Q.17 In a sliding game at a fun fair, a child train was sliding in different heights. If the train slipped from height A 10 m till height B 5 m. The speed of the train at point B is:

(A) 10.84 m/s (B) 9.89 m/s (C) 11.71 m/s (D) 8.85 m/s

Q.18 A force was applied on an object of mass 70 kg which changed its speed from 13 m/s to 45 m/s. The momentum for the final speed is:

(A) 3600 kg.m/s (B) 2700 kg.m/s (C) 3150 kg.m/s (D) 1350 kg.m/s

Q.19 A 0.40 kg ball is initially moving to the left at 30 m/s. After hitting the wall, the ball is moving to the right at 20 m/s. The impulse of the net force on the ball during its collision with the wall is:

(A) 20 kg.m/s, left (B) 20 kg.m/s, right (C) 4.0 kg.m/s, right (D) 4.0 kg.m/s, left

Q.20 The velocity of a 0.200-kg ball during a collision with the wall changes from 35 m/s toward to 12.0 m/s away from. If the contact time is 60.0 ms, the magnitude of the average force applied to the ball is:

A) 157 N (B) 123 N (C) 90 N (D) 140 N

.21 On a smooth horizontal frictionless floor, an object slides in to a spring which is attached to an other tationary mass. Afterward, both objects are moving at the same speed. What is conserved during this nteraction? (P is momentum, K is Kinetic, U is potential and M is Mechanical energies).

A) P only (B) P and M (C) P and K (D) P and U.

.22 In the figure, determine the character of the collision. The masses of the locks, and the velocities before and after are given. The collision is:

) perfectly elastic. (B) partially inelastic. (C) completely inelastic. (D) not possible

.23 The center of mass of the objects shown in the Figure is:

) (3.54,6.54)m (B) (5.65,1.54)m
) (4.25,3.45)m (D) (2.29,1.41)m

24 A small wooden block with mass 0.800 kg is suspended from the lower end of a light cord that is 1.60 long. The block is initially at rest. A bullet with mass 12.0 g is fired at the block with a horizontal velocity v_0. e bullet strikes the block and becomes embedded in it. After the collision the combined object swings on e end of the cord. When the block has risen a vertical height of 0.800 m, the tension in the cord is 5.4 N. e initial speed v_0 of the bullet is:

284.6 m/s (B) 290.8 m/s (C) 281.4 m/s (D) 287.7 m/s

25 A turbine blade of radius 5 cm rotates an angle of 120°, the angle of rotation in radians:

$\pi/2$ rad (B) $\pi/4$ rad (C) $\pi/6$ rad (D) $2\pi/3$ rad

26 The angular position θ of a 0.18 m radius flywheel is given by $\theta = 2t^3$ rad. Find θ in radians at t = 5 s.

128 rad (B) 250 rad (C) 54 rad (D) 432 rad

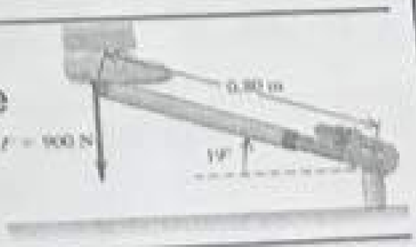
7 The angular position θ of a 0.18 m radius flywheel is given by $\theta = 2t^3$ rad. Find the average angular city over that interval from $t_1 = 2$ s to $t_2 = 7$ s.

38 rad/s (B) 134 rad/s (C) 56 rad/s (D) 104 rad/s

8 What should the diameter of an axle be in order to work at a steady 1 cm/s when it is turning at 7.5 min? (hint: 1 rev = 360° = 2π rad)

.55 cm (B) 5.09 cm (C) 10.19 cm (D) 7.65 cm

9 A plumber stands on the end of the cheater at a point from the center of the g as shown below. The wrench handle and cheater make an angle of 19° with the ontal. The direction of the torque he applies is:



n to the page (B) parallel to the page (C) out of the page (D) 19° with the page

A particle has a mass of 0.25 kg and rotate about a point at distance 3m with velocity given by: v = 6) t^2 The angular momentum of the particle at t = 5 s is:

12.5 Kg.m^2/s (B) 18 Kg.m^2/s (C) 72 Kg.m^2/s (D) 4.5 Kg.m^2/s

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Physics 101

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D

Final Exam	Date: **10/04/1439H**	Time: **120 m**
Student Name:	ID:	Section:

Q.1 The unit of speed in SI is:
(A) m (B) m/s (C) Km/h (D) Kg/s

Q.2 Which of the following quantities is not a basic quantity?
(A) Mass (B) Speed (C) Length (D) Time

Q.3 The components of vector $\vec{B}$ are given as $B_x = -6\ \text{m}$ and $B_y = 9\ \text{m}$. The magnitude of vector $\vec{B}$ is
(A) 8.5 m (B) 9.2 m (C) 10.8 m (D) 11.7 m

Q.4 Given two vectors $\vec{A} = \hat{\imath} + 2\hat{\jmath} + 2\hat{k}$ and $\vec{B} = 2\hat{\imath} - \hat{\jmath} + 6\hat{k}$. Then, $\vec{A}.\vec{B}$ is:
(A) 12 (B) 4 (C) 10 (D) 6

Q.5 The angle between the vector $\vec{A} = \hat{\jmath} + \hat{k}$ and the positive z-axis is:
(A) 45° (B) 60° (C) 120° (D) 90°

Q.6 A car takes 12 s to accelerate from 0 to 48 m/s with constant acceleration. This acceleration is:
(A) 2 m/s^2 (B) 3 m/s^2 (C) 4 m/s^2 (D) 1 m/s^2

Q.7 A car moves along the x-axis with constant speed, the acceleration of the car is:
(A) Increasing (B) Decreasing (C) 9.8 m/s^2 (D) Zero

Q.8 A particle moving from $\vec{r}_1 = 2\hat{\imath} + 2\hat{\jmath} + 4\hat{k}$ to $\vec{r}_2 = 3\hat{\imath} + 4\hat{\jmath} + 3\hat{k}$. Then the displacement is:
(A) $\hat{\imath} + 2\hat{\jmath}$ (B) $\hat{\imath} + 2\hat{\jmath} - 2\hat{k}$ (C) $\hat{\imath} + 2\hat{\jmath} + \hat{k}$ (D) $\hat{\imath} + 2\hat{\jmath} - \hat{k}$

Q.9 A player throws a ball at an angle θ to the horizontal with velocity 8 m/s. The maximum horizontal
that the ball can reach is:
(A) 1.63 m (B) 3.67m (C) 6.53 m (D) 10.20 m

Q.10 The velocity and acceleration of a body in uniform circular motion are:
(A) Perpendicular (B) Parallel (C) Differed by 100° (D) Differed by 45°

Q.11 The Newton's Second Law is given by:
(A) $\vec{w} = m\vec{g}$ (B) $\vec{F}_N = -m\vec{g}$ (C) $\vec{F}_{net} = m\vec{a}$ (D) $\vec{p} = m\vec{v}$

Q.12 A person of mass 80 kg. His weight is:
(A) 686 N (B) 735 N (C) 784 N (D) 833 N

Q.13 The frictional force on a moving body is proportional to the:
(A) force causing the motion (B) acceleration of the body
(C) normal force on the body (D) weight of the body

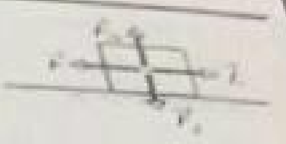
Q.14 A moving particle of mass 6 kg, has kinetic energy of 25 J. It speed is:
(A) 6.1 m/s (B) 7.1 m/s (C) 7.9 m/s (D) 2.9 m/s

Q.15 If the work done on a particle is 60 J in 5 s.The power is:
(A) 20 W (B) 15 W (C) 12 W (D) 5 W

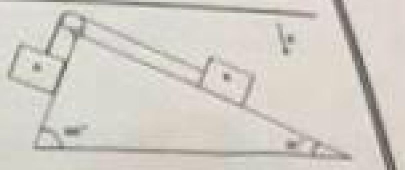
Q.16 A force F causes the 5 kg box to rise up to height 20 m. The gravitational potential energ
he box is:
A) 588 J (B) 784 J (C) 980 J (D) 1176 J

Q.14 Refer to Q13, If the coefficient of friction between the mass and the incline is μ, the friction force is:
(A) μ m g sin θ (B) μ m g cosθ (C) μ m g (D) μ m g tanθ

Q.15 The frictional force on a moving body is proportional to the:
(A) force causing the motion (B) weight of the body
(C) acceleration of the body (D) normal force on the body

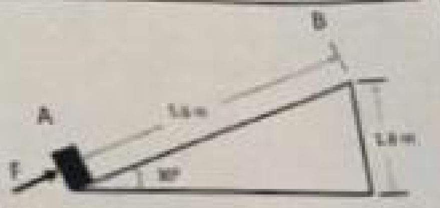


Q.16 Two blocks A and B (m_A=120 kg and m_B= 55 kg) connected by a cord passing over a small, frictionless pulley rest on frictionless planes. The acceleration of the blocks is:
(A) 4m/s² (B) 4.6 m/s² (C) 3.1 m/s² (D) 4.3 m/s²



Q.17 A particle moves 17 m in the positive x direction while being acted upon by a constant force F=(3î + 4k̂) N. The work done on the particle by this force is:
(A) 45 J (B) 51 J (C) 36 J (D) 30 J

Q.18 force F causes the 5 kg box to slide up from point A to point B.
The work done by the normal force on the box is:
(A) 98 J (B) 58 J (C) 49 J (D) zero



Q.19 An object that has kinetic energy must be:
(A) at rest (B) falling (C) moving (D) non of these

Q.20 A moving particle of mass 3 kg, has kinetic energy of 10 J. Its speed is:
(A) 3.37 m/s (B) 2.58 m/s (C) 3.16 m/s (D) 2.83 m/s

Q.21 A particle of mass 10 kg moves with a speed of 3 m/s, its kinetic energy is:
(A) 45 J (B) 36 J (C) 27 J (D) 18J

Q.22 A man of mass 85 kg climbs a stair of 7 m height at constant speed. The work done by the man is:
(A) 3332 J (B) 5831 J (C) 4165 J (D) 4998 J

Q.23 A 80 kg runner runs up the stairs to the top of 400 m tall tower. To lift himself to the top in 30 minutes, what must be his average power output?
(A) 174 W (B) 348 W (C) 523 W (D) 261 W

Q.24 A force acts on a spring with length 30 cm. This force compressed it to be 22 cm. If the spring constant is 50 N/m, the work done by the spring is:
(A) -0.0625 J (B) -0.0900 J (C) -0.1225 J (D) -0.1600 J

Q.25 If the work done on a particle is 55 J in 5 s. The power is:
(A) 11 W (B) 10 W (C) 9 W (D) 8 W

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Physics 101

D

Final Exam | Time: [illegible] | Time: [illegible]

Student Name: [illegible]

Q.1 The unit of speed in SI is:
(A) m (B) m/s (C) km/h (D) [illegible]

Q.2 Which of the following quantities is not a basic quantity?
(A) Mass (B) Speed (C) Length (D) Time

Q.3 The components of vector $\vec{A}$ are given as A_x = [illegible] and A_y = [illegible]. The magnitude of vector $\vec{A}$ is
(A) [illegible] m (B) [illegible] m (C) [illegible] (D) [illegible] m

Q.4 Given two vectors $\vec{A}$ = [illegible] and $\vec{B}$ = [illegible]. Then $\vec{A}\cdot\vec{B}$ is
(A) [illegible] (B) [illegible] (C) [illegible] (D) [illegible]

Q.5 The angle between the vector $\vec{A}$ = [illegible] and the positive [illegible] axis is
(A) 45° (B) 60° (C) [illegible]° (D) 90°

Q.6 A car takes 10 s to accelerate from 0 to [illegible] m/s with constant acceleration. The acceleration is
(A) 2 m/s² (B) 3 m/s² (C) 4 m/s² (D) 1 m/s²

Q.7 A car moves along the x axis with constant speed, the acceleration of the car is
(A) Increasing (B) Decreasing (C) 9.8 m/s² (D) Zero

Q.8 A particle moving from $\vec{r}_1$ = [illegible] to $\vec{r}_2$ = [illegible]. Then the displacement is
(A) [illegible] (B) [illegible] (C) [illegible] (D) [illegible]

Q.9 A player throws a ball at an angle [illegible] to the horizontal with velocity [illegible] m/s. The maximum horizontal [illegible] that the ball can reach is
(A) [illegible] m (B) [illegible] m (C) [illegible] m (D) [illegible] m

Q.10 The velocity and acceleration of a body in uniform circular motion are
(A) Perpendicular (B) Parallel (C) Differed by 180° (D) Differed by 45°

Q.11 The Newton's Second Law is given by:
(A) [illegible] (B) [illegible] (C) [illegible] (D) [illegible]

Q.12 A person of mass 80 kg. His weight is
(A) [illegible] N (B) [illegible] N (C) [illegible] N (D) [illegible] N

Q.13 The frictional force on a moving body is proportional to the
(A) force causing the motion (B) acceleration of the body
(C) normal force on the body (D) weight of the body

Q.14 A moving particle of mass [illegible] kg has kinetic energy of [illegible] J. Its speed is
(A) [illegible] m/s (B) [illegible] m/s (C) [illegible] m/s (D) [illegible] m/s

Q.15 If the work done on a particle is [illegible] J in [illegible] s. The power is
(A) [illegible] W (B) [illegible] W (C) [illegible] W (D) [illegible] W

Q.16 A force F causes the 5 kg box to rise up to height [illegible] m. The gravitational potential energy of the box is
(A) [illegible] J (B) [illegible] J (C) [illegible] J (D) [illegible] J

Q.17 [illegible]

Q.18 [illegible]

Q.19 [illegible]

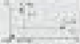
Q.20 [illegible]

Q.21 [illegible]

Q.22 In the figure, determine the character of the collision. [illegible] The collision is

(A) perfectly elastic (B) partially inelastic (C) completely inelastic (D) not possible

23 The center of mass of the object shown in the Figure is [illegible]



24 A small wooden block with mass [illegible] kg is suspended from the lower end of a light cord [illegible]

25 [illegible]

26 The angular position [illegible]

27 The angular position [illegible]

28 [illegible]

29 [illegible]

30 A particle has a mass [illegible]

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D

Second Term Exam
Student Name:
Date: **15/07/1439H**
ID:
Time:**90 min**
Section:

Q.1 A car moves along the x-axis with constant speed, the acceleration of the car is:

(A) Increasing (B) Zero (C) Decreasing (D) 9.8 m/s2

Q.2 The Newton's Second Law is given by:

(A) $\vec{F}_{net} = m\vec{a}$ (B) $\vec{F}_N = -m\vec{g}$ (C) $\vec{p} = m\vec{v}$ (D) $\vec{w} = m\vec{g}$

Q.3 A car travels north at constant velocity, the net force on the car is:

(A) less than zero (B) greater than zero (C) 9.8 N (D) zero

Q.4 A constant force $\vec{F} = (24\ N)\hat{i} + (18\ N)\hat{j}$ acts on an object of mass 10 kg. The magnitude of the acceleration of the object is:

(A) 6.0 m/s^2 (B) 5.0 m/s^2 (C) 4.0 m/s^2 (D) 3.0 m/s^2

Q.5 The acceleration of gravity on the moon is 1.67 m/s^2. A person of weight 122 N on the moon. His mass is:

(A) 61 Kg (B) 73 Kg (C) 64 Kg (D) 56 Kg

Q.6 A man of mass 70 kg. His weight is:

(A) 588 N (B) 637 N (C) 539 N (D) 686

Q.7 An electron (mass = 9.11×10^{-31} kg) leaves one end of a TV picture tube with zero initial speed and travels in a straight line to the accelerating grid, which is 1.3 cm away. It reaches the grid with a speed of 3.00×10^6 m/s. If the accelerating force is constant, (ignore the gravitational force on the electron) the net force on it is:

(A)1.6×10^{-16} N (B) 2.28×10^{-16} N (C) 2.73×10^{-16} N (D) 3.2×10^{-16} N

Q.8 A light cable from the ceiling suspends a ball of weight 380 N in static equilibrium. The tension in the cable is:

(A) 380N (B) 400 N (C) 420 N (D) 440 N

Q.9 A block of mass m is suspended from the ceiling by a light cable in static equilibrium. If the tension in the cable is 58.8 N, the mass of the block is:

(A) 6 Kg (B) 3 Kg (C) 5 Kg (D) 4 Kg

Q.10 A 800 kg elevator is moving up with zero acceleration. The tension in the cable is:

(A) 10780 N (B) 7840 N (C) 11760 N (D) 8820 N

Q.11 In the figure a 13 kg box is pushed at a constant speed up the frictionless ramp by a horizontal force F. The magnitude of F is:

(A) 53.9 N (B) 44.1 N (C) 63.7 N (D) 58.8 N

Q.12 A1000 kg elevator is moving up with acceleration 2 m/s^2. The tension in the cable is:

(A) 11800 N (B) 12800 N (C) 14800 N (D) 13800 N

Q.13 A mass m is placed on incline that makes an angle θ with respect to the horizontal. The normal force is:

(A) m g sinθ (B) m g tanθ (C) m g (D) m g cosθ