SET 4 – LAWS OF MOTION (Q151–Q200)

Q151. The unit of force in CGS system is:
a) Newton
b) Dyne
c) Erg
d) Pascal
Ans: b) Dyne

Q152. The inertia of rotation depends on:
a) Angular speed
b) Moment of inertia
c) Radius only
d) None
Ans: b) Moment of inertia

Q153. A person jumping from a height bends his knees on landing to:
a) Reduce mass
b) Reduce momentum
c) Increase stopping time
d) Increase acceleration
Ans: c) Increase stopping time

Q154. Which law of motion explains the use of helmets?
a) First
b) Second
c) Third
d) Gravitation law
Ans: a) First

Q155. When a moving bus suddenly turns right, passengers fall left due to:
a) Inertia of rest
b) Inertia of direction
c) Inertia of motion

d) Momentum
Ans: b) Inertia of direction

Q156. The impulse experienced by a body is numerically equal to:
a) Change in energy
b) Change in momentum
c) Force × distance
d) Mass × acceleration
Ans: b) Change in momentum

Q157. Which quantity is conserved in all types of collisions?
a) Kinetic energy
b) Potential energy
c) Momentum
d) Work
Ans: c) Momentum

Q158. The centripetal force on a body in circular motion is always:
a) Along tangent
b) Away from centre
c) Towards centre
d) Zero
Ans: c) Towards centre

Q159. If force is doubled and mass is halved, acceleration becomes:
a) Double
b) Four times
c) Half
d) Same
Ans: b) Four times

Q160. A cricketer moves his hands backward while catching ball due to:
a) Decrease in time of impact
b) Increase in time of impact
c) Increase in momentum

d) None
Ans: b) Increase in time of impact

Q161. The direction of frictional force is always:
a) Along motion
b) Opposite to motion
c) Perpendicular to motion
d) Downward
Ans: b) Opposite to motion

Q162. A man pushes a wall but it does not move. The work done is:
a) Positive
b) Negative
c) Zero
d) Infinite
Ans: c) Zero

Q163. The action and reaction forces:
a) Cancel each other
b) Act on same body
c) Do not cancel as they act on different bodies
d) None
Ans: c) Do not cancel as they act on different bodies

Q164. The SI unit of weight is:
a) kg
b) Newton
c) Dyne
d) Pascal
Ans: b) Newton

Q165. A person leans outward while running round a curve on a flat ground due to:
a) Centripetal force
b) Centrifugal force
c) Momentum

d) Inertia
Ans: b) Centrifugal force

Q166. The kinetic friction is always:
a) Greater than static
b) Smaller than static
c) Equal to static
d) Independent
Ans: b) Smaller than static

Q167. A parachute descends safely due to:
a) Gravity only
b) Air resistance
c) Normal force
d) Low mass
Ans: b) Air resistance

Q168. The seat belt in cars works on:
a) Newton's First Law
b) Newton's Second Law
c) Newton's Third Law
d) Conservation of energy
Ans: a) Newton's First Law

Q169. Which of the following is not a vector quantity?
a) Force
b) Momentum
c) Impulse
d) Work
Ans: d) Work

Q170. A ball kept on a table is an example of:
a) Unbalanced forces
b) Balanced forces
c) Rotational motion

d) None
Ans: b) Balanced forces

Q171. Newton's laws are valid in:
a) All frames
b) Inertial frames
c) Rotating frames
d) Accelerated frames
Ans: b) Inertial frames

Q172. When brakes are applied on a moving car, friction acts:
a) In direction of motion
b) Opposite to motion
c) Perpendicular to motion
d) None
Ans: b) Opposite to motion

Q173. A rocket rises upward due to:
a) Thrust of burnt gases downward
b) Gravity
c) Air resistance
d) Buoyancy
Ans: a) Thrust of burnt gases downward

Q174. Which quantity has unit N·s?
a) Force
b) Work
c) Impulse
d) Energy
Ans: c) Impulse

Q175. The angle of repose is the angle made by:
a) Normal with vertical
b) Plane with horizontal
c) Weight with normal

d) Velocity with acceleration
Ans: b) Plane with horizontal

Q176. Friction can be reduced by:
a) Polishing
b) Lubrication
c) Ball bearings
d) All of these
Ans: d) All of these

Q177. A person is hurt less when he falls on sand instead of concrete because:
a) Sand is soft
b) Sand reduces momentum
c) Sand increases stopping time
d) Sand reduces velocity
Ans: c) Sand increases stopping time

Q178. A horse pulls a cart. The force which moves the cart is:
a) Force by horse on cart
b) Reaction of ground on horse
c) Normal force
d) Friction only
Ans: b) Reaction of ground on horse

Q179. Newton's First Law is also called:
a) Law of acceleration
b) Law of inertia
c) Law of gravitation
d) Law of impulse
Ans: b) Law of inertia

Q180. A runner presses ground with his foot to run. This is explained by:
a) First law
b) Second law
c) Third law

d) Gravitation law
Ans: c) Third law

Q181. A force is said to be balanced if:
a) It changes velocity
b) It changes direction
c) It does not change state of motion
d) It accelerates body
Ans: c) It does not change state of motion

Q182. A ball of mass m hits a wall at velocity v and rebounds with same velocity. Impulse is:
a) Zero
b) mv
c) 2mv
d) v/m
Ans: c) 2mv

Q183. When a body moves with uniform velocity, acceleration is:
a) Zero
b) Constant
c) Negative
d) Infinite
Ans: a) Zero

Q184. Inertia of direction is observed when:
a) Bus starts suddenly
b) Bus stops suddenly
c) Bus takes a sharp turn
d) Ball is dropped from tower
Ans: c) Bus takes a sharp turn

Q185. A moving body comes to rest on rough surface due to:
a) Force
b) Friction
c) Inertia

d) Mass
Ans: b) Friction

Q186. A force produces acceleration of 5 m/s² in a mass of 2 kg. The force is:
a) 2 N
b) 5 N
c) 10 N
d) 20 N
Ans: c) 10 N

Q187. A block slides on smooth horizontal surface with constant velocity. Net force is:
a) Zero
b) mg
c) μN
d) None
Ans: a) Zero

Q188. The unit of momentum in SI system is:
a) kg m/s
b) N s
c) Both (a) and (b)
d) J s
Ans: c) Both (a) and (b)

Q189. The property by which a body tends to oppose change of its motion is:
a) Momentum
b) Inertia
c) Impulse
d) Force
Ans: b) Inertia

Q190. A person standing in moving bus is thrown backward when bus accelerates due to:

a) Inertia of rest
b) Inertia of motion
c) Inertia of direction
d) Momentum
Ans: a) Inertia of rest

Q191. The cause of motion of a body is:
a) Force
b) Inertia
c) Mass
d) Acceleration
Ans: a) Force

Q192. A rocket can work in vacuum because:
a) No gravity
b) No resistance
c) Newton's Third Law
d) Momentum is not conserved
Ans: c) Newton's Third Law

Q193. The inertia of a body increases with:
a) Decrease in speed
b) Increase in mass
c) Increase in velocity
d) Increase in acceleration
Ans: b) Increase in mass

Q194. Inertia of motion is observed when:
a) A person falls forward when bus stops suddenly
b) A person falls backward when bus starts suddenly
c) A coin remains on card pulled from under glass
d) A stone tied to string rotates in circle
Ans: a) A person falls forward when bus stops suddenly

Q195. The SI unit of coefficient of friction is:
a) Newton

b) Joule
c) Dimensionless
d) Pascal
Ans: c) Dimensionless

Q196. A hammer strikes a nail. The force driving the nail into wood is:
a) Force of hammer
b) Force of nail
c) Reaction of nail
d) Both (a) and (c)
Ans: d) Both (a) and (c)

Q197. The quantity which changes with force is:
a) Mass
b) Momentum
c) Weight
d) Inertia
Ans: b) Momentum

Q198. The equation F = ma is statement of:
a) Newton's First Law
b) Newton's Second Law
c) Newton's Third Law
d) Law of inertia
Ans: b) Newton's Second Law

Q199. Which of the following forces is electromagnetic in origin?
a) Friction
b) Normal reaction
c) Tension
d) All of these
Ans: d) All of these

Q200. A ball thrown upward returns back to ground due to:
a) Force of friction
b) Force of gravity

c) Inertia
d) Momentum
Ans: b) Force of gravity