Force and Pressure

Very Short Answer Type Questions

Question 1
What is the push or pull on an object known as?
Answer:
Force
Force is a Pull or a push on the object.

Question 2.
Why do the shape and size of a balloon change when filled with air or water?
Answer:
As we know that air and water are the matter and matter has a characteristic property which says that they have mass and occupy certain space. So when air or water is filled in a balloon, they tend to stretch its rubber boundary and occupy the space. Therefore the shape and size of the balloon get change when filled with air or water.

Question 3.
Name the quantity whose unit is 'Newton' (N).
Answer:
Force
The unit of force is Newton. Kg ms^{-2} = Newton

Question 4.
When a ball is dropped from a height, its speed increases gradually. Name the force which causes this change in speed.
Answer:
Gravitational force
Every object in the universal exerts a force on every other object. this force is known as the gravitational force.

Question 5.
What is the unit of force?
Answer:
Newton
The unit of force is Newton

Question 6.
Give one example where force changes the shape of an object.
Answer:
When you squeeze a toothpaste.
Force can change the shape, size, direction, etc on applying the body.

Question 7.
Identify the actions involved in the following situations as push or pull, or both:
(a) Opening a drawer.

(b) A cricket ball hit by a batsman.
(c) Drawing a bucket of water from a well.
(d) moving a book placed on a table.
(e) A football player taking a penalty corner.
(f) Moving a wheel barrow.
Answer:
(a) PULL
Force is a Pull or a push on the object.

(b) PUSH
Force is a Pull or a push on the object.

(c) PULL
Force is a Pull or a push on the object.

(d) Ans Both push and pull
Pull or push on an object is known as force

(e) push
Pull or push on an object is known as force

(f) push
Pull or push on an object is known as force.

Question 8 A.
Name two contact forces.
Answer:

1. frictional force
2. applied force

The force applied when it is in contact with the object.

Question 8 B.
Name two non-contact forces.
Answer:

1. Gravitational force.
2. Magnetic force.

The force acting on an object without being in contact with it is known as non-contact force.

Question 9.
When a plastic pen is rubbed in dry hair, it attracts tiny pieces of paper. Which force is involved in this process?

Answer:
Electrostatic force due to create unlike charge by rubbing to get attracted

Question 10.
A small device pulls iron nails from a distance. Which type of force is involved in this process?
Answer:
Magnetic force
Iron nails get attracted by magnet without touching them.

Question 11.
Which force can be used to gather iron pins scattered on the floor?
Answer:
Magnetic force
Iron pins get attracted by magnet without touching them.

Question 12.
Name the force which always opposes motion.
Answer:
Friction
Friction force acting between the two surfaces in the contact with each other which oppose the motion

Question 13.
Which force makes a rolling ball stop on its own?
Answer:
Friction force
Friction force acting between the two surfaces in the contact with each other which oppose the motion, due to which stop the moving object.

Question 14.
An inflated balloon was pressed against a wall after it has been rubbed with a piece of synthetic cloth. It was found that the balloon sticks to the wall. What force might be responsible for the attraction between the balloon and the wall?
Answer:
Electrostatic force
On the rubbing an object to get charged (static charge) and unlike charges get attracted to each other, such type of force is Electrostatic force.

Question 15.
What name is given to the force acting on a unit area of an object?
Answer:
Pressure
Pressure = thrust (force) / area

Question 16.
Name the quantity whose one of the units is Pascal (Pa)?
Answer:

Pressure
The unit of pressure is Pascal (Pa).

Question 17.
What conclusion do you get from the observation that a fountain of water is created at the leaking joint of pipes of the main water supply line?
Answer:
Water exerts force on the bottom of the container.

Question 18.
What type of pressure is involved in the filling of a liquid in a syringe?
Answer:
Air pressure
Pressure = thrust (force)/area

Question 19.
What substance present in our body balances the atmospheric pressure acting on us?
Answer:
Our Blood (Internal body pressure created by blood)

Question 20.
Where will the atmospheric pressure be greater-at ground level or at the top of high mountain ?
Answer:
Ground Level
At mountain air is low.

Question 21.
Name any two devices used in everyday life which work on the existence of atmospheric pressure.
Answer:

1. Drinking Straw works on atmospheric pressure
2. Vacuum Cleaner works on atmospheric pressure.

Question 22.
If a vacuum is created between two Magdeburg hemispheres joined together, they cannot be separated easily, What presses the hemispheres together?
Answer:
The two hemispheres pressed together when vacuum is created between them because air is pumped out of the interior which create the remarkable force between them to stick together.

Question 23.
What makes a balloon get inflated when air is filled in it?
Answer:
When we filled air in the balloon, the inside pressure in the balloon increases and thereby the surface area of balloon increases. Thus the force acting by air molecule inside outward and the force acting by air from outside inward equals. This balancing force tend to make a balloon get inflated when air is filled in it.

Question 24.
Name the substance whose weight produces atmospheric pressure.
Answer:
Air
Air has mass and occupied space.

Question 25.
Where is the pressure greater, 10m below the surface of the sea or 20m below the surface of sea?
Answer:
20m below the surface of sea.
Pressure increases with height or depth of sea level

Question 26.
What force acting on, an area of 0.5 m^2 will produce a pressure of 500 Pa?
Answer:
250N
P = F/A
F = P × A
= 500 × 0.5 = 250 N

Question 27.
Can a liquid exert pressure upwards?
Answer:
Yes, but exert more pressure downwards than upwards.

Question 28.
Can a liquid exert pressure sideways?
Answer:
Yes, Liquid exert pressure in all direction.

Question 29.
State whether the following statements are true or false :
(a) The pressure exerted by a liquid depends on the area of base of its container.
(b) A drinking straw works on the pressure exerted by the liquid filled in a soft drink bottle in which it is placed.
Answer:
(a) True
Pressure depends on the area and force.

(b) False
Pressure depends on the area and force.

Question 30.
Fill in the following blanks with suitable words :
(a) To draw water 'from a well, we have to ……at the rope.
(b) If the two forces applied to an object are equal and act in opposite directions, the net force acting on the object will be …….
(c) Force could be a ……or a …….

(d) Force has magnitude as well as …….
(e) A force arises due to…….between two objects.
(f) A charged body……an uncharged body towards it.
(g) The north pole of a magnet……the north pole of another magnet.
(h) Force acting on a unit area is called ……
(i) The pressure exerted by a liquid …….with depth.
(J) A drinking straw works on the existence of …….pressure.
(k) Atmospheric pressure……with increasing height.
Answer:
(a) To draw water 'from a well, we have to apply pull force at the rope.
To draw an object by applying force

(b) If the two forces applied to an object are equal and act in opposite directions, the net force acting on the object will be zero.
The force applied on the body are equal and opposite direction, force cancel out and net force is zero.

(c) Force could be a push or a pull.
A push or pull on an object is known as force.

(d) Force has magnitude as well as direction.
Force is a vector quantity and it depends on direction.

(e) A force arises due to interaction between two objects.
The interaction between two objects due to a force .

(f) A charged body attracts an uncharged body towards it.
Force attracts to each other of two objects when they are unlike charges.

(g) The north pole of a magnet repeals the north pole of another magnet.
Like poles of magnet repeal to each other's.

(h)Force acting on a unit area is called Pressure.

(i) The pressure exerted by a liquid increases with depth.
Pressure = height × density of object × gravity

(J) A drinking straw works on the existence of atmospheric pressure.
The level of water rises from drinking straw due to atmospheric pressure.

(k) Atmospheric pressure decreases with increasing height.
Pressure is inversely proportional to height

Short Answer Type Questions

Question 31.
Define 'state of motion' of an object. Name the 'agent' which can change the state of motion of an

object.
Answer:
The state of motion of an object is defined by the speed acquired by it in a particular direction. Force can change the state of motion of an object.

Question 32.
Give two examples of situations where you push or pull to change the state of motion of objects.
Answer:

1. Pushing a carom board coin
2. Moving a glass placed on table

The force can change the state of motion on applying on it.

Question 33.
What is meant by saying that force is due to an interaction'? Give an example to illustrate your answer.
Answer:
It means for force to come into play, atleast two object must interact with each other. For example: If the man pushes the car with his hands due to which the car starts moving, there is an interaction between man and a car. During this interaction force arises which Acts on the car and makes it move in the direction of applied force.

Question 34.
In a tug of war; when the two teams are pulling the rope, a stage comes when the rope does not move to either side at all. What can you say about the magnitudes and directions of the forces being applied to the rope by the two teams at this stage?
Answer:
Same magnitude of force are acting in opposite direction. Therefore they cancel each other.

Question 35.
What is force? State the various effects of force.
Answer:
A force is a push or pull upon an object resulting from the object's interaction with another object.
Various effects of force are:
a) It can change shape
b) It can change direction
c) It can change position

Question 36 A.
Give one example where force moves a stationary object.
Answer:
Pushing a table
The force can change the state of motion of object.

Question 36 B.
State one example where force stops a moving object.

Answer:
A brake applied on bicycle to stop due to force.

Question 37 A.
Give one example where force changes the speed of a moving object.
Answer:
Pushing a slow moving bicycle increases its speed.

Question 37 B.
Give one example where force changes the direction of a moving object.
Answer:
Hitting a moving ball change its direction.

Question 38.
Why does the shape of an ointment tube change when we squeeze it?
Answer:
The shape changes because our finger applies force on the tube that is why the ointment tube's shape changed.

Question 39.
What happens to the springs of a sofa when we sit on it?
Answer:
The shape and size of the spring changes, the force due to sitting on the sofa changes the shape and size of the spring.

Question 40.
Name the various types of forces.
Answer:

1. Contact Forces (Frictional Force, Tension Force, Normal Force, Air Resistance Force, Applied Force and Spring Force)
2. Action-at-a-Distance Forces (Magnetic Force, Electrical Force, Gravitational Force)

Question 41.
What is muscular force ? Give one example of muscular force.
Answer:
Muscular force is a force which is generated by our muscles during heavy works, exercises etc which produce lactic acid. The example of muscular force is bouncing a ball.

Question 42.
Which of the following are non-contact forces?
Magnetic force, Frictional force, Gravitational force, Muscular force, Electrostatic force.
Answer:
Non-Contact Forces are the forces exerted by an object that can be experienced by an object even from a distance without any contact with each other magnetic, Electrostatic and Gravitational Forces are Non-Contact Forces

Question 43.
Give two examples from everyday life which show that air exerts pressure.
Answer:

1. Drinking Straw
2. Vacuum Cleaner

Question 44.
What is a rubber sucker? How does it work? State any one use of a rubber sucker.
Answer:
Rubber sucker a device used in toys, sunlight blocker – suction cups, suction clamps and various other places where "sticking" is required for temporary period and when you don't want to use glue.

The principle on which Rubber suckers work: When the sucker is pressed against the surface, it squeeze out the air that is behind it. The atmospheric pressure on the outside of the sucker holds its rim firmly against the smooth surface.

Question 45.
Why do mountaineers usually suffer from nose-bleeding at high altitudes?
Answer:
At higher altitude the atmospheric pressure decreases therefore the blood vessels exceed the outside pressure which causes blood vessels to get rupture.

Question 46.
Describe one activity to show the existence of atmospheric pressure.
Answer:
Crushing can experiment
When a can filled with hot water is closed and is cooled down rapidly by pouring cold water on it, it will crush instantly. This experiment proves that there is a huge atmospheric pressure exerts on everything on the surface of the earth.

Question 47.
Explain why, water comes out more slowly from an upstairs tap than from a similar tap downstairs.
Answer:
As the depth of water increases the pressure also increases.

Question 48.
What is meant by gravitational force (or force of gravity)? Give its one example.
Answer:
The force of attraction between all masses in the universe, especially the attraction of the earth's mass for bodies near its surface. For example: When you hold a ball up in the air, the mass of Earth allows the ball to fall to the Earth.

Question 49.
Calculate the pressure when a force of 200 N is exerted on an area of:
(a) $10m^2$ (b) $5m^2$
Answer:

Given: Force applied is given as: 200N
Now, we know that the Pressure is the force applied perpendicular to the surface of an object per unit area. or Pressure = Force/ Area
(a) Area = $10m^2$
P = $200N/10m^2$
or P = 20 Nm^2 or 20 Pascal

(b) Area = $10m^2$
P = $200N/5m^2$
or P = 40 Nm^2 or 40 Pascal

Question 50.
Which force do the animals apply while moving, chewing and doing other activities?
Answer:
Muscular force

Question 51.
Which force is responsible for raising our body hair when we try to take off a terylene or polyester shirt in the dry weather?
Answer:
Electrostatic force
The force acting on object due to its charged.

Question 52.
Name the type of forces involved in the following :
(a) A horse pulling a cart.
(b) A sticker attached to steel almirah without glue.
(c) A coin falling to the ground on slipping from hand.
(d) A plastic comb rubbed in dry hair picking up tiny pieces of paper.
(e) A moving boat coming to rest when rowing is stopped.
Answer:
(a) Muscular force is a contact force due to action of muscles.
(b) Magnetic force

(c) Gravitational force
Objects fall towards the earth due to its gravity.

(d) Electrostatic force
The force acting on an object due to its charged particles.

(e) Frictional force
Stream of water opposed to moving boat to stop.

Question 53.
Why does a sharp knife cut objects more effectively than a blunt knife?
Answer:

Lesser the area, larger the pressure for the same force applied. Therefore it is easier to cut with sharp knives than blunt ones, with same force.

Question 54.
Explain why, wooden (or concrete) sleepers are kept below the railway line.
Answer:
There are many reasons. Some of them are

1. To keep the lines equidistant from each other.
2. To reduce unwanted vibrations in the track.
3. The sleepers have a large surface area compared to the lines; this larger surface area decreases the pressure due to the weight of the train on the track. If only the rails were used without slippers; they being thinner would extent greater pressure over the bed of stone and move deeper into the ground

Question 55.
Explain why a wide steel belt is provided over the wheels of an army tank.
Answer:
The weight of the tank (its mass being acted upon by the force of gravity) is spread over a larger surface area (the big steel belt), giving it a smaller pressure and therefore it makes it sink in less, allowing it to travel faster over more surfaces where others would with less surface area

Question 56.
Explain why the tip of a sewing needle is sharp.
Answer:
The tip of sewing needle is sharp because with the decrease of area, pressure increases and the needle can easily penetrate the stitching material.

Question 57.
Explain why snow shoes stop you from sinking into snow.
Answer:
The snow shoes have large, flat soles so they exert less pressure (= force /area) on the soft snow and stop the wearer from sinking into it.

Question 58.
Explain why, when a person stands on a cushion, the depression is much more than when he lies down on it.
Answer:
When a man stands on a cushion then only his two feet (having small area) are in contact with the cushion. Due to this the weight of man falls on a small area of the cushion producing a large pressure. This large pressure causes a big depression in the cushion.

Question 59.
Explain why, porters place a thick, round piece of cloth on their heads when they have to carry heavy loads.
Answer:
The round piece of cloth on their heads increases the area on which the force (weight of the load)

will act. We know that, the pressure is inversely proportional to area. Therefore, increase in area reduces the pressure and this helps the porter to carry the heavy load easily.

Question 60.
Give one practical application of magnetic force.
Answer:
Magnetic forces are the force due to magnetic field of a magnet. The closing of door of refrigerator works on the application of magnetic forces.

Long Answer Type Questions

Question 61 A.
What is meant by a contact force? Explain with the help of an example.
Answer:
A Contact force as the name suggests acts on a point of an object by direct contact. The Contact may be Continuous or sometimes momentary. The former case is known as Continuous force and the latter case is known as impulse force.

Example: Pushing an object along the floor: This is an example of a continuous force. Here, continuously, the direct force is put on the object to move it along the floor.

Question 61 B.
What is meant by a non-contact force? Explain with the help of an example.
Answer:
An imaginary force can pull everything towards the earth surface. All the objects are pulled towards the earth without any physical contact with the objects and bodies. These are non contact forces in the most basic sense.

Example

- Gravitational force
- Magnetic force
- Electrostatics
- Nuclear force

Question 62 A.
Define frictional force (or friction).
Answer:
Frictional Force refers to the force generated by two surfaces that contacts and slide against each other. These forces are mainly affected by the surface texture and amount of force impelling them together. The angle and position of the object affect the amount of frictional force.

If an object is placed flat against an object, then the frictional force will be equal to the weight of the object.

If an object is pushed against the surface, then the frictional force will be increased and becomes more than the weight of the object.

Question 62 B.
Explain why frictional force is said to be a contact force.
Answer:
If life an object which is moving over a horizontal surface does not continue with constant velocity when the accelerating force is removed. Instead, the object slows down and eventually stops. The deceleration is caused by a frictional force between the object and the surface on which it travels. A frictional force always acts to oppose the motion of an object over a surface and is an example of a contact force. When we try to slide one object over another, we find that there is a force which opposes the motion. This force is called friction. Whenever there is relative motion of two surfaces in contact, there is frictional resistance. When a body moves over another, it has to overcome friction. This needs energy. Hence, some energy is always wasted in overcoming friction. When two parts of a machinery rub against each other heat are produced, and the efficiency of the machine decreases. There will be a greater wear and tear in the different parts of a machine due to friction.

Question 62 C.
Explain, why magnetic force is said to be a non-contact force.
Answer:
Magnetic force is acted upon a body by the magnetic lines of force. These are imaginary closed line of lines of force which emanate from the N pole f the magnet and goes into the S pole of the magnet. So, a magnet can influence a magnetic material like a piece of iron even when they are not in contact thus magnetic force is a non contact force.

Question 63 A.
Define pressure. What is the relation between pressure, force and area? State the units in which pressure is measured.
Answer:
Pressure is defined as a measure of the force applied over a unit area. Pressure often is expressed in units of Pascals (Pa), newtons per square meter (N/m^2 or $kg/m.s^2$), or pounds per square inch.
Other units include the atmosphere (atm), torr, bar, and meters sea water (msw).
In equations, pressure is denoted by the capital letter P or the lowercase letter p.
Pressure is a derived unit, generally expressed according to the units of the equation:
$P = F / A$
where P is pressure, F is force, and A is area
P is pressure
F is the component of force perpendicular to the surface
A is the area of the surface
When a force is constant over an area, the pressure acting on that area is simply
Pressure is a scalar quantity, thus it acts in all directions at any given point. In order for pressure to create a force, the pressure must be integrated over some area.

Question 63 B.
Explain why school bags are provided with wide straps to carry them.
Answer:
A wider strap distributes the force throughout a greater surface area. You can do a comparison using a simple physics equation.
Pressure = Force/Area
So take two different straps and measure the area of them.
Then find out how much weight the pack will be holding.
Then divide the Weight by the Area and you end up with pressure.

Question 64 A.
What is meant by atmospheric pressure? What is the cause of atmospheric pressure?
Answer:
ATMOSPHERIC PRESSURE: The air around you has weight, and it presses against everything it touches. That pressure is called atmospheric pressure, or air pressure. It is the force forced on a surface by the air above it as gravity pulls it to Earth.

CAUSES:

1. Height of altitude
2. Density of air

Question 64 B.
Why are our bodies not crushed by the large pressure exerted by the atmosphere?
Answer:
Because the atmosphere also pressurize the body. Diving down 100 meters will pressurize the gasses in the body and they will compress, like the air in our lungs and if the lung volume gets below half a litre the lungs can get partly filled with blood plasma. But sorry no bone crushing. But if you take a big breath and hold it while you ascend from 100 meters to the surface, your ribs may start to break

Question 64 C.
Explain why atmospheric pressure decreases as we go higher up above the earth's surface.
Answer:
The air molecules at lower altitudes are more compressed by gravity than the ones at the higher altitudes. The pressure level is highest right at the surface of the earth because the air at this level is supporting the weight of all the air above it. More weight above means a greater downward gravitational force. As we move up through levels of the atmosphere, the air has less air mass above it and gravity isn't strong enough to pull down a greater number of particles. So the balancing pressure decreases. This is why atmospheric pressure drops as we rise in altitude.

Question 65 A.
How does the pressure of a liquid depend on its depth? Draw a labelled diagram to show that the pressure of a liquid (say, water) depends on its depth.
Answer:
All the liquids exert pressure on the base or bottom and walls of their container. All the liquid have weight. When we pour liquid into a vessel, then the weight of liquid pushes down on the base of the vessel producing a pressure.

The liquid exerts pressure on the base of the vessel.

The pressure exerted by a liquid changes with depth in the liquid. The pressure exerted by a liquid increases with increasing depth inside the liquid. The pressure exerted by a liquid is small just under the surface of the liquid. But as we go we deeper in a liquid the pressure of liquid increases. As the depth of liquid increases the weight of liquid column pushing down from above increases and hence the pressure also increases.

Question 65 B.
Explain why the walls of a dam are thicker near the bottom than at the top.
Answer:
A dam is thicker at the bottom than at the top because the forces exerted are strongest close to the ground. Water pressure increases proportionally with depth, so the lower portion of the dam has greater water pressure exerted upon it. The increasing thickness of the lower dam also helps it support its own weight.

Multiple Choice Questions (MCQs)

Question 66.
Which of the following is not an example of muscular force?
A. a porter carrying a load on a wheel-barrow.
B. an apple falling from a tree.
C. a child riding a bicycle.
D. a person drawing water from a well.
Answer:
B. an apple falling from a tree.
An apple falling from a tree is an example of gravitational force.

Question 67.
Which of the following is not an example of the force of gravity?
A. a leaf falling from a tree.
B. a boy pushing a cart on a level plane.
C. a diver jumping into a swimming pool.
D. a stone falling from the top of a cliff.
Answer:
B. a boy pushing a cart on a level plane.
A boy pushes a cart on a level of plane due to force.

Question 68.
When we press the bulb of a dropper with its nozzle kept in water air in the dropper is seen to escape in the form of bubbles. Once we release the pressure on the bulb, water gets filled in the dropper. The rise of water in the dropper is due to :
A. pressure of water
B. gravity of the earth
C. shape of rubber bulb
D. atmospheric pressure
Answer:
D. atmospheric pressure
Atmospheric pressure exerted by air .

Question 69.
A rectangular wooden block has length, breadth and height of 50 cm, 25 cm and10 cm, respectively. This wooden block is kept on ground in three different ways, turn by turn. Which of the following is the correct statement about the pressure exerted by this block on the ground?
A. the maximum pressure is exerted when the length and breadth form the base
B. the maximum pressure is exerted when length and height form the base

C. the maximum pressure is exerted when breadth and height form the base
D. the minimum pressure is exerted when length and height form the base
Answer:
C. the maximum pressure is exerted when breadth and height form the base
Pressure = force / area

Question 70.
Which of the following are contact forces ?
A. Friction
B. Gravitational force
C. Magnetic force
D. Muscular force
A. A and B
B. B and C
C. A and D
D. B and D
Answer:
C. A and D
Force applied when it is in contact with the object.

Question 71.
If we release a magnet held in our hand, it falls to the ground. The force responsible for this is :
A. muscular force
B. magnetic force
C. electrostatic force
D. gravitational force
Answer:
D. gravitational force
Force applied when it is in non contact with the object.

Question 72.
Which of the following force is utilized in reducing air pollution by removing dust, soot and fly-ash particles from the smoke coming out of chimneys of factories ?
A. magnetic force
B. gravitational force
C. electrostatic force
D. frictional force
Answer:
C. electrostatic force
Charged particles gets removed by electrostatic force .

Question 73.
The same force Facts on four different objects having the areas given below, one by one. In which case the pressure exerted will be the maximum?
A. 20 m^2
B. 50 m^2
C. 10 m^2
D. 100 m^2

Answer:
C. 10 m^2

Question 74.
Which of the following represent correct values for the normal atmospheric pressure?
A) 101.3 kilopascals
B) 76 mm of mercury
C) 101.3 pascals
D) 76 cm of mercury
A. A and B
B. B and C
C. A and D
D. B and D
Answer:
D. B and D
P = F/A

Question 75.
Which of the following does not work on the existence of atmospheric pressure ?
A. rise of iodine solution in the glass tube of dropper
B. rise of cold drink in a long plastic straw
C. sticking of suction hook on the wall of a room
D. rise of mercury in glass tube of thermometer
Answer:
A. rise of iodine solution in the glass tube of dropper
P = height × density × gravity

Question 76.
The magnitude of force is expressed in the unit of force called:
A. pascal
B. kelvin
C. newton
D. Magdeburg
Answer:
C. newton
The unit of force is newton.

Question 77.
Which of the following change appreciably when a batsman hits a moving cricket ball?
A. Shape
B. Direction
C. Size
D. Speed
A. A and B
B. B and C
C. A and C
D. B and D
Answer:

D. B and D
The force can change the direction and Speed of motion.

Question 78.
Which of the following is not an effect of force?
A. a force can change the speed of a moving object
B. a force can change the direction of a moving object
C. a force can change the composition of a moving object
D. a force can change the shape and size of an object
Answer:
B. a force can change the direction of a moving object
The force can change the direction of motion.

Question 79.
Which of the following is not a non-contact force?
A. electrostatic force
B. gravitational force
C. frictional force
D. magnetic force
Answer:
B. gravitational force
Friction force is an example of contact force.

Question 80.
Which of the following scientists gave the idea of the existence of gravitational force?
A. Einstein
B. James Watt
C. Faraday
D. Newton
Answer:
D. Newton
Newton propound the universal laws of gravitational

Question 81.
Some mustard oil is kept in a beaker. It will exert pressure:
A. downwards only
B. sideways only
C. upwards only
D. in all directions
Answer:
D. in all directions
Fluid exerted pressure in all direction

Question 82.
A pressure of 10 kPa acts on an area of 0.3 m^2. The force acting on the area will be :
A. 3000 N
B. 30 N
C. 3 N

D. 300 N
Answer:
A. 3000 N
Force = pressure × area
= 10 × 1000 × 0.3 = 3000N

Question 83
The magnitude of atmospheric pressure is equal to the pressure exerted by a :
A. 76 mm tall column of mercury
B. 760 mm tall column of alcohol
C. 76 cm tall column of mercury
D. 760 cm tall column of mercury
Answer:
C. 76 cm tall column of mercury
The correct solution is option (c)
The standard temperature and pressure (STP), refers to nominal conditions in the atmosphere at sea level, which supports 760 millimeters in a mercurial barometer (760 mm Hg)

Question 84.
The atmospheric pressure is usually measured in the unit of :
A. newtons per square meter
B. pascal
C. cm of mercury
D. mm of mercury
Answer:
D. mm of mercury
The level of mercury is measured in mm.

Question 85.
When a force of 5 N acts on a surface, it produces a pressure of 500 Pa. The area of surface then must be
A. 10 cm^2
B. 50 cm^2
C. 100 cm^2
D. 0.01 cm^2
Answer:
C. 100 cm^2
Pressure = thrust / area
Area = Pressure / Thrust = 500/ 5 = 100 cm^2

Questions Based on High Order Thinking Skills (HOTS)

Question 86.
Two tiny holes are made in a plastic bucket, one near the middle part and the other just above bottom when this bucket is filled with water, the water rushes out from the bottom hole much faster than from the upper hole. What conclusion do you get from this observation?
Answer:
Pressure exerted by water increases with creasing depth

Question 87.
What is common in the working of the devices such as a drinking straw, a syringe, a dropper and a rubber sucker?
Answer:
All these devices work on the existence of atmospheric pressure

Question 88.
A rocket has been fired upwards to launch a satellite in its orbit. Name the two forces acting on the rocket immediately after leaving the launching pad (Ignore the frictional force due to air resistance).
Answer:
Upward force applied by the rocket engine and downward gravitational force applied by the earth

Question 89.
One student says that water exerts pressure on the bottom of the bucket but another student says that water exerts pressure on the sides of the bucket. What would you like to say?
Answer:
Water exerts pressure on the bottom of the bucket as well as on the sides of the bucket

Question 90.
Name the forces acting on a plastic bucket containing water held above ground level in your hand. Discuss why the forces acting on the bucket do not bring a change in its state of motion.
Answer:
Upward muscular force applied by hand and downward gravitational force applied by earth ; The two forces being equal and opposite balance each other and hence do not bring a change in the state of motion.