



## ASSERTION AND REASON QUESTIONS

For these questions, two statements are given – one labelled *Assertion* (A) and the other labelled *Reason* (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:

- (i) Both A and R are true and R is correct explanation of the assertion.
- (ii) Both A and R are true but R is not the correct explanation of the assertion.
- (iii) A is true but R is false.
- (iv) A is false but R is true.

### Chapter 1: Nutrition in Plants

1. **Assertion:** Some bacteria and all green plants are autotrophs.  
**Reason:** Organisms that make their food from simple substances are called autotrophs.
2. **Assertion:** Stomata are present mostly on the undersurface of leaves.  
**Reason:** Stomata help in the transportation of water and minerals to the leaves.
3. **Assertion:** Oxygen is released during photosynthesis.  
**Reason:** Plants need oxygen for respiration.
4. **Assertion:** Dodder plant has special root-like structures called haustoria.  
**Reason:** Haustoria help to absorb food from the root or stem of host plant.
5. **Assertion:** Lichens are parasitic organisms.  
**Reason:** The fungus in lichen provides shelter, water and minerals to the alga.

### Chapter 2: Nutrition in Animals

1. **Assertion:** There are two pairs of salivary glands in the mouth.  
**Reason:** Saliva contains an enzyme which digests starch.
2. **Assertion:** Scavengers are called nature's cleaners.  
**Reason:** Scavengers feed on the body of dead animals.
3. **Assertion:** In *Amoeba*, food is digested inside the food vacuole.  
**Reason:** Pseudopodia are finger-like projections of the body.
4. **Assertion:** The centre of each tooth has a pulp of blood and nerves.  
**Reason:** The pulp is surrounded by a layer of enamel.
5. **Assertion:** Pancreatic enzymes help to complete the digestion of carbohydrates, fats and proteins.  
**Reason:** Liver is the largest gland in the body.

### Chapter 3: Fibres

1. **Assertion:** The body of sheep is shaved mostly in spring or early summer.  
**Reason:** Shaving the body of sheep to get fleece is called shearing.
2. **Assertion:** Merino wool is considered of good quality.  
**Reason:** The number of curls per centimetre defines the quality of wool.
3. **Assertion:** Tassar is the best quality of silk.  
**Reason:** Tassar is a wild variety of silk.
4. **Assertion:** The process of unwinding silk filaments from the cocoon is called throwing.  
**Reason:** Hot and cold treatment of cocoons is called softening of sericin.
5. **Assertion:** The larvae of silk moth are called caterpillars.  
**Reason:** Caterpillars feed on the neem leaves and grow in size rapidly.



## Chapter 4: Heat and Temperature

- Assertion:** The heat is a form of energy which makes a body hot.  
**Reason:** When we rub our palms together, heat energy is generated.
- Assertion:** When a body possesses heat energy, it tends to become hot.  
**Reason:** When some heat is lost by a body, it becomes hotter than before.
- Assertion:** Energy can neither be created nor destroyed.  
**Reason:** In a steam engine, heat energy is transformed into mechanical energy.
- Assertion:** A device used for measuring the temperature of a body is called thermoscope.  
**Reason:** The freezing point of water is taken as 32 degree on Fahrenheit scale.
- Assertion:** The capillary tube of a clinical thermometer has a kink a little above the bulb.  
**Reason:** The kink in capillary tube prevents the mercury from falling back.

## Chapter 5: Transfer of Heat

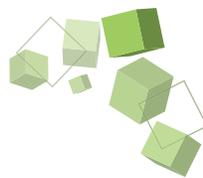
- Assertion:** Transfer of heat in solids occurs by conduction.  
**Reason:** In conduction, heat is carried from one particle to another due to vibrations.
- Assertion:** All materials do not conduct heat through them.  
**Reason:** Materials which conduct heat through them easily are called insulators.
- Assertion:** The handles of utensils are generally made of wood or plastic.  
**Reason:** Wood and plastic are poor conductors of heat.
- Assertion:** The sea breeze is formed during daytime.  
**Reason:** The convection current from sea towards land causes sea breeze.
- Assertion:** The bottom of cooking utensils is painted black.  
**Reason:** The black colour is a good absorber as well as a good radiator.

## Chapter 6: Acids, Bases and Salts

- Assertion:** Green apples are sour due to the presence of malic acid.  
**Reason:** Acid containing substances generally taste sour.
- Assertion:** Acids react with carbonates to form salts and carbon dioxide.  
**Reason:** The reaction of an acid with a base is called neutralisation reaction.
- Assertion:** Bases are bitter in taste and produce a soapy feeling.  
**Reason:** Bases are not corrosive or harmful.
- Assertion:** Sodium hydroxide is used as an acid-base indicator.  
**Reason:** Sodium hydroxide is also called caustic soda.
- Assertion:** Salts are formed by the reaction of an acid with a base.  
**Reason:** Quicklime is used to neutralise acidic soil.

## Chapter 7: Physical and Chemical Changes

- Assertion:** Most of the physical changes are reversible.  
**Reason:** No new substance is formed during a physical change.
- Assertion:** Digestion of food is a chemical change.  
**Reason:** In our stomach, food undergoes chemical reactions and changes into new substances.
- Assertion:** When hydrochloric acid is added to zinc granules, heat is released and test tube becomes warm.  
**Reason:** Release of energy in the form of heat shows a chemical change.

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4. **Assertion:** Rust is a reddish-brown substance that appears on the surface of iron articles.  
**Reason:** Rusting is a very common chemical change.
  5. **Assertion:** The process of depositing a layer of zinc on iron is called alloying.  
**Reason:** Alloying prevents rusting of iron articles.

### Chapter 8: Weather, Climate and Adaptations

1. **Assertion:** A person who studies and records weather changes and makes weather forecast is called a meteorologist.  
**Reason:** Weather keeps changing every day and may even change hour-to-hour.
2. **Assertion:** Afternoon is the coldest time and early morning is the hottest time of a day.  
**Reason:** When heat escapes during night, the temperature falls down.
3. **Assertion:** Relative humidity is measured by a device called hygrometer.  
**Reason:** Rainfall is measured by using a device called anemometer.
4. **Assertion:** Torrid zones are hot and humid zones.  
**Reason:** Torrid zones are located around the equator.
5. **Assertion:** A thick layer of fat present under the skin of some animals is called blubber.  
**Reason:** Blubber prevents loss of body heat and protects from extreme cold.

### Chapter 9: Wind, Storm and Cyclones

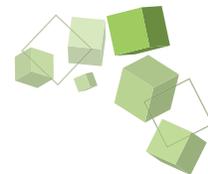
1. **Assertion:** The thick layer of air found around the earth is called atmosphere.  
**Reason:** The atmosphere extends up to nearly 50 km above the earth's surface.
2. **Assertion:** Winds always move from a region of high pressure to a region of low pressure.  
**Reason:** Winds are caused due to change in temperature and pressure of the air.
3. **Assertion:** The air above the land becomes very hot during daytime and rises up.  
**Reason:** The cooler and denser wind to flow from the oceans towards the land.
4. **Assertion:** Cyclones are violent storms which are accompanied by strong winds and heavy rains.  
**Reason:** Cyclones can be prevented with the help of anticyclone device.
5. **Assertion:** A wind vane is used to find the direction of the wind.  
**Reason:** Weather forecast can help to save lives and protect property.

### Chapter 10: Soil

1. **Assertion:** Soil contains particles of different sizes.  
**Reason:** A vertical section of soil showing its different layers is called soil profile.
2. **Assertion:** Bedrock is a soft and porous rock.  
**Reason:** Bedrock produces soil over a long period of time.
3. **Assertion:** Humus contains all the nutrients required by the plants for their growth.  
**Reason:** Humus kills the earthworms present in soil.
4. **Assertion:** Sandy soil contains much space between its particles.  
**Reason:** Sandy soil can hold much water in its large spaces.
5. **Assertion:** Loamy soil is the most fertile soil.  
**Reason:** Loamy soil has sufficient water-holding capacity.

### Chapter 11: Respiration in Animals and Plants

1. **Assertion:** Energy is released during oxidation of food.  
**Reason:** Oxidation of food also produces carbon dioxide.



- Assertion:** Most of the animals and plants have aerobic respiration.  
**Reason:** Organisms that use oxygen for respiration are called aerobes.
- Assertion:** In the nasal passages, air is filtered, warmed and moistened before entering the lungs.  
**Reason:** The opening of epiglottis is guarded by larynx.
- Assertion:** During exhalation, ribs are raised upwards and outwards.  
**Reason:** The volume of thoracic cavity increases and the air pressure inside the lungs decreases.
- Assertion:** The number of times a person breathes in a minute is called breathing rate.  
**Reason:** Breathing rate increases during fast running and heavy exercise.

### Chapter 12: Transportation in Animals and Plants

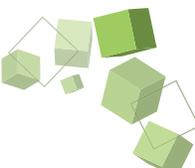
- Assertion:** Blood supplies food from intestine to every cell of the body.  
**Reason:** Blood flows inside the blood vessels.
- Assertion:** Red blood corpuscles provide red colour to the blood.  
**Reason:** Red blood corpuscles contain a red-coloured pigment called haemoglobin.
- Assertion:** White blood corpuscles are called soldiers of the body.  
**Reason:** White blood corpuscles fight against the germs that enter our body.
- Assertion:** Arteries carry oxygenated blood from the heart to body organs.  
**Reason:** The valves present in arteries make the blood to flow only in one direction.
- Assertion:** Ventricles are collecting chambers of the heart.  
**Reason:** Ventricles of the heart have thick walls.

### Chapter 13: Reproduction in Plants

- Assertion:** Spore formation is a mode of asexual reproduction in some plants.  
**Reason:** Formation of spores occurs under unfavourable conditions.
- Assertion:** Bread mould reproduces asexually by spore formation.  
**Reason:** The green spongy material on a stale slice of bread is bread mould.
- Assertion:** Potato is an underground root tuber.  
**Reason:** Potato tuber has buds in the depressions called eyes.
- Assertion:** The male gametes in plants are called pollen grains.  
**Reason:** Pollen grains are formed inside the ovary of a plant.
- Assertion:** Transfer of pollen grains from the anthers to the stigma of pistil is called pollination.  
**Reason:** In sweet pea, pollination occurs by insects.

### Chapter 14: Motion and Time

- Assertion:** Speed is the rate at which an object moves over a distance.  
**Reason:** A fast-moving object has a high speed.
- Assertion:** Average speed is the mean of all the speeds of a body in nonuniform motion.  
**Reason:** Average speed is calculated by dividing the total distance travelled by the total time taken.
- Assertion:** Indian Standard Time (IST) is the standard official time followed throughout India.  
**Reason:** The Standard Meridian of India passes between Allahabad and Varanasi.
- Assertion:** Sundial was one of the earlier means of measurement of time.  
**Reason:** A sundial uses the change in the position and size of the shadow formed by the sun to give time.
- Assertion:** A simple pendulum completes each to-and-fro motion in exactly the same time.  
**Reason:** The bob of a simple pendulum is a light and hollow sphere.



## Chapter 15: Electric Current and Its Effects

1. **Assertion:** The flow of electric energy or electricity is called electric current.  
**Reason:** The electric current is measured in ampere.
2. **Assertion:** A combination of two or three cells is called a battery.  
**Reason:** A battery is a source of electric current.
3. **Assertion:** A fuse is a heating device used in the circuit to avoid overloading.  
**Reason:** When current in a circuit exceeds a specified value, the fuse wire melts and circuit is broken.
4. **Assertion:** The combined effect of electricity and magnetism is called electromagnetism.  
**Reason:** The electric current attracts magnetic things towards it.
5. **Assertion:** An electromagnet is a temporary magnet.  
**Reason:** The magnetism disappears as soon as the current through the coil of electromagnet is switched off.

## Chapter 16: Light

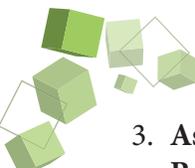
1. **Assertion:** Light is reflected by smooth and shiny opaque surfaces.  
**Reason:** Light always travels along a straight line.
2. **Assertion:** The ray of light falling on a reflecting surface is called incident ray.  
**Reason:** Angle formed between the incident ray and the reflected ray is called angle of incidence.
3. **Assertion:** A virtual image is formed on the screen.  
**Reason:** The image formed in a plane mirror when we look into it is a virtual image.
4. **Assertion:** A curved mirror is also called a spherical mirror.  
**Reason:** It is because a curved mirror has been cut out of a sphere.
5. **Assertion:** A dentist's mirror is a concave mirror.  
**Reason:** A dentist uses a mirror to see an enlarged image of the tooth.

## Chapter 17: Water

1. **Assertion:** Water on the earth is found in all the three states of matter.  
**Reason:** Solid form of water is ice and snow which is found on high mountains, glaciers and at poles.
2. **Assertion:** The continuous circulation of water between the atmosphere, land and oceans on the earth is called water cycle.  
**Reason:** Most of the rainwater seeps into the ground and collects as groundwater.
3. **Assertion:** Pond water is not fit for drinking.  
**Reason:** Pond water may contain germs and other soluble impurities which are harmful for the health.
4. **Assertion:** Pond water is an important source for agricultural and industrial needs.  
**Reason:** The seeped water collects between the layers of hard rocks and forms an aquifer.
5. **Assertion:** About 98% of the total water on the earth is present in seas and oceans.  
**Reason:** Only a very little amount of water available on the earth is fit for our use.

## Chapter 18: Forest

1. **Assertion:** A forest contains annual, biennial and perennial plants.  
**Reason:** Herbs are perennial plants.
2. **Assertion:** Canopy is the topmost layer of a forest.  
**Reason:** Canopy appears as a green cover forming a roof over the forest land.

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3. **Assertion:** An increase in the level of carbon dioxide may cause global warming.  
**Reason:** Plants purify air by releasing oxygen into atmosphere during the process of photosynthesis.
  4. **Assertion:** Forests help in bringing rainfall.  
**Reason:** Forests keep the air cool by the evaporation of water from the leaves.
  5. **Assertion:** A food chain always begins with producers.  
**Reason:** In a food web, several food chains are interlinked.

### Chapter 19: Waste Water Story

1. **Assertion:** Water containing waste from various sources is called sewage.  
**Reason:** Consumption of waste water may cause diseases like typhoid, cholera, dysentery, etc.
2. **Assertion:** Sewage should be treated before discharging into rivers, ponds or lakes.  
**Reason:** Sewage contains lots of germs and impurities due to which many aquatic animals may die.
3. **Assertion:** The organic matter that floats at water surface in sedimentation tank is called sludge.  
**Reason:** The sludge is decomposed with the help of anaerobic bacteria in digesters.
4. **Assertion:** Chlorine is a common disinfectant used to purify water.  
**Reason:** Chlorine destroys organic matter like human and animal wastes present in waste water.
5. **Assertion:** Open defecation may lead to waterborne diseases like typhoid, hepatitis A, dysentery, cholera, diarrhoea, etc.  
**Reason:** A septic system uses natural processes to treat waste water.

## ANSWERS

### **Chapter 1**

1. (a)    2. (d)    3. (b)    4. (a)    5. (d)

### **Chapter 2**

1. (d)    2. (a)    3. (b)    4. (c)    5. (b)

### **Chapter 3**

1. (b)    2. (b)    3. (d)    4. (d)    5. (c)

### **Chapter 4**

1. (d)    2. (c)    3. (b)    4. (d)    5. (a)

### **Chapter 5**

1. (a)    2. (c)    3. (b)    4. (a)    5. (b)

### **Chapter 6**

1. (a)    2. (b)    3. (c)    4. (d)    5. (b)

### **Chapter 7**

1. (b)    2. (a)    3. (a)    4. (b)    5. (d)

### **Chapter 8**

1. (b)    2. (d)    3. (c)    4. (b)    5. (a)

### **Chapter 9**

1. (c)    2. (a)    3. (a)    4. (c)    5. (b)

### **Chapter 10**

1. (b)    2. (d)    3. (c)    4. (c)    5. (b)

### **Chapter 11**

1. (b)    2. (b)    3. (c)    4. (d)    5. (b)

### **Chapter 12**

1. (b)    2. (a)    3. (a)    4. (c)    5. (d)

### **Chapter 13**

1. (a)    2. (b)    3. (d)    4. (c)    5. (b)

### **Chapter 14**

1. (b)    2. (a)    3. (b)    4. (a)    5. (c)

### **Chapter 15**

1. (b)    2. (b)    3. (d)    4. (c)    5. (a)

### **Chapter 16**

1. (b)    2. (c)    3. (d)    4. (a)    5. (b)

### **Chapter 17**

1. (b)    2. (c)    3. (a)    4. (d)    5. (b)

### **Chapter 18**

1. (c)    2. (b)    3. (c)    4. (a)    5. (b)

### **Chapter 19**

1. (b)    2. (a)    3. (d)    4. (c)    5. (b)