UNITY TRAINING
ACADEMY FOR DDCET

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Practice Set 2 Solution

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 (sets) x 30 (questions) = 90 Questions

Total Practice tests of this topic : 3 (exams) x 25 (questions) = 75 Questions

Offline / Online during lecture : 4 (lectures) X 70 (Questions) = 280 Question

DDCET 2025

Total 445 Questions to practice this topic (Third week Oct 24)

(Last week of oct and first week of nov will be Diwali holidays)

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UNITY TRAINING ACADEMY FOR DDCET

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 ✓ (Momentum = mass × velocity = 5 kg × 10 m/s = 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

Section 1 : Linear motion, velocity, acceleration, force, Newton's laws of motion, linear momentum and impulse of force.

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 ✓ (Impulse = Force × Time = 20 N × 5 s = 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

Section 1 : Linear motion, velocity, acceleration, force, Newton's laws of motion, linear momentum and impulse of force.

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

Section 1 : Linear motion, velocity, acceleration, force, Newton's laws of motion, linear momentum and impulse of force.

19 What happens to a person standing inside a moving bus when the bus suddenly starts moving forward?

A) The person moves backward ✓
B) The person moves forward
C) The person remains stationary
D) The person jumps

20 When two objects collide and bounce off each other without losing kinetic energy, the collision is said to be:

A) Elastic ✓
B) Inelastic
C) Partially elastic
D) Frictionless

21 If an object moves with uniform acceleration, its velocity-time graph will be:

A) A horizontal line
B) A straight line inclined to the time axis ✓
C) A curve
D) A vertical line

22 What is the SI unit of acceleration?

A) m/s
B) m/s^2 ✓
C) Newton
D) Joule

23 The equation v=u+at represents:

A) Newton's first law of motion
B) Equation of motion ✓
C) Conservation of energy
D) Conservation of momentum

24 A force of 15 N is applied to an object of mass 3 kg. What is its acceleration?

A) 5 m/s^2 ✓ (a = F/m , a = 15 / 3, a = 5 m/s^2)
B) 10 m/s^2
C) 15 m/s^2
D) 45 m/s^2

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? [DDCET 2024]

A) Force of gravity
B) Centripetal force
C) Friction force ✓
D) Centrifugal force