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Practice Set 2

Classical MECHANICS

Topic : Linear motion, velocity, acceleration, force, Newton's laws of motion, linear momentum and impulse of force.


DDCET final exam weightage of this topic : 3 Questions (6 Marks)

Total Practice sets of this topic : $3 \text{ (sets) } \times 30 \text{ (questions) } = 90 \text{ Questions}$

Total Practice tests of this topic : $3 \text{ (exams) } \times 25 \text{ (questions) } = 75 \text{ Questions}$

Offline / Online during lecture : $4 \text{ (lectures) } \times 70 \text{ (Questions) } = 280 \text{ Question}$

Total 445 Questions to practice this topic

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Section 1 :

Linear motion, velocity, acceleration, force, Newton's laws of motion, linear momentum and impulse of force.

- 1 Which of the following is NOT a type of force?
 - A) Gravitational force
 - B) Magnetic force
 - C) Thermal force
 - D) Frictional force
- 2 What is the SI unit of momentum?
 - A) Newton-second (Ns)
 - B) Joule (J)
 - C) Newton per meter (N/m)
 - D) Meter per second (m/s)
- 3 The force that opposes the motion of objects through air is called:
 - A) Friction
 - B) Air resistance
 - C) Gravity
 - D) Magnetic force
- 4 An object of mass 5 kg is moving with a velocity of 10 m/s. What is its momentum?
 - A) 5 kg·m/s
 - B) 50 kg·m/s
 - C) 100 kg·m/s
 - D) 10 kg·m/s
- 5 What happens to the acceleration of an object if its mass is doubled while keeping the force constant?
 - A) It doubles
 - B) It halves
 - C) It remains the same
 - D) It becomes zero
- 6 If two objects of different masses are dropped from the same height in the absence of air resistance, which one hits the ground first?
 - A) The heavier object
 - B) The lighter object
 - C) Both at the same time
 - D) The one with greater inertia

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- 7 A body moving in a straight line at constant speed has:
 - A) Zero acceleration
 - B) Increasing velocity
 - C) Constant force acting on it
 - D) Decreasing momentum
- 8 If an object's velocity-time graph is a straight line parallel to the time axis, what can be said about its motion?
 - A) It is accelerating
 - B) It is at rest
 - C) It is moving with uniform velocity
 - D) It is slowing down
- 9 A passenger in a moving bus leans forward when the bus suddenly stops. This is due to:
 - A) Newton's first law
 - B) Newton's second law
 - C) Newton's third law
 - D) Conservation of momentum
- 10 A cricketer lowers his hands while catching a fast-moving ball to:
 - A) Decrease the force of impact
 - B) Increase the momentum
 - C) Increase the acceleration
 - D) Reduce the weight of the ball
- 11 What is the impulse experienced by a body when a force of 20 N acts on it for 5 seconds?
 - A) 4 Ns
 - B) 100 Ns
 - C) 25 Ns
 - D) 10 Ns
- 12 If an object's displacement-time graph is a straight line, what does it indicate?
 - A) The object is moving with uniform acceleration
 - B) The object is at rest
 - C) The object is moving with constant velocity
 - D) The object is decelerating

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- 13** A rocket moves upward by expelling gases downward. This is an example of:
- A) Newton's first law
 - B) Newton's second law
 - C) Newton's third law
 - D) Conservation of momentum
- 14** The area under a velocity-time graph represents:
- A) Acceleration
 - B) Displacement
 - C) Momentum
 - D) Force
- 15** A ball is dropped from a certain height. As it falls, its:
- A) Potential energy increases
 - B) Kinetic energy decreases
 - C) Kinetic energy increases
 - D) Velocity remains constant
- 16** Which of the following is NOT an example of Newton's third law?
- A) A swimmer pushing water backward to move forward
 - B) A bird flying by pushing air downward
 - C) A book resting on a table
 - D) A rocket launching into space
- 17** What happens to the force required to stop a moving object if its mass is doubled and velocity remains the same?
- A) It doubles
 - B) It halves
 - C) It remains the same
 - D) It becomes zero
- 18** A moving car comes to a stop when brakes are applied due to:
- A) Gravitational force
 - B) Inertia
 - C) Friction
 - D) Magnetic force

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- 19 What happens to a person standing inside a moving bus when the bus suddenly starts moving forward?
- The person moves backward
 - The person moves forward
 - The person remains stationary
 - The person jumps
- 20 When two objects collide and bounce off each other without losing kinetic energy, the collision is said to be:
- Elastic
 - Inelastic
 - Partially elastic
 - Frictionless
- 21 If an object moves with uniform acceleration, its velocity-time graph will be:
- A horizontal line
 - A straight line inclined to the time axis
 - A curve
 - A vertical line
- 22 What is the SI unit of acceleration?
- m/s
 - m/s²
 - Newton
 - Joule
- 23 The equation $v = u + at$ represents:
- Newton's first law of motion
 - Equation of motion
 - Conservation of energy
 - Conservation of momentum
- 24 A force of 15 N is applied to an object of mass 3 kg. What is its acceleration?
- 5 m/s²
 - 10 m/s²
 - 15 m/s²
 - 45 m/s²

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UNITY TRAINING ACADEMY FOR DDCE

Section 1 :

Linear motion, velocity, acceleration, force, Newton's laws of motion, linear momentum and impulse of force.

- 25 What happens to the velocity of an object moving with uniform acceleration?
- A) Remains constant
 - B) Increases or decreases at a constant rate
 - C) Becomes zero
 - D) Decreases exponentially
- 26 The motion of an object under the influence of gravity alone is called:
- A) Free fall
 - B) Projectile motion
 - C) Circular motion
 - D) Uniform motion
- 27 If an object is at rest, its velocity is:
- A) Zero
 - B) Maximum
 - C) Constant
 - D) Negative
- 28 A change in momentum occurs when:
- A) A force is applied for a time interval
 - B) An object moves at a constant velocity
 - C) No force acts on the object
 - D) The object is at rest
- 29 What happens to an object's acceleration if the net force acting on it is zero?
- A) It accelerates
 - B) It moves with constant velocity
 - C) It moves faster
 - D) It comes to rest
- 30 A body is moving in a vertical circular motion, which one of the following forces does not experience? [DDCE 2024]
- A) Force of gravity
 - B) Centripetal force
 - C) Friction force
 - D) Centrifugal force

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