



<b>Name of the Bundle</b>	Advanced Bundle V1	<b>Subject</b>	Competitive Exams Training (Science & Geography)
<b>Topic</b>	Force, Motion and Energy	<b>Last updated on</b>	31 July 2024

1) Which of the following physical quantities changes or tends to change the state of rest or of uniform motion of a body in a straight line?

- a) Force
- b) Mass
- c) Momentum
- d) Inertia

**Ans: a) Force**

2) In which of the following examples will an athlete have maximum accelerated motion?

- a) Running on an octagonal track
- b) Running on a hexagonal track
- c) Running on a rectangular track
- d) Running on a circular track

**Ans: d) Running on a circular track**

3) The Newton's second law of motion gives the relation between:

- a) Velocity and time
- b) Position and velocity
- c) Position and time
- d) Velocity and acceleration

**Ans: c) Position and time**

4) When a force resists the relative motion between two surfaces, it is called \_\_\_\_\_.

- a) Resistance
- b) Convection
- c) Friction
- d) Induction

**Ans: c) Friction**

5) On applying a constant force to a body, it moves with uniform\_:

- a) Momentum
- b) Speed
- c) Velocity
- d) Acceleration

**Ans: d) Acceleration**



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6) Newton's second law of motion .....

- a) is also called the law of conservation of momentum.
- b) is also called as law of inertia
- c) describes the relationship between the forces on two interacting objects.
- d) explains about change in momentum.

**Ans: d) explains about change in momentum.**

7) Name the external force that acts radially inward during the circular motion of a body.

- a) Centripetal force
- b) Centrifugal force
- c) Gravitational force
- d) Inertial force

**Ans: a) Centripetal force**

8) Energy possessed by a body due to its motion is known by what name?

- a) Final energy
- b) Kinetic energy
- c) Potential energy
- d) Kinetic and potential energy

**Ans: b) Kinetic energy**

9) If the force applied on the object is in the direction opposite to the direction of motion, the speed of the object \_\_\_\_\_.

- a) increases
- b) stops
- c) decreases
- d) no effect

**Ans: c) decreases**

10) If a body slides over a surface, the force resisting the motion between them is called

- a) Centripetal force
- b) Friction
- c) Centrifugal force
- d) Inertia

**Ans: b) Friction**



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11) Motion of a train is an example of which kind of motion?

- a) Rotatory motion
- b) Spin motion
- c) Projectile motion
- d) Translatory motion

**Ans: d) Translatory motion**

12) A cannonball is fired. The motion of this ball is an example of \_\_\_\_\_.

- a) Straight line motion
- b) Projectile motion
- c) Hyperbolic motion
- d) horizontal motion

**Ans: b) Projectile motion**

13) Which force helps swimmers float in water?

- a) Muscular force
- b) Magnetic force
- c) Buoyant force
- d) Frictional force

**Ans: c) Buoyant force**

14) Which of the following changes when a body performs uniform circular motion?

- a) Speed
- b) Mass
- c) Direction
- d) None of the above

**Ans: c) Direction**

15) The motion of \_\_\_\_\_ body is an example of uniformly accelerated motion.

- a) resting
- b) decelerating
- c) freely falling
- d) None of the above

**Ans: c) freely falling**



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16) The motion of an object is said to be uniform when its

- a) Speed changes keeping direction constant
- b) Direction and speed remain constant
- c) Direction and speed change simultaneously
- d) None of the above

**Ans: b) Direction and speed remain constant**

17) A passenger in a moving bus is thrown forward when the bus suddenly stops. This is explained by

- a) Newton's first law
- b) Newton's second law
- c) Newton's third law
- d) the principle of conservation of momentum

**Ans: a) Newton's first law**

18) In a uniform circular motion:

- a) Velocity is constant
- b) Distance is constant
- c) Displacement is constant
- d) Speed is constant

**Ans: d) Speed is constant**

19) Knocking a nail into a wooden block with a hammer involves conversion between different forms of energy, which of the following choices present this conversion in correct order.

- a) chemical energy → gravitational potential energy → kinetic energy → (sound energy + heat energy)
- b) chemical energy → kinetic energy → gravitational potential energy → (sound energy + heat energy)
- c) chemical energy → (sound energy + heat energy) → kinetic energy → gravitational potential energy
- d) (sound energy + heat energy) → chemical energy → kinetic energy → gravitational potential energy

**Ans: a) chemical energy → gravitational potential energy → kinetic energy → (sound energy + heat energy)**



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20) The quantity of motion in a body is known as \_\_\_\_\_.

- a) Momentum
- b) Velocity
- c) Speed
- d) Acceleration

**Ans: a) Momentum**

21) What is the numerical formula for force?

- a)  $F=ma$
- b)  $F=m/a$
- c)  $F=ma^2$
- d)  $F=a^2m$

**Ans: a)  $F=ma$**

22) According to the third law of motion, action and reaction

- a) always act on the same body
- b) always act on different bodies in opposite directions
- c) have same magnitude and direction
- d) act on either body at normal to each other

**Ans: b) always act on different bodies in opposite directions**

23) Water sprinkler used for the grass lawn begins to rotate as soon as the water is supplied. Identify the principle on which it works

- a) Newton's first law of motion
- b) Newton's second law of motion
- c) Newton's third law of motion
- d) Newton's universal law of gravitation

**Ans: c) Newton's third law of motion**

24) Rocket works on the principle of conservation of

- a) mass
- b) energy
- c) momentum
- d) velocity

**Ans: c) momentum**



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25) Newton's third law of motion describes

- a) net force
- b) centripetal forces
- c) balanced forces
- d) action and reaction forces

**Ans: d) action and reaction forces**

26) The SI unit of force is the

- a) meter
- b) kilogram
- c) joule
- d) newton

**Ans: d) newton**

27) Which of the following universal forces is the most effective over long distances?

- a) Gravitational
- b) magnetic
- c) strong nuclear
- d) electric

**Ans: a) Gravitational**

28) According to the Newton's second law of motion, the acceleration of an object equals the net force acting on the object divided by the object's

- a) mass
- b) velocity
- c) momentum
- d) weight

**Ans: a) mass**

29) Speed is the ratio of the distance an object moves to

- a) the displacement of the object
- b) the motion of the object
- c) the amount of time to travel the distance
- d) the direction the object moves

**Ans: c) the amount of time to travel the distance**



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30) The energy of motion is called

- a) thermal energy
- b) work
- c) kinetic energy
- d) potential energy

**Ans: c) kinetic energy**

31) According to Newton's third law of motion, when a hammer strikes and exerts force on a nail, the nail

- a) disappears into the wood.
- b) exerts an equal force back on the hammer
- c) moves at a constant speed
- d) creates a friction with the hammer

**Ans: b) exerts an equal force back on the hammer**

32) The energy stored in gasoline is

- a) nuclear energy
- b) chemical energy
- c) electromagnetic energy
- d) mechanical energy

**Ans: b) chemical energy**

33) Friction acts in a direction \_\_\_\_\_ to the direction of an object's motion.

- a) Unrelated
- b) Opposite
- c) Equal
- d) Perpendicular

**Ans: b) Opposite**

34) Unless an object at rest is acted upon by a force, it stays at rest due to its \_\_\_\_\_.

- a) Matter
- b) Inertia
- c) Friction
- d) Gravity

**Ans: b) Inertia**





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35) The amount of matter in an object is called its \_\_\_\_\_.

- a) Weight
- b) Force
- c) Inertia
- d) Mass

**Ans: d) Mass**

36) Newton's second law of motion states the relationship of mass, acceleration and force. It says that \_\_\_\_\_.

- a) Force equal mass divided by acceleration
- b) Force equals acceleration divided by mass
- c) Every object attracts every other object in the universe
- d) Force equal mass divided by acceleration

**Ans: b) Force equals acceleration divided by mass**

37) \_\_\_\_\_ causes objects to move in a circle.

- a) Centripetal force
- b) Large weight
- c) Terminal velocity
- d) Acceleration

**Ans: a) Centripetal force**

38) Potential energy is the energy \_\_\_\_\_.

- a) of Velocity
- b) Of motion
- c) Of distance
- d) That is stored

**Ans: d) That is stored**

39) Kinetic energy depends on \_\_\_\_\_.

- a) Only mass
- b) Only velocity
- c) Height
- d) Mass and velocity

**Ans: d) Mass and velocity**





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40) Human body converts chemical energy to all of the following EXCEPT

- a) Nuclear energy
- b) Thermal energy
- c) Chemical energy
- d) Electrical energy

**Ans: a) Nuclear energy**

41) A person is standing in a bus. When the bus starts moving forward suddenly \_\_\_\_\_.

- a) The person moves forward
- b) The person remains stationary
- c) The person is unaffected
- d) The person moves backward

**Ans: d) The person moves backward**

42) When a moving bus suddenly stops, a person is sitting \_\_\_\_\_.

- a) Stands up
- b) Falls forward
- c) Falls backward
- d) Is unaffected

**Ans: b) Falls forward**

43) Which of the following is also known as the law of inertia?

- a) Newton's second law of motion
- b) Newton's third law of motion
- c) Newton's first law of motion
- d) Aristotelian law of motion

**Ans: c) Newton's first law of motion**

44) When we shake the branch of a tree, its fruits and dry leaves fall down. This is an example of \_\_\_\_\_.

- a) Inertia of motion
- b) Inertia of rest
- c) Inertia of direction
- d) Newton's third law of motion

**Ans: b) Inertia of rest**



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45) The \_\_\_\_\_ path is the shortest distance between two points.

- a) Circular
- b) Straight line
- c) Rectangular
- d) Triangular

**Ans: b) Straight line**

46) The total length of a path taken by an object to reach one place from another place is called \_\_\_\_\_.

- a) Velocity
- b) Displacement
- c) Distance
- d) Speed

**Ans: c) Distance**

47) The shortest distance from the initial position to the final position of an object is called \_\_\_\_\_.

- a) Velocity
- b) Displacement
- c) Distance
- d) Speed

**Ans: b) Displacement**

48) The SI unit of displacement is \_\_\_\_\_.

- a) metre
- b) seconds
- c) second/metre
- d) litre

**Ans: a) metre**

49) How much is one nautical mile?

- a) 12.985 km
- b) 1.852 km
- c) 2.762 km
- d) 5.903 km

**Ans: b) 1.852 km**



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50) What is the unit for measuring the speed of aeroplanes and ships?

- a) Velocity
- b) Displacement
- c) Distance
- d) Knot

**Ans: d) Knot**

51) Speed is the rate of change of \_\_\_\_\_.

- a) Velocity
- b) Displacement
- c) Distance
- d) Speed

**Ans: c) Distance**

52) 1 km/hr=\_\_\_\_\_.

- a) 2/10 m/s
- b) 5/18 m/s
- c) 3/8 m/s
- d) 1/10 m/s

**Ans: b) 5/18 m/s**

53) Velocity is the rate of change in \_\_\_\_\_.

- a) Speed
- b) Distance
- c) Displacement
- d) Velocity

**Ans: c) Displacement**

54) SI unit of measurement of acceleration is \_\_\_\_\_.

- a)  $m/s^2$
- b) m/s
- c) M
- d) m/hr

**Ans: a)  $m/s^2$**

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55) Acceleration is a vector quantity, which indicates its value \_\_\_\_\_.

- a) Can be positive or negative or zero
- b) Is always positive
- c) Is always negative
- d) Is zero

**Ans: a) Can be positive or negative or zero**

56) Rate of change of displacement is called \_\_\_\_\_.

- a) Velocity
- b) acceleration
- c) Speed
- d) motion

**Ans: a) Velocity**

57) Which of the following statements is correct regarding velocity and speed of a moving body?

- a) Velocity of a moving body is always higher than its speed
- b) Speed of a moving body is always higher than its velocity
- c) Speed of a moving body is its velocity in a given direction
- d) Velocity of a moving body is its speed in a given direction

**Ans: d) Velocity of a moving body is its speed in a given direction**

58) Which of the following describes how fast something is going, and describes how fast something is going in a certain direction?

- a) rate, velocity
- b) rate, speed
- c) speed, velocity
- d) speed, acceleration

**Ans: c) speed, velocity**

59) The S.I unit of acceleration is:

- a)  $\text{ms}^{-1}$
- b) ms
- c)  $\text{m/s}^2$
- d) m

**Ans: c)  $\text{m/s}^2$**

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60) Speed of a body in particular direction can be called

- a) acceleration
- b) displacement
- c) velocity
- d) distance

**Ans: c) velocity**

61) What does the equation  $v=u+at$  represent?

- a) Relationship between velocity and time
- b) Relationship between position and time
- c) Relationship between acceleration and time
- d) Relationship between displacement and time

**Ans: a) Relationship between velocity and time**

62) What is the S.I unit of speed?

- a)  $ms^{-1}$
- b) ms
- c)  $m/s^2$
- d) m

**Ans: a)  $ms^{-1}$**

63) What is the S.I unit of force?

- a)  $ms^{-1}$
- b) ms
- c)  $m/s^2$
- d)  $Kgm/s^2$

**Ans: d)  $Kgm/s^2$**

64) A body coming back to the same position after a fixed time interval is called \_\_\_\_\_.

- a) Oscillatory motion
- b) Rotatory motion
- c) Zigzag motion
- d) Linear motion

**Ans: a) Oscillatory motion**

65) Wind making a flag flutter, a bullock pulling a cart are \_\_\_\_\_.



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- a) Contact forces
- b) Gravity
- c) Non-contact forces
- d) None of the above

**Ans: a) Contact forces**