8th A.P(CBSE) FA & SA EXAM QUESTIONS WITH ANSWERS
1.ELECTRICITY , MAGNETIC & HEATING EFFECTS

1 Mark Questions

1. **What is the SI unit of electric current?**
   Answer: Ampere (A).
2. **What is resistance?**
   Answer: Resistance is the property of a conductor that opposes the flow of electric charge.
3. **What is the magnetic effect of electric current?**
   Answer: The production of a magnetic field around a current-carrying conductor is called the magnetic effect of electric current.
4. **Who discovered the magnetic effect of electric current?**
   Answer: Hans Christian Oersted.
5. **What is an electromagnet?**
   Answer: An electromagnet is a temporary magnet produced when electric current passes through a coil of wire.
6. **Which material is commonly used as the core of an electromagnet?**
   Answer: Iron.
7. **Which wire is commonly used in electric heating devices?**
   Answer: Nichrome wire.
8. **What form of energy does a dry cell convert into electrical energy?**
   Answer: Chemical energy.
9. **What acts as the electrolyte in a lemon battery?**
   Answer: Lemon juice.

10.What is electric current?
Answer: Electric current is the rate of flow of electric charge through a conductor.

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2 Marks Questions – 10

1. **Differentiate between an open circuit and a closed circuit.**

Answer:
Open circuit: The path is incomplete, so current does not flow.
Closed circuit: The path is complete, so current flows through the circuit.

2. **What is the difference between a cell and a battery?**

Answer:
A cell produces electricity from chemical energy.
A battery is a combination of two or more cells.

3. **Why is copper used for making electric wires?**

Answer:
Copper is a good conductor of electricity and allows electric current to pass through it easily.

4. **Why are electric wires covered with plastic or rubber?**

Answer:
Plastic and rubber are insulators. They prevent electric current from reaching our body and protect us from electric shock.

5. **What happens to a compass needle placed near a current-carrying wire?**

Answer:
The compass needle deflects when current flows through the wire. When the current is switched off, it returns to its original position.

6. **Why does an iron nail inside a current-carrying coil behave like a magnet?**

Answer:
The current-carrying coil produces a magnetic field. The iron nail placed inside the coil becomes temporarily magnetised and behaves like an electromagnet.

7. **State two methods of increasing the strength of an electromagnet.**

Answer:

1. Increase the number of turns of the coil.
2. Increase the electric current flowing through the coil.

8.What happens to the poles of an electromagnet when the direction of current is reversed?

Answer:
The North and South poles of the electromagnet interchange when the direction of current is reversed.

9. **Why does nichrome wire become hot when current passes through it?**

Answer:
Nichrome has high resistance. When current passes through it, some electrical energy is converted into heat, making the wire hot.

10. **Give any two applications of electromagnets.**

Answer:

1. Electromagnetic cranes used to lift scrap metal.
2. Electric bells.

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4 Marks Questions

1. Describe an experiment to show the magnetic effect of electric current.

Answer:

1. Take an electric cell, connecting wires, a switch and a magnetic compass.
2. Place a straight connecting wire above the compass needle.
3. Connect the wire to the cell through the switch.
4. Keep the switch OFF and observe the compass needle.
5. Turn the switch ON. The compass needle deflects from its original position.
6. Turn the switch OFF. The needle returns to its original position.

Conclusion: A current-carrying wire produces a magnetic field around it. This phenomenon is called the magnetic effect of electric current.

2. Explain how an electromagnet is made and how it works.

Answer:

1. Take an iron nail and a length of insulated wire.
2. Wind the wire tightly around the nail to form a coil.
3. Connect the two ends of the wire to an electric cell.
4. When current flows through the coil, the iron nail attracts paper clips.
5. The nail acts as a temporary magnet.
6. When the cell is disconnected, current stops flowing.
7. The nail loses its magnetic effect and the paper clips fall off.

Thus, a current-carrying coil with an iron core forms an electromagnet.

3. Explain the factors affecting the strength of an electromagnet.

Answer:

The strength of an electromagnet depends mainly on:

1. Number of turns of the coil: Increasing the number of turns makes the magnetic effect stronger.
2. Electric current: Increasing the current through the coil increases the magnetic field.
3. Iron core: Inserting an iron core inside the coil makes the electromagnet stronger.
4. More cells can provide a larger current and increase the magnetic effect.

The poles of an electromagnet can also be reversed by reversing the direction of current.

4. Describe an activity to demonstrate the heating effect of electric current.

Answer:

1. Fix two nails on a piece of cardboard.

2. Connect a nichrome wire between the nails.
3. Connect the wire to an electric cell through a switch.
4. Initially keep the switch OFF.
5. Switch ON the circuit for about 30 seconds.
6. Switch it OFF and carefully observe the nichrome wire. It becomes warm.
7. Nichrome offers resistance to the flow of current.
8. Due to this resistance, some electrical energy is converted into heat.

Conclusion: The production of heat in a conductor when electric current passes through it is called the heating effect of electric current.

5. Explain the construction and working of a dry cell.

Answer:

Construction:

1. The outer zinc container acts as the negative terminal.
2. A carbon or graphite rod is placed at the centre.
3. The metal cap of the carbon rod acts as the positive terminal.
4. The carbon rod is surrounded by carbon particles and ammonium chloride.
5. The cell is sealed at the top.

Working:
6. Chemical reactions inside the cell produce electrical energy.
7. The cell supplies current when connected in a closed circuit.
8. After prolonged use, the chemicals become exhausted and the cell stops producing electricity.

Dry cells are commonly used in torches, TV remotes, wall clocks and toys.

2.EXPLORING Force

1 Mark Questions

1. **What is force?**
   Answer: Force is a push or pull acting on an object.
2. **What is the SI unit of force?**
   Answer: Newton (N).
3. **Is force a scalar or vector quantity?**
   Answer: Force is a vector quantity.
4. **What is friction?**
   Answer: Friction is the force that opposes the motion or attempted motion between two surfaces in contact.
5. **Give one example of a contact force.**
   Answer: Frictional force.

6. **Give one example of a non-contact force.**
   Answer: Magnetic force.
7. **What is gravitational force?**
   Answer: Gravitational force is the force by which the Earth attracts objects towards itself.
8. **What is weight?**
   Answer: Weight is the gravitational force acting on an object.
9. **Which instrument is used to measure weight?**
   Answer: Spring balance.
10. **What is buoyant force?**
    Answer: The upward force exerted by a liquid on an object immersed in it is called buoyant force or upthrust.

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2 Marks Questions

1. **Write any two effects of force.**

Answer:

1. Force can change the speed of an object.
2. Force can change the direction of motion of an object.

2.Differentiate between contact and non-contact forces.

Answer:
Contact forces act only when two objects are physically touching each other. Example: friction.
Non-contact forces act without physical contact. Example: magnetic force.

3. **Why does a moving book eventually stop when pushed across a table?**

Answer:
Friction acts between the book and the table in a direction opposite to motion. This force slows the book and finally brings it to rest.

4. **Why is friction greater on a rough surface than on a smooth surface?**

Answer:
Rough surfaces have more irregularities that interlock with each other. Hence, they produce greater friction than smooth surfaces.

5. **State two advantages of friction.**

Answer:

1. Friction helps us walk without slipping.

2. Friction helps vehicles stop when brakes are applied.

6.Why is magnetic force called a non-contact force?

Answer:
A magnet can attract or repel another magnet or magnetic material without directly touching it. Therefore, magnetic force is a non-contact force.

7. **State the rule of attraction and repulsion between electric charges**.

Answer:
Like charges repel each other.
Unlike charges attract each other.

8. **Differentiate between mass and weight.**

Answer:
Mass is the amount of matter present in an object and is measured in kilograms.
Weight is the gravitational force acting on an object and is measured in newtons.

9. **Why does an astronaut weigh less on the Moon?**

Answer:
The Moon has weaker gravity than the Earth. Therefore, the gravitational force acting on the astronaut is smaller, so the astronaut weighs less.

10. **When does an object float and when does it sink in water?**

Answer:
An object floats when buoyant force balances its weight.
It sinks when its weight is greater than the buoyant force.

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4 Marks Questions

1. Explain the different effects of force with examples.

Answer:

Force can produce several effects on an object:

1. It can make a stationary object move.
   Example: Kicking a football lying on the ground.
2. It can stop a moving object.
   Example: Applying brakes stops a bicycle.
3. It can change the speed of an object.
   Example: Pedalling harder makes a bicycle move faster.

4. It can change the direction of motion.
   Example: A cricket bat changes the direction of a moving ball.
5. It can change the shape or size of an object.
   Example: Stretching a rubber band or squeezing a sponge.

Thus, force can change the motion, speed, direction, shape or size of an object.

2. Explain friction and its advantages with examples.

Answer:

Friction is the force that opposes the motion or attempted motion of one surface over another.

1. It acts only when two surfaces are in contact.
2. It acts opposite to the direction of motion.
3. Rough surfaces produce more friction than smooth surfaces.
4. Friction helps us walk without slipping.
5. It helps us write with a pencil or pen.
6. It helps brakes stop vehicles.
7. It also helps us grip and hold objects.

Therefore, although friction opposes motion, it is very useful in our daily life.

3. Explain magnetic, electrostatic and gravitational forces.

Answer:

Magnetic force:
It is the force exerted by a magnet on another magnet or magnetic material. Like poles repel and unlike poles attract.

Electrostatic force:
It is the force exerted by a charged object on another charged or uncharged object. Like charges repel and unlike charges attract.

Gravitational force:
It is the attractive force exerted by the Earth on objects. It pulls objects towards the Earth.

All three are non-contact forces because they can act without direct physical contact.

4. Differentiate between mass and weight.

Answer:

Mass:

1. Mass is the amount of matter present in an object.
2. It remains the same everywhere.

3. It is measured in gram (g) or kilogram (kg).
4. It does not depend on gravity.

Weight:

1. Weight is the gravitational force acting on an object.
2. It can change from place to place.
3. It is measured in newton (N).
4. It depends on gravitational acceleration.[
   W = mg
   where
   (W) = weight,
   (m) = mass,
   (g) = acceleration due to gravity.

5. Explain buoyant force and Archimedes' principle.

Answer:

When an object is immersed in water or another liquid, the liquid exerts an upward force on it. This force is called buoyant force or upthrust.

1. Gravity pulls an immersed object downward.
2. Buoyant force pushes the object upward.
3. If the weight of the object is greater than the buoyant force, the object sinks.
4. If buoyant force balances the weight, the object floats.

Archimedes' Principle:
When an object is fully or partially immersed in a liquid, it experiences an upward force equal to the weight of the liquid displaced by it.

Examples: Boats floating on water, swimmers floating, and life jackets helping people stay afloat.

3. Pressure, Winds ,storms and CycloneS

1 Mark Questions

1. **What is pressure?**
   Answer: Pressure is the force acting per unit area.
2. **What is the SI unit of pressure?**
   Answer: Pascal (Pa).
3. **Write the relation between force, area and pressure.**
   Answer:
   Pressure=force/area

4. **How does pressure change when the same force acts on a smaller area?**
   Answer: Pressure increases.
5. **In which directions do liquids exert pressure?**
   Answer: Liquids exert pressure in all directions.
6. **What is atmospheric pressure?**
   Answer: The pressure exerted by the air of the atmosphere is called atmospheric pressure.
7. **What is wind?**
   Answer: Wind is the movement of air from a high-pressure region to a low-pressure region.
8. **What is a thunderstorm?**
   Answer: A storm accompanied by lightning and thunder is called a thunderstorm.
9. **What is a cyclone?**
   Answer: A cyclone is a large rotating storm that develops over warm ocean water.
10. **What is the eye of a cyclone?**
    Answer: The calm central region of a cyclone with the lowest pressure is called the eye.

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2 Marks Questions

1. **Why are school bags provided with broad shoulder straps?**

Answer:
Broad straps increase the area of contact with the shoulder. For the same force, a larger area produces less pressure, making the bag more comfortable to carry.

2. **Why does a sharp knife cut better than a blunt knife?**

Answer:
A sharp knife has a smaller contact area. The same force acting on a smaller area produces greater pressure, so it cuts more easily.

3. **Why are overhead water tanks placed at a height?**

Answer:
Liquid pressure increases with the height of the water column. Placing the tank at a greater height produces sufficient pressure for water to flow through taps.

4. **Why are dam walls thicker at the bottom?**

Answer:
Liquid pressure increases with depth. Therefore, the bottom of a dam experiences greater water pressure and is made thicker to withstand it.

5. **Give two examples showing atmospheric pressure.**

Answer:

1. Drinking through a straw.
2. Suction cups sticking to smooth surfaces.

6.Why does air escape from an untied balloon?

Answer:
The air pressure inside the balloon is greater than the pressure outside. Air therefore moves from the high-pressure region inside to the lower-pressure region outside.

7. **How are winds formed?**

Answer:
Warm air rises and creates a low-pressure region. Cooler air from a nearby high-pressure region moves towards it. This movement of air forms wind.

8. **Why do we see lightning before hearing thunder?**

Answer:
Light travels much faster than sound. Therefore, the light from lightning reaches us before the sound of thunder.

9. **What is a lightning conductor? What is its purpose?**

Answer:
A lightning conductor is a metal rod fitted on top of a building and connected to the ground. It provides a safe path for electric charges to flow into the Earth.

10. **What is a storm surge?**

Answer:
A storm surge is a large rise of seawater pushed towards the coast by strong cyclone winds, which can cause severe flooding.

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4 Marks Questions

1. Explain the relationship between force, area and pressure with examples.

Answer:

Pressure is the force acting per unit area.
P=F/A

1. Pressure increases when force increases.
2. Pressure decreases when the area increases.
3. For the same force, a smaller area produces greater pressure.
4. A sharp knife cuts easily because its edge has a small area.
5. A pointed nail enters wood easily because the force acts on a very small area.

6. Broad school bag straps reduce pressure on the shoulders because they spread the force over a larger area.
7. Snow shoes prevent a person from sinking deeply into snow by increasing the area of contact.

Thus, pressure depends on both force and area.

2. Explain how liquid pressure depends on depth and how liquids exert pressure in all directions.

Answer:

1. Liquids exert pressure because of their weight.
2. Liquid pressure increases as the depth or height of the liquid column increases.
3. Therefore, water comes out with greater force from a lower hole in a container than from an upper hole.
4. Water also comes out through holes made on the sides of a bottle.
5. This proves that liquid pressure does not act only downward.
6. Liquids exert pressure on the bottom as well as on the side walls of a container.
7. Hence, liquids exert pressure in all directions.

This is why dams are made thicker near their base, where water pressure is greatest.

3. Explain atmospheric pressure and how it causes wind.

Answer:

1. The Earth is surrounded by a layer of air called the atmosphere.
2. Air has weight and therefore exerts pressure called atmospheric pressure.
3. Air pressure acts in all directions.
4. When air becomes warm, it expands, becomes lighter and rises.
5. This creates a low-pressure region.
6. Cooler, heavier air from a high-pressure region moves towards the low-pressure region.
7. This movement of air is called wind.
8. A greater difference in pressure produces stronger wind.

Thus, pressure differences in the atmosphere are responsible for the formation of winds.

4. Explain the formation of lightning and thunder. Mention safety measures.

Answer:

Formation of lightning:

1. Strong upward and downward winds cause water droplets and ice particles in clouds to rub against one another.
2. This produces electric charges.

3. Positive and negative charges become separated in the cloud.
4. When a large amount of charge builds up, the insulating property of air breaks down.
5. A sudden electric discharge occurs, producing a bright flash called lightning.

Formation of thunder:
6. Lightning heats the surrounding air very rapidly.
7. The hot air expands suddenly and produces a loud sound called thunder.

Safety measures:

- Stay indoors.
- Avoid tall trees, poles and open fields.
- Stay away from water bodies.
- Do not use umbrellas with metallic rods.
- If caught outdoors, crouch in a low place and do not lie flat.

5. Explain how a cyclone is formed and state its major effects.

Answer:

1. Cyclones usually form over warm ocean waters.
2. The warm ocean heats the air above it.
3. Warm, moist air rises and creates a low-pressure region.
4. Water vapour condenses and releases heat.
5. This causes more air to rise and makes the low-pressure region stronger.
6. Air from surrounding high-pressure regions rushes towards the centre.
7. Due to Earth's rotation, the moving air begins to spin.
8. This forms a large rotating system of clouds, winds and rain called a cyclone.

Effects:

- Very strong winds.
- Heavy rainfall.
- Flooding of coastal regions.
- Uprooting of trees.
- Damage to houses and crops.
- Power failures.
- Storm surges.

The centre of the cyclone is called the **eye**, which has the lowest pressure and comparatively calm weather.

4.Light: Mirrors and Lenses

1 Mark Questions

1. **What is reflection of light?**
   Answer: The bouncing back of light into the same medium after striking a surface is called reflection of light.
2. **What is an incident ray?**
   Answer: The ray of light that falls on a reflecting surface is called the incident ray.
3. **What is a reflected ray?**
   Answer: The ray of light that bounces back from a reflecting surface is called the reflected ray.
4. **What is the normal?**
   Answer: The perpendicular drawn to the reflecting surface at the point of incidence is called the normal.
5. **State the first law of reflection.**
   Answer: The angle of incidence is equal to the angle of reflection, (i=r).
6. **What is a spherical mirror?**
   Answer: A mirror whose reflecting surface forms part of a sphere is called a spherical mirror.
7. **What is a concave mirror?**
   Answer: A spherical mirror whose reflecting surface curves inward is called a concave mirror.
8. **What is a convex mirror?**
   Answer: A spherical mirror whose reflecting surface bulges outward is called a convex mirror.
9. **What is a convex lens?**
   Answer: A lens that is thicker at the centre and thinner at the edges is called a convex lens.
10. **What is a concave lens?**
    Answer: A lens that is thinner at the centre and thicker at the edges is called a concave lens.

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2 Marks Questions

1. **State the two laws of reflection.**

Answer:

1. The angle of incidence is equal to the angle of reflection.
2. The incident ray, reflected ray and normal at the point of incidence lie in the same plane.

2.Differentiate between regular and diffuse reflection.

Answer:
Regular reflection occurs from a smooth surface and reflected rays remain orderly, forming a clear image.
Diffuse reflection occurs from a rough surface and reflected rays scatter in different directions.

3. **Differentiate between a concave mirror and a convex mirror.**

Answer:
Concave mirror: Its reflecting surface curves inward and it converges parallel rays.
Convex mirror: Its reflecting surface curves outward and it diverges parallel rays.

4. **Give any two uses of concave mirrors**.

Answer:

1. Used as shaving and make-up mirrors.
2. Used as reflectors in torches and vehicle headlights.

5.Why are convex mirrors used as rear-view mirrors?

Answer:
Convex mirrors provide a wider field of view and form upright, diminished images. Hence, drivers can see a larger area behind the vehicle.

6. **Write any two characteristics of an image formed by a plane mirror.**

Answer:

1. The image is virtual and erect.
2. The image is of the same size as the object.

7.Differentiate between a convex lens and a concave lens.

Answer:
Convex lens: Thicker at the centre and converges light rays.
Concave lens: Thinner at the centre and diverges light rays.

8. **Why is a convex lens called a converging lens?**

Answer:
A convex lens bends parallel light rays towards one another and makes them meet at a point. Therefore, it is called a converging lens.

9. **Why is a concave lens called a diverging lens?**

Answer:
A concave lens spreads parallel light rays away from one another. Therefore, it is called a diverging lens.

10. **A ray strikes a plane mirror with an angle of incidence of (35^\circ). Find the angle of reflection.**

Answer:
According to the law of reflection,
i=r
r=**35°**.

4 Marks Questions

1. Describe an activity to verify the laws of reflection.

Answer:

1. Place a plane mirror vertically on a white sheet of paper.
2. Use a torch and a narrow slit to produce a thin beam of light.
3. Allow the light ray to fall on the mirror at a point.
4. Draw the incident ray, reflected ray and a normal at the point of incidence.
5. Measure the angle of incidence and angle of reflection.
6. Repeat the activity with different angles.
7. In every case, the angle of incidence is found equal to the angle of reflection.
8. The incident ray, reflected ray and normal remain in the same plane.

Conclusion: Both laws of reflection are verified.

2. Compare plane, concave and convex mirrors.

Answer:

Plane mirror:

1. Has a flat reflecting surface.
2. Forms an erect, virtual image.
3. Image is of the same size as the object.
4. Shows lateral inversion.

Concave mirror:

1. Reflecting surface curves inward.
2. Converges parallel rays.
3. Can form enlarged or inverted images depending on object position.
4. Used in shaving mirrors, headlights and dentist mirrors.

Convex mirror:

1. Reflecting surface curves outward.
2. Diverges parallel rays.
3. Always forms an upright and diminished image.
4. Used in vehicle rear-view and security mirrors.

3. Explain the behaviour of parallel rays when they fall on plane, concave and convex mirrors.

Answer:

Plane mirror:
Parallel incident rays remain parallel after reflection.

Concave mirror:
Parallel rays are reflected inward and meet at a point. This is called convergence.

Convex mirror:
Parallel rays spread apart after reflection. This is called divergence.

Therefore:

- Plane mirror → rays remain parallel.
- Concave mirror → converging mirror.
- Convex mirror → diverging mirror.

4. Explain convex and concave lenses with their properties and uses.

Answer:

Convex lens:

1. It is thicker at the centre and thinner at the edges.
2. It converges parallel light rays.
3. It can magnify objects.
4. Depending on object distance, it may form erect or inverted images.
5. It is used in magnifying glasses, cameras, microscopes and spectacles.

Concave lens:

1. It is thinner at the centre and thicker at the edges.
2. It diverges parallel light rays.
3. It forms an erect image.
4. The image is always diminished.
5. It is used in spectacles for correcting certain vision defects.

5. Describe an activity to show that a convex lens can concentrate sunlight.

Answer:

1. Take a convex lens and a sheet of paper.
2. Hold the convex lens in sunlight.
3. Place the paper behind the lens.
4. Adjust the distance until a small bright spot is formed on the paper.
5. Keep the lens and paper steady for some time.
6. The paper becomes hot and may begin to smoke or burn.
7. This happens because the convex lens brings the Sun's rays together at one point.
8. Light energy becomes concentrated in a small area, increasing the temperature.

Conclusion: A convex lens is a converging lens and can concentrate sunlight.

5. Keeping Time with the Skies

1 Mark Questions

1. **What is a natural satellite?**
   Answer: A naturally occurring object that revolves around a planet is called a natural satellite.
2. **Why does the Moon shine?**
   Answer: The Moon shines because it reflects sunlight.
3. **What are the phases of the Moon?**
   Answer: The different visible shapes of the illuminated part of the Moon are called the phases of the Moon.
4. **What is a Full Moon?**
   Answer: The day on which the Moon appears as a complete bright circle is called Full Moon or Purnima.
5. **What is a New Moon?**
   Answer: The day on which the Moon is not visible from Earth is called New Moon or Amavasya.
6. **What is waxing of the Moon?**
   Answer: The period during which the visible bright portion of the Moon increases is called waxing or Shukla Paksha.
7. **What is waning of the Moon?**
   Answer: The period during which the visible bright portion of the Moon decreases is called waning or Krishna Paksha.
8. **How long does one complete cycle of Moon phases take?**
   Answer: About 29.5 days.
9. **How many days are there in a leap year?**
   Answer: 366 days.
10. **What is an artificial satellite?**
    Answer: An artificial satellite is a man-made object launched into space to revolve around Earth or another celestial body.

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2 Marks Questions

1. **Why does the Moon appear to change its shape?**

Answer:
The Moon does not produce its own light. As it revolves around Earth, we see different portions of its sunlit half. Therefore, its visible shape appears to change.

2. **Differentiate between waxing and waning phases.**

Answer:
Waxing phase: The bright portion of the Moon increases day by day. It is called Shukla Paksha.
Waning phase: The bright portion decreases day by day. It is called Krishna Paksha.

3. **Why is the Moon not visible on New Moon day?**

Answer:
On New Moon day, the illuminated side of the Moon faces away from Earth, while the dark side faces Earth. Therefore, the Moon is not visible.

4. **Why are Moon phases not caused by Earth's shadow?**

Answer:
Moon phases occur regularly because we see different portions of the illuminated Moon as it revolves around Earth. Earth's shadow falling on the Moon causes a lunar eclipse, not the regular Moon phases.

5. **Why does the Moon rise about 50 minutes later each day?**

Answer:
While Earth rotates, the Moon also moves forward in its orbit. Earth must rotate a little extra to face the Moon again, so the Moon rises about 50 minutes later each day.

6. **State the natural cycles used to define a day, month and year**.

Answer:
Day – Earth's rotation.
Month – Moon's phase cycle.
Year – Earth's revolution around the Sun.

7. **Differentiate between a lunar year and a solar year.**

Answer:
A lunar year has about 354 days.
A solar year has about 365 days.
Thus, a lunar year is about 11 days shorter than a solar year.

8. **Why do we have a leap year?**

Answer:
Earth takes about 365 days and 6 hours to complete one revolution around the Sun. The extra 6 hours accumulate to about one full day in four years, so an extra day is added.

9. **What is Adhika Maasa? Why is it added?**

Answer:
Adhika Maasa is an extra month added to a luni-solar calendar approximately every 2–3 years to keep lunar months aligned with the seasons.

10. **Give any two uses of artificial satellites.**

Answer:

1. Communication and television transmission.

2. Weather forecasting and cyclone tracking.

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4 Marks Questions

1. Explain the phases of the Moon.

Answer:

1. The Moon is spherical and does not produce its own light.
2. It shines by reflecting sunlight.
3. One half of the Moon is always illuminated by the Sun.
4. The Moon revolves around Earth.
5. As its position changes, different portions of its illuminated half are visible from Earth.
6. When the entire illuminated portion is visible, we see a Full Moon.
7. When the illuminated side faces away from Earth, we see a New Moon.
8. Between these stages, crescent, half and gibbous phases are observed.

Thus, the Moon itself does not change shape; only the visible illuminated portion changes.

2. Describe an activity to understand the phases of the Moon.

Answer:

Materials required: A small ball, stick and torch or lamp.

Procedure:

1. Insert a stick into the ball.
2. Let the ball represent the Moon.
3. Our head represents Earth and the torch represents the Sun.
4. Hold the ball at arm's length.
5. Keep the light source fixed.
6. Slowly turn around while observing the illuminated part of the ball.

Observation:

- Sometimes the entire bright side is visible.
- Sometimes half is visible.
- Sometimes only a small crescent is visible.
- Sometimes the bright portion is not visible.

Conclusion: The Moon does not actually change its shape. Its phases occur because different portions of its illuminated side are visible from Earth.

3. Explain how the concepts of day, month and year originated.

Answer:

Ancient people observed repeated events in the sky and used them to measure time.

Day:

1. Earth rotates on its axis.
2. One rotation takes about 24 hours.
3. This became the basis of a day.

Month:
4. The Moon completes one cycle of phases in about 29.5 days.
5. This cycle became the basis of a month.

Year:
6. Earth revolves around the Sun.
7. One revolution takes about 365¼ days.
8. This became the basis of a year.

Thus, calendars developed from observations of Earth's rotation, Moon phases and Earth's revolution around the Sun.

4. Explain why leap years are necessary.

Answer:

1. A normal calendar year has 365 days.
2. Earth actually takes approximately 365 days and 6 hours to complete one revolution around the sun
3. Every year, about 6 extra hours are left.
4. After four years:
   6+6+6+6=24 hours
5. Twenty-four hours equal one complete day.
6. Therefore, one extra day is added to February approximately every four years.
7. February then has 29 days instead of 28 days.
8. Such a year contains 366 days and is called a leap year.

5. Explain the important uses of artificial satellites.

Answer:

Artificial satellites are man-made objects launched into space to orbit Earth. They have many important uses:

1. Communication: They help transmit television, telephone and internet signals.
2. Navigation: They help GPS systems determine locations accurately.
3. Weather forecasting: They monitor clouds, rainfall, storms and cyclones.
4. Disaster management: They help monitor floods, cyclones, forest fires and other disasters.

5. Mapping: Satellite images are used to prepare maps and study land use.
6. Scientific research: Satellites help study Earth, the Sun, Moon, stars and other celestial objects.

Thus, artificial satellites are very useful in communication, navigation, weather prediction, mapping and scientific research.