ground, what is its kinetic energy?

A. Twice that of the first rock

B. Four times that of the first rock

C. The same as that of the first rock

D. Half that of the first rock

Answer: A

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29. The potential energy of a system increases, if work is done

A. upon the system by a non-conservative force

B. upon the system by a conservative force

C. by the system against a non-conservative force

D. by the system against a conservative force

Answer: D

Watch Video Solution

30. A bullet is fired from a rifle which recoils after firing. The ratio of kinetic energy of the rifle to that of the bullet is:

A. less than one

B. more than one

C. equal to one

D. zero

Answer: A

Watch Video Solution

31. In the following question a statement of assertion is followed by a statement of reason. Select the correct choice.

Assertion: Mass and energy are conserved as a single entity called mass - energy. They are not conserved separately.

Reason: Mass and energy are interconvertible in accordance with Einstein's mass energy relation.

A. Assertion is true but reason is false

B. Assertion is false and reason is also false

C. Assertion is true and reason is true and reason explains assertion correctly

D. Assertion is true and reason is true and reason does not explain assertion correctly.

Answer: C

Watch Video Solution

32. If the force acting on a body is inversely proportional to its speed, the kinetic energy of the body is:

A. constant

B. directly proportional to time

C. inversely proportional to time

D. directly proportional to the square of time

Answer: B

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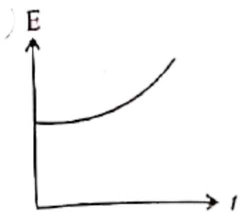
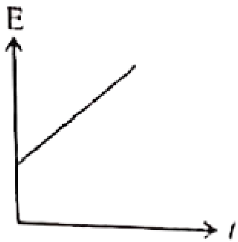
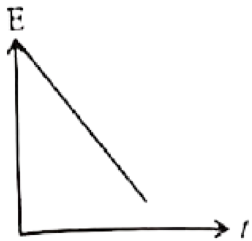
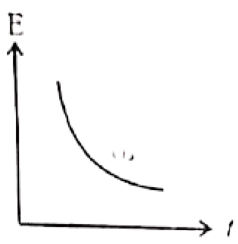
33. A particle is dropped from a height h. A constant horizontal velocity is given to the particle. Taking g to be constant everywhere, kinetic energy E of the particle with respect to time t is correctly shown in:

A. 

B. 

C. 

D. 

Answer: A

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34. Select the odd man out from the following equations related to values of parameter.

A. $1eV = 1.6 \times 10^{-19} J$

B. Kalorie = $4.186J$

C. Acceleration due to gravity $g = 9.8m/s^2$

D. $1kWh = 3.6 \times 10^{-6} J$

Answer: C

Watch Video Solution

35. If a body is raised from the surface of the earth upto height R, what is the change in potential energy?

A. mgR

B. $\frac{3}{2} mgR$

C. $\frac{mgR}{2}$

D. $\frac{mgR}{4}$

Answer: C

Watch Video Solution

36. In the following question select the correct statement.

The law of conservation of energy always holds good when:

A. a body moves down a rough plane

B. two electrically charged particles collide

C. two bodies collide

D. a body moves (or rolls) down a smooth plane

Answer: D

Watch Video Solution

37. Principle of conservation of linear momentum:

A. is applicable when time of impact between 2 colliding particles is extremely small

B. when time of impact is moderately small

C. when time of impact is large

D. is independent of time of impact

Answer: A

Watch Video Solution

38. Two balls at the same temperature collide. What is conserved?

A. momentum

B. KE

C. Temperature

D. Velocity

Answer: A

Watch Video Solution

39. Two bodies of masses 3m and 9m are moving with equal kinetic energies. The ratio of linear momenta is:

A. $1:3$

B. $1:\sqrt{3}$

C. $3:1$

D. $\sqrt{3}:1$

Answer: B

Watch Video Solution

40. What is a perfect inelastic collision ? Derive the expression of the common velocity after collision.

A. before impact is zero

B. before impact is equal to that after impact

C. after impact is zero

D. None of the above is true

Answer: C

Watch Video Solution

41. In perfect elastic collision, the relative velocity of the body before impact is:

A. equal to relative velocity after impact

B. equal to zero

C. greater than relative velocity after impact

D. less than relative velocity after impact

Answer: A

Watch Video Solution

42. In an elastic collision

A. time of collision is small

B. bodies are more particles

C. bodies are more spheres

D. under all conditions

Answer: D

Watch Video Solution

43. In the following question which one of the statements is correct?

Head on collision signifies collision with:

A. velocities of equal magnitudes

B. velocities of different magnitudes

C. velocities acting along same straight line out in opposite direction

D. velocities acting at right angles

Answer: C

Watch Video Solution

44. A mass of 0.5 kg moving with a velocity of 1.5 m/s on a horizontal smooth surface, collides with a nearly weightless spring of force constant $K = 50N/m$. The maximum compression of the spring would be:

A. 0.3 m

B. 1.5 m

C. 0.15 m

D. 0.25 m

Answer: C

Watch Video Solution

45. A ball strikes against the floor and returns with double the velocity. What type of collision is it?

A. perfectly elastic

B. perfectly inelastic

C. partially elastic

D. none of the above

Answer: A

Watch Video Solution

46. A bullet strikes the wooden block and gets embedded into it. What type of collision is it?

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B. perfectly inelastic

C. partially elastic

D. none of the above

Answer: B

Watch Video Solution

47. A bullet is fired from a rifle. If the rifle recoils freely then the K.E of the rifle as compared to that of bullet is:

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B. equal

C. lesser

D. none of the above

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Watch Video Solution

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B. total momentum decreases

C. total KE increases

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Watch Video Solution

49. The potential energy of a certain spring when streched by a distance x is 20J. The amount of work required to strech it through an additional distance x is:

A. 60J

B. 40J

C. 20J

D. 10J

Answer: A

Watch Video Solution

50. Match the parameters given in column I and column II correctly.

Column I	Column II
1. Work	*(i)* Rate of doing work
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3. Power	*(iii)* Vector product of force and displacement
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	(v) Change in linear momentum

A. 1 - (iii), 2- (v), 3 - (ii), 4 - (i)

B. 1 - (i), 2 - (ii), 3 - (iii), 4 - (v)

C. 1 - (iii), 2 - (i), 3 - (iv), 4 - (v)

D. 1 - (iv), 2 - (v), 3 - (ii), 4 - (i)

Answer: D

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51. A stone tied to a piece of string whirled in a vertical circle with uniform speed, in what position of the stone in the tension in the string greatest?

A. in the highest position of the stone

B. in the lowest position of the stone

C. in the position when string is horizontal

D. is same for all positions of the stone

Answer: B

View Text Solution

52. The coefficient of restitution e for a perfectly elastic collision is

A. 1

B. 0

C. ∞

D. -1

Answer: A

Watch Video Solution

53. In an explosion, a body breaks up into two pieces of unequal masses. In this case which one of the following statements is correct?

A. both parts will have numerically equal momentum

B. lighter part will have more momentum

C. heavier part will have more momentum

D. both parts will have equal kinetic energy

Answer: A

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54. Select the correct pair from the following pairs related to Physics.

A. The dimension of energy is ML^2T^{-2} and that of power is ML^2T^{-3}

B. The dimension of energy is MLT^2 and that of power is $M^{-2}LT^2$

C. The dimension of force is MLT^{-2} and that of impulse is $ML^{-1}T^{-1}$

D. The dimension of force $ML^{-1}T^2$ and that of impulse is $M^{-1}L^2T^{-2}$

Answer: A

Watch Video Solution

55. A body of mass 4 m is lying in xy - plane at rest. It suddenly explodes into three pieces. Two pieces each of mass m move perpendicular to each other with equal speed

v. The total kinetic energy generated due to explosion is

A. mv^2

B. $\frac{3}{2}mv^2$

C. $2mv^2$

D. $4mv^2$

Answer: B

Watch Video Solution

56. For inelastic collision between two spherical rigid bodies, which one of the following statements is correct?

A. the total kinetic energy is conserved

B. the total mechanical energy is not conserved

C. the linear momentum is not conserved

D. the linear momentum is conserved

Answer: D

Watch Video Solution

57. Which of the following is not a perfectly inelastic collision?

A. Striking of two glass bulbs

B. Bullet striking a bag and sand

C. An electron captured by a proton

D. A man jumping onto a moving cart

Answer: D

Watch Video Solution

58. The potential energy of a system increases, if work is done

A. upon the system by a conservative force

B. by the system against a conservative force

C. upon the system against a non-conservative force

D. upon the system by a non-conservative force

Answer: B

Watch Video Solution

59. Choose the odd man out

A. Potential energy P.E = mgh

B. Elastic potential energy $U = \frac{1}{2}kx^2$

C. Gravitational potential energy $U = mgh$

D. Energy = power $\times$ time

Answer: D

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60. Select the wrong odd man out from the following statements indicating the properties of an elastic collision.

A. In an elastic collision total kinetic energy is conserved

B. In an elastic collision total momentum is conserved

C. In elastic collision mechanical energy is not dissipated

D. In an elastic collision total non-conservative forces are involved

Answer: D

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61. A constant power P is applied to a car starting from rest. If v is the velocity of the car at time t, then:

A. $v \propto t$

B. $v \propto \frac{1}{t}$

C. $v \propto \sqrt{t}$

D. $v \propto \frac{1}{\sqrt{t}}$

Answer: B

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62. A body projected electrically from the earth reaches a height equal to earth's radius before retruning to the earth. The power exerted by the gravitational force is greatest

A. at the highest position of the body

B. at the instant just before the body hits the earth

C. It remains constant all through

D. at the instant just after the body is projected

Answer: B

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63. A particle is acted upon by a force of constant magnitude which is always perpendicular to the velocity of the particle, the motion of the particles takes place in a plane. It follows that:

A. its kinetic energy is constant

B. its acceleration is constant

C. its velocity is constant

D. it moves in a straight line

Answer: A

Watch Video Solution

64. You lift a heavy book from the floor of the room and keep it in the book shelf having a height 2m. In this process you take 5 seconds. The work done by you will depend upon:

A. mass of the book and time taken

B. weight of the book and height of the book-shelf

C. height of the book-shelf and time taken

D. mass of the book, height of the book-shelf and time taken

Answer: B

Watch Video Solution

65. A man starts walking from a point on the surface of earth (assumed smooth) and reaches diagonally opposite point. What is the nature of work done by him?

A. zero

B. positive

C. negative

D. nothing can be said

Answer: A

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66. Which one of the following is not a conservative force?

A. Gravitational force

B. Electrostatic force between two changes

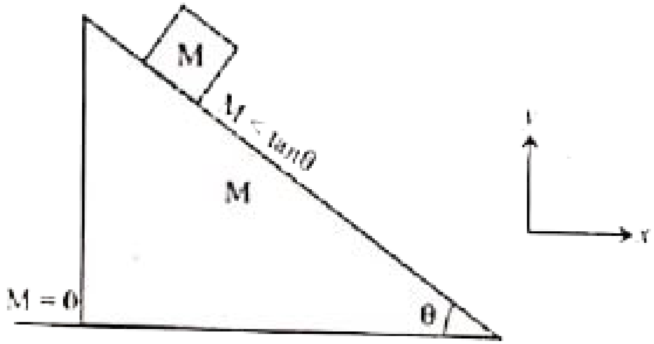
C. Magnetic force between two magnetic dipoles

D. Frictional force

Answer: D

Watch Video Solution

67. Choose the correct option:



A. momentum is conserved in x-direction

B. momentum is conserved in y-direction

C. mechanical energy is conserved

D. work done by internal forces is zero

Answer: A

View Text Solution

68. In the following question, a statement of Assertion is followed by a statement of Reason.

Assertion: When a body moves along a circular path, the work done by a centripetal force is zero.

Reason: The centripetal force is utilised in moving the body along the circular path and hence the work is done.

Choose one of the following statements is correct?

A. Both assertion and reason are true and reason is the correct explanation of the assertion

B. Both assertion and reason are true but reason is not correct explanation of the assertion

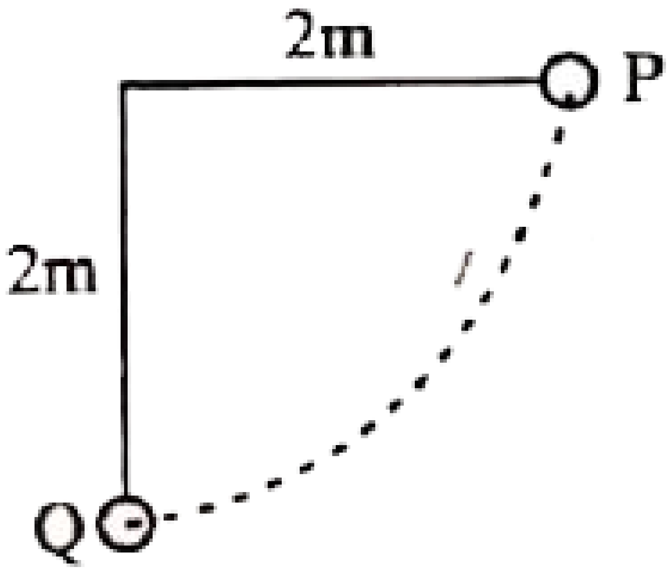
C. Assertion is true but reason is false

D. Both assertion and reason are false

Answer: C

Watch Video Solution

69. The bob of a pendulum of length 2 m lies at P. When it reaches Q it loses 10% of its total energy due to air resistance. For this event, which of the following is a correct statement.



A. The velocity at Q is $1m/s$

B. The velocity at Q is $6m/s$

C. The acceleration at Q is $3m/s^2$

D. The acceleration at Q is $6m/s^2$

Answer: B

Watch Video Solution

70. Match the parameters given in column I with the expressions given in column II.

Column I	Column II
1. Elastic potential energy	(i) mgh
2. Kinetic energy	(ii) $F.s$
3. Potential energy	(iii) $F.s \cos \theta$
4. Work done by a constant force	(iv) $\frac{1}{2} mv^2$
	(v) $\frac{1}{2} kx^2$
	(vi) $F \cos \theta (r_1 - r_2)$

A. 1 - (i), 2 - (iii), 3 - (ii), 4 - (vi)

B. 1 - (ii), 2 - (v), 3 - (i), 4 - (iv)

C. 1 - (vi), 2 - (iv), 3 - (ii), 4 - (i)

D. 1 - (v), 2 - (iv), 3 - (i), 4 - (vi)

Answer: D

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71. A body of mass 1kg begins to more under the action of a time dependent force $F = \left(2t\hat{i} + 3t^2\hat{j}\right)N$ where $\hat{i}$ and $\hat{j}$ are unit vectors along x and y axes. What power will be developed by a force at time t?

A. $\left(2t^3 + 3t^5\right)w$

B. $\left(2t^2 + 3t^3\right)w$

C. $\left(2t^2 + 4t^4\right)w$

D. $\left(2t^3 + 3t^4\right)w$

Answer: A

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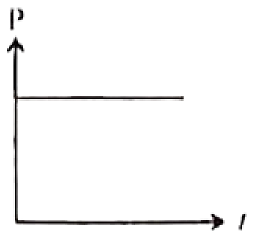
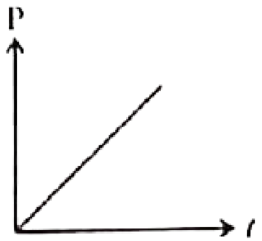
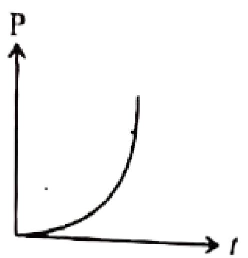
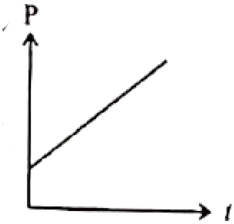
72. The body moves under the action of constant force along a straight line. The instantaneous power developed by this force with time 't' is correctly represented by:

A. 

B. 

C. 

D. 

Answer: B

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73. Which one of the following statement is an incorrect statement?

A. work done by a force $W = F.\,dr\cos\theta$

B. kinetic energy = $\dfrac{p^2}{2m}$

C. Potential energy of a body moving with constant velocity is

$$U = \int F_{ext} . d\overrightarrow{r}$$

D. Power = Force $\times$ Velocity

Answer: B

Watch Video Solution

74. The spring of the watch when wound possesses....................energy.

A. kinetic

B. potential

C. neither (a) nor (b)

D. both (a) and (b)

Answer: B

Watch Video Solution

75. A light and heavy body have equal momentum, which has greater K.E?

A. the light body

B. the heavy body

C. both have equal K.E

D. data insufficient

Answer: A

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76. A light body and a heavy body have the same kinetic energy. Which one will have greater momentum?

A. the light body

B. the heavier body

C. both have same momentum

D. data insufficient

Answer: B

Watch Video Solution

77. Same retarding force is applied to stop the train in certain distance. When the speed is doubled, how is this distance changed?

A. Remain same

B. Gets doubled

C. Gets halved

D. Gets four times

Answer: D

Watch Video Solution

78. Law of conservation of linear momentum is applicable even in those cases where:

A. Newton's I law of motion does not hold good

B. Newton's II law of motion does not hold good

C. Newton's III law of motion does not hold good

D. None of these

Answer: A

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79. In the following question, a statement of Assertion is followed by a statement of Reason. Mark the correct choice.

Assertion: In an elastic collision of two billiard balls are in contact with each other. During the short time of collision, kinetic energy is conserved.

Reason: Energy, spent against friction does not follow the law of conservation of energy

A. Both assertion and reason are true and reason explains assertion correctly.

B. Both assertion and reason are true but reason does not explain assertion correctly

C. Assertion is true but reason is false

D. Assertion is false but reason is also false

Answer: D

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80. If the force and the displacement are in the same direction, then the work done is:

A. F.S

B. $-F.S$

C. 0

D. F/S

Answer: A

Watch Video Solution

81. If the force and the displacement are at an angle of 180°, then work done is:

A. F.S

B. $-F.\ S$

C. 0

D. $F-S$

Answer: B

Watch Video Solution

82. Which one of the following statements is incorrect?

A. When a shell is exploded into four unequal parts linear momentum is conserved

B. For a perfect elastic collision the coefficient of restitution is unity

C. In an inelastic collision total kinetic energy is conserved

D. When a body undergoes a vertical circular motion, the minimum speed at the highest point is $v > \sqrt{5gr}$ to stay in the circular path.

Answer: C

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83. When a body does some work, we can say that work done by the body is

A. work

B. no work

C. positive work

D. negative work

Answer: C

Watch Video Solution

84. A body is said to be doing a negative work if :

A. it does work in the direciton of force

B. work is done against a force

C. work is done by a force

D. it does no work

Answer: B

Watch Video Solution

85. Consider the following two statements.

(A) Linear momentum of a system of particles is zero

(B) Kinetic energy of a system of particles is zero. Then.

A. A does not imply B and B does not imply A

B. A implies B but B does not imply A

C. A does not imply B but B implies A

D. A implies B and B implies A

Answer: C

Watch Video Solution

86. From the following statements select the incorrect statements.

A. 1 giga watt = 10^9 watt

B. 1 electrical unit = $36 \times 10^6 J$

C. 1 mega watt = 10^6 watt

D. 1 horse power = 746 W

Answer: B

Watch Video Solution

87. If a stone is released from a tower, then its total energy during its fall.

A. increases

B. decreases

C. remains constant

D. first increases then remains constant

Answer: C

Watch Video Solution

88. Two springs have their force constants k_1 and $k_2 (k_2 > k_1)$. When they are stretched by the same force ____ .

A. no work is done in case of both the springs

B. equal work is done in case of both the springs

C. more work is done in case of second spring

D. more work is done in case of first spring

Answer: C

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89. Which of the following statements is wrong?

A. K.E of a body is dependent on the direction of motion

B. In an elastic collision of two bodies, the momentum and energy of each body is conserved

C. If two protons are brought towards each other,the P.E. of the system increases

D. A body can have energy without momentum

Answer: A

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90. A rock of mass m dropped to the ground from a height h. A second rock with mass 2m is dropped from the same height. When second rock strikes the ground, what is its kinetic energy?

A. Twice that of the first rock

B. Four times that of the first rock

C. The same as that of the first rock

D. Half that of the first rock

Answer: A

Watch Video Solution

91. The potential energy of a system increases, if work is done

A. upon the system by a non-conservative force

B. upon the system by a conservative force

C. by the system against a non-conservative force

D. by the system against a conservative force

Answer: D

Watch Video Solution

92. A bullet is fired from a rifle which recoils after firing. The ratio of kinetic energy of the rifle to that of the bullet is:

A. less than one

B. more than one

C. equal to one

D. zero

Answer: A

Watch Video Solution

93. In the following question a statement of assertion is followed by a statement of reason. Select the correct choice.

Assertion: Mass and energy are conserved as a single entity called mass - energy. They are not conserved separately.

Reason: Mass and energy are interconvertible in accordance with Einstein's mass energy relation.

A. Assertion is true but reason is false

B. Assertion is false and reason is also false

C. Assertion is true and reason is true and reason explains assertion correctly

D. Assertion is true and reason is true and reason does not explain assertion correctly.

Answer: C

Watch Video Solution

94. If the force acting on a body is inversely proportional to its speed, the kinetic energy of the body is:

A. constant

B. directly proportional to time

C. inversely proportional to time

D. directly proportional to the square of time

Answer: B

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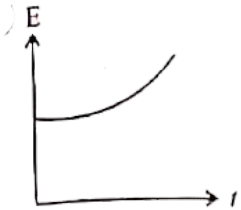
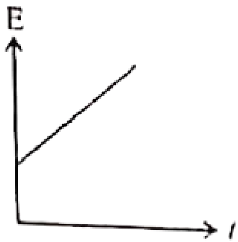
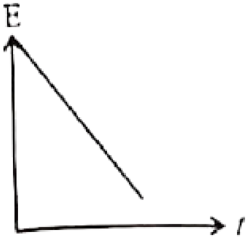
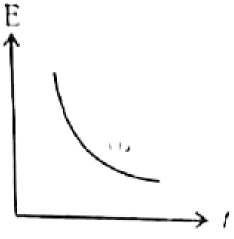
95. A particle is dropped from a height h. A constant horizontal velocity is given to the particle. Taking g to be constant everywhere, kinetic energy E of the particle with respect to time t is correctly shown in:

A. 

B. 

C. 

D. 

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B. Kalorie = $4.186J$

C. Acceleration due to gravity $g = 9.8m/s^2$

D. $1kWh = 3.6 \times 10^{-6} J$

Answer: C

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97. If a body is raised from the surface of the earth upto height R, what is the change in potential energy?

A. mgR

B. $\frac{3}{2}mgR$

C. $\frac{mgR}{2}$

D. $\frac{mgR}{4}$

Answer: C

Watch Video Solution

98. In the following question select the correct statement.

The law of conservation of energy always holds good when:

A. a body moves down a rough plane

B. two electrically charged particles collide

C. two bodies collide

D. a body moves (or rolls) down a smooth plane

Answer: D

Watch Video Solution

99. Principle of conservation of linear momentum:

A. is applicable when time of impact between 2 colliding particles is extremely small

B. when time of impact is moderately small

C. when time of impact is large

D. is independent of time of impact

Answer: A

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100. Two balls at the same temperature collide.

What is conserved?

A. momentum

B. KE

C. Temperature

D. Velocity

Answer: A

Watch Video Solution

101. Two bodies of masses 3m and 9m are moving with equal kinetic energies. The ratio of linear momenta is:

A. $1:3$

B. $1:\sqrt{3}$

C. $3:1$

D. $\sqrt{3}:1$

Answer: B

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102. In perfect elastic collision, the relative velocity of the body before impact is:

A. before impact is zero

B. before impact is equal to that after impact

C. after impact is zero

D. None of the above is true

Answer: C

Watch Video Solution

103. In perfect elastic collision, the relative velocity of the body before impact is:

A. equal to relative velocity after impact

B. equal to zero

C. greater than relative velocity after impact

D. less than relative velocity after impact

Answer: A

Watch Video Solution

104. In elastic collision law of conservation of momentum holds good if:

A. time of collision is small

B. bodies are more particles

C. bodies are more spheres

D. under all conditions

Answer: D

Watch Video Solution

105. In the following question which one of the statements is correct?

Head on collision signifies collision with:

A. velocities of equal magnitudes

B. velocities of different magnitudes

C. velocities acting along same straight line out in opposite direction

D. velocities acting at right angles

Answer: C

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106. A mass of 0.5 kg moving with a velocity of 1.5 m/s on a horizontal smooth surface, collides with a nearly weightless spring of force constant $K = 50N/m$. The maximum compression of the spring would be:

A. 0.3 m

B. 1.5 m

C. 0.15 m

D. 0.25 m

Answer: C

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107. A bullet strikes the wooden block and gets embedded into it. What type of collision is it?

A. perfectly elastic

B. perfectly inelastic

C. partially elastic

D. none of the above

Answer: A

Watch Video Solution

108. A bullet strikes the wooden block and gets embedded into it. What type of collision is it?

A. perfectly elastic

B. perfectly inelastic

C. partially elastic

D. none of the above

Answer: B

Watch Video Solution

109. A bullet is fired from a rifle. If the rifle recoils freely then the K.E of the rifle as compared to that of bullet is:

A. greater

B. equal

C. lesser

D. none of the above

Answer: C

Watch Video Solution

110. If a shell is fired from a cannon explodes in mid-air, then:

A. total momentum increases

B. total momentum decreases

C. total KE increases

D. momentum and KE doesn't change

Answer: C

Watch Video Solution

111. The potential energy of a certain spring when streched by a distance x is 20J. The amount of work required to strech it through an additional distance x is:

A. 60J

B. 40J

C. 20J

D. 10J

Answer: A

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112. Match the parameters given in column I and column II correctly.

Column I	Column II
1. Work	*(i)* Rate of doing work
2. Impulse	*(ii)* By the virtue of motion
3. Power	*(iii)* Vector product of force and displacement
4. Kinetic energy	*(iv)* Scalar product of force and displacement
	(v) Change in linear momentum

A. 1 - (iii), 2- (v), 3 - (ii), 4 - (i)

B. 1 - (i), 2 - (ii), 3 - (iii), 4 - (v)

C. 1 - (iii), 2 - (i), 3 - (iv), 4 - (v)

D. 1 - (iv), 2 - (v), 3 - (ii), 4 - (i)

Answer: D

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113. A stone tied to a piece of string whirled in a vertical circle with uniform speed, in what position of the stone in the tension in the string greatest?

A. in the highest position of the stone

B. in the lowest position of the stone

C. in the position when string is horizontal

D. is same for all positions of the stone

Answer: B

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114. The coefficient of restitution e for a perfectly elastic collision is

A. 1

B. 0

C. ∞

D. -1

Answer: A

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115. In an explosion, a body breaks up into two pieces of unequal masses. In this case which one of the following statements is correct?

A. both parts will have numerically equal momentum

B. lighter part will have more momentum

C. heavier part will have more momentum

D. both parts will have equal kinetic energy

Answer: A

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116. Select the correct pair from the following pairs related to Physics.

A. The dimension of energy is ML^2T^{-2} and that of power is MLT^{-3}

B. The dimension of energy is MLT^2 and that of power is $M^{-2}LT^2$

C. The dimension of force is MLT^{-2} and that of impulse is $ML^{-1}T^{-1}$

D. The dimension of force $ML^{-1}T^{2}$ and that of impulse is $M^{-1}L^{2}T^{-2}$

Answer: A

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117. A body of mass 4 m is lying in xy - plane at rest. It suddenly explodes into three pieces. Two pieces each of mass m move perpendicular to each other with equal speed

v. The total kinetic energy generated due to explosion is

A. mv^2

B. $\frac{3}{2}mv^2$

C. $2mv^2$

D. $4mv^2$

Answer: B

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118. For inelastic collision between two spherical rigid bodies, which one of the following statements is correct?

A. the total kinetic energy is conserved

B. the total mechanical energy is not conserved

C. the linear momentum is not conserved

D. the linear momentum is conserved

Answer: D

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119. Which of the following is not a perfectly inelastic collision?

A. Striking of two glass bulbs

B. Bullet striking a bag and sand

C. An electron captured by a proton

D. A man jumping onto a moving cart

Answer: D

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120. The potential energy of a system increases, if work is done

A. upon the system by a conservative force

B. by the system against a conservative force

C. upon the system against a non-conservative force

D. upon the system by a non-conservative force

Answer: B

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121. Choose the odd man out incorrect relationship with reference to potential energy.

A. Potential energy P.E = mgh

B. Elastic potential energy $U = \frac{1}{2}kx^2$

C. Gravitational potential energy $U = mgh$

D. Energy = power $\times$ time

Answer: D

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122. Select the wrong odd man out from the following statements indicating the properties of an elastic collision.

A. In an elastic collision total kinetic energy is conserved

B. In an elastic collision total momentum is conserved

C. In elastic collision mechanical energy is not dissipated

D. In an elastic collision total non-conservative forces are involved

Answer: D

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123. A constant power P is applied to a car starting from rest. If v is the velocity of the car at time t, then:

A. $v \propto t$

B. $v \propto \frac{1}{t}$

C. $v \propto \sqrt{t}$

D. $v \propto \frac{1}{\sqrt{t}}$

Answer: C

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124. In the following situation which one of the following is a correct statement?

A body projected vertically from the earth reaches a height equal to earth's radius before turning to the earth. The power exerted by the gravitational force is greatest:

A. at the highest position of the body

B. at the instant just before the body hits the earth

C. It remains constant all through

D. at the instant just after the body is projected

Answer: B

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Very Short Answer Questions

1. When a work is said to be done? Give some example.

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2. State the condition under which a force does not work.

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3. What is the work done by the person in holding 15 kg suitcase while waiting for a bus for 15 minutes?

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4. What is the work done by the force of tension in the string of simple pendulum?

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5. What physical quantity does the area under the force-displacement curve represent?

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6. Define energy and write its unit and dimension.

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7. A man run a distance on the level road. The same man ascends up a hill with the same velocity through the same distance. When does he do more work?

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8. Potential energy

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9. What is meant by kinetic energy?

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10. How many joules make up one erg?

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11. Which physical quantities is / are conserved during elastic and inelastic collision?

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12. A body is moving at constant speed over a frictionless surface. What is the work done by the weight?

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13. Can a body have momentum without energy?

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14. Does the work done in raising a suitcase on to platform depend upon how far it is raised up?

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15. Can you associate potential energy with non-conservative force?

Watch Video Solution

16. A rocket explodes in mid air. How does this affect its total momentum?

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