MATH LOVE INSTITUTE

Annual Examination 2025-26

Class: VIII | Subject: Science (SET - 2)

Time: 3 Hours | Maximum Marks: 80

Student Name:	_____
Roll Number:	_____
Date:	_____

General Instructions:

1. All questions are compulsory.
2. The question paper is divided into 5 sections: A, B, C, D, and E.
3. Section A: Multiple Choice Questions (1 mark each) – 15 marks
4. Section B: Fill in the Blanks / True-False (1 mark each) – 15 marks
5. Section C: Short Answer Questions (2 marks each) – 20 marks
6. Section D: Long Answer Questions (3 marks each) – 15 marks
7. Section E: Diagram Based / Case Based Questions (3 marks each) – 15 marks
8. Write neatly and legibly. Marks may be deducted for illegible handwriting.
9. Read each question carefully before attempting.

SECTION A – MULTIPLE CHOICE QUESTIONS (15 × 1 = 15 Marks)

Q1. Which vaccine is used to prevent polio? **[1 Mark]**

(a) BCG

(b) OPV

(c) DPT

(d) MMR

Q2. The process of separating grain from stalks is called: **[1 Mark]**

(a) Threshing

(b) Winnowing

(c) Harvesting

(d) Sowing

Q3. Rayon is a: **[1 Mark]**

(a) Natural fibre

(b) Synthetic fibre

(c) Semi-synthetic fibre

(d) Animal fibre

Q4. Non-metals are generally: **[1 Mark]**

(a) Good conductors of heat

(b) Malleable

(c) Brittle

(d) Ductile

Q5. Coal, petroleum, and natural gas are examples of: **[1 Mark]**

(a) Renewable resources

(b) Inexhaustible resources

(c) Fossil fuels

(d) Bio-fuels

Q6. The force that pulls objects towards the center of the Earth is called: **[1 Mark]**

(a) Magnetic force

(b) Gravitational force

(c) Electrostatic force

(d) Muscular force

Q7. The pitch of sound depends on: **[1 Mark]**

(a) Amplitude

(b) Frequency

(c) Speed

(d) Distance

Q8. Which of the following is a good conductor of electricity? **[1 Mark]**

(a) Plastic

(b) Wood

(c) Rubber

(d) Graphite

Q9. Lightning is caused by the accumulation of: **[1 Mark]**

(a) Heat energy

(b) Electric charges

(c) Magnetic force

(d) Sound waves

Q10. The part of the eye that controls the amount of light entering is: **[1 Mark]**

(a) Retina

(b) Lens

(c) Iris

(d) Cornea

Q11. The sex of a child is determined by: **[1 Mark]**

(a) Mother's genes only

(b) Father's genes only

(c) Both parents equally

(d) Environmental factors

Q12. Red Data Book contains information about: **[1 Mark]**

(a) Extinct species

(b) Endangered species

(c) Common species

(d) Domestic animals

Q13. A cyclone is called a hurricane in: **[1 Mark]**

(a) America

(b) Japan

(c) Australia

(d) India

Q14. Earthquake is measured by: **[1 Mark]**

(a) Barometer

(b) Seismograph

(c) Thermometer

(d) Lactometer

Q15. Which is the largest planet in our solar system? **[1 Mark]**

(a) Saturn

(b) Jupiter

(c) Uranus

(d) Neptune

SECTION B – FILL IN THE BLANKS / TRUE-FALSE (15 × 1 = 15 Marks)

Q16. Fill in the Blank: **[1 Mark]**

The cell wall is made up of _____.

Q17. Fill in the Blank: **[1 Mark]**

_____ is the green pigment in plants.

Q18. Fill in the Blank: **[1 Mark]**

Animals that eat both plants and animals are called _____.

Q19. Fill in the Blank: **[1 Mark]**

The property of metals to be beaten into thin sheets is called _____.

Q20. Fill in the Blank: **[1 Mark]**

CNG stands for _____.

Q21. True or False: **[1 Mark]**

Rolling friction is greater than sliding friction.

Q22. True or False: **[1 Mark]**

The speed of sound is maximum in solids.

Q23. True or False: **[1 Mark]**

Distilled water is a good conductor of electricity.

Q24. Fill in the Blank: **[1 Mark]**

The hormone responsible for changes during puberty in boys is _____.

Q25. Fill in the Blank: **[1 Mark]**

The process of adding nutrients to the soil is called _____.

Q26. True or False: **[1 Mark]**

Antibiotics are effective against viral diseases.

Q27. True or False: **[1 Mark]**

Thermosetting plastics can be remolded after heating.

Q28. Fill in the Blank: **[1 Mark]**

The phenomenon of splitting white light into seven colors is called _____.

Q29. Fill in the Blank: **[1 Mark]**

A group of stars that appears to form a pattern is called a _____.

Q30. True or False: **[1 Mark]**

Deforestation leads to an increase in oxygen levels in the atmosphere.

SECTION C – SHORT ANSWER QUESTIONS (10 × 2 = 20 Marks)

Q31. What is the role of yeast in baking bread? Explain briefly. **[2 Marks]**

Q32. Define manure and fertilizer. Give one example of each. **[2 Marks]**

Q33. What are biodegradable and non-biodegradable substances? Give one example of each. **[2 Marks]**

Q34. Write two differences between contact force and non-contact force. **[2 Marks]**

Q35. What is atmospheric pressure? Why don't we feel it? **[2 Marks]**

Q36. Define echo. What is the minimum distance required to hear an echo? **[2 Marks]**

Q37. What is wildlife sanctuary? Name two wildlife sanctuaries in India. **[2 Marks]**

Q38. List four secondary sexual characters in girls. **[2 Marks]**

Q39. Why are green plants called producers? **[2 Marks]**

Q40. What is refraction of light? Give one example. **[2 Marks]**

SECTION D – LONG ANSWER QUESTIONS (5 × 3 = 15 Marks)

Q41. What is a fire extinguisher? Explain how carbon dioxide is used to control fire. **[3 Marks]**

Q42. Differentiate between unicellular and multicellular organisms with examples. Draw a labeled diagram of Amoeba. **[3 Marks]**

Q43. Explain the process of electroplating with the help of an example. Why is electroplating done? **[3 Marks]**

Q44. What is the difference between luminous and non-luminous objects? Explain regular and irregular reflection. **[3 Marks]**

Q45. Describe the water cycle with a neat labeled diagram. **[3 Marks]**

SECTION E – DIAGRAM BASED / CASE BASED QUESTIONS (5 × 3 = 15 Marks)

Q46. Diagram Based Question: **[3 Marks]**

Draw a labeled diagram showing three types of simple tissues in plants. Name them and write one function of each.

Q47. Case Study – Plastic Pollution **[3 Marks]**

Plastic is a versatile material that has become an integral part of our daily life. However, it has become a major environmental concern. Plastics are non-biodegradable and can remain in the environment for hundreds of years. When plastic bags are thrown away carelessly, they clog drains and cause waterlogging. Animals often eat plastic bags mistaking them for food, which can be fatal. Burning plastic releases toxic gases that pollute the air and cause respiratory problems.

Based on the above passage, answer the following:
(i) Why is plastic considered harmful to the environment? (1 mark)
(ii) How does plastic affect animals and aquatic life? (1 mark)
(iii) Suggest two ways to reduce plastic pollution. (1 mark)

Q48. Case Study – Fertilizers and Soil Health **[3 Marks]**

Farmers use fertilizers to increase crop production. Fertilizers provide essential nutrients like nitrogen, phosphorus, and potassium to plants, helping them grow faster and produce more yield. However, excessive use of chemical fertilizers can be harmful. It can kill beneficial microorganisms in the soil, reduce soil fertility in the long run, and cause water pollution when fertilizers are washed into rivers and lakes, leading to eutrophication.

Based on the above passage, answer the following:
(i) What are the benefits of using fertilizers? (1 mark)
(ii) What are the harmful effects of excessive use of fertilizers? (1 mark)
(iii) What alternative can farmers use instead of chemical fertilizers? (1 mark)

Q49. Case Study – Sound and Noise Pollution **[3 Marks]**

Rahul lives near a busy highway. He notices that he has difficulty sleeping at night due to loud noise from vehicles. His grandfather also complains of headaches. Their doctor explained that continuous exposure to loud sounds above 80 decibels can cause hearing problems, stress, high blood pressure, and sleep disturbances. The doctor advised them to use earplugs and suggested planting trees around the house as trees can absorb sound.

Based on the above passage, answer the following:
(i) What is noise pollution? (1 mark)
(ii) List two harmful effects of noise pollution on human health. (1 mark)
(iii) How can we reduce noise pollution? Suggest two measures. (1 mark)

Q50. Practical Based Question: **[3 Marks]**
Draw a well-labeled diagram of a candle flame showing all three zones. Explain why the middle zone is the hottest part of the flame.

✓ COMPLETE ANSWER KEY WITH DETAILED SOLUTIONS

This section contains comprehensive answers with marking schemes for all questions. Study thoroughly to understand concepts and scoring patterns.

SECTION A ANSWERS – MULTIPLE CHOICE QUESTIONS

Q1. Answer: (b) OPV

OPV (Oral Polio Vaccine) is used to prevent polio disease. It is given orally (by mouth) to children. Polio is a viral disease that can cause paralysis. Other vaccines include: BCG for tuberculosis, DPT for diphtheria-pertussis-tetanus, and MMR for measles-mumps-rubella.

> *1 mark for correct option*

Q2. Answer: (a) Threshing

Threshing is the process of separating grain seeds from the harvested crop (stalks). It is done by beating the harvested crop or using a threshing machine. After threshing, winnowing is done to separate grain from chaff.

> *1 mark for correct option*

Q3. Answer: (c) Semi-synthetic fibre

Rayon is a semi-synthetic fibre (also called artificial silk) made from wood pulp (cellulose), which is a natural material, but processed chemically. It has properties similar to both natural and synthetic fibres.

> *1 mark for correct option*

Q4. Answer: (c) Brittle

Non-metals are generally brittle in solid state, meaning they break easily when force is applied. They are not malleable or ductile. Most non-metals are poor conductors of heat and electricity (except graphite).

> *1 mark for correct option*

Q5. Answer: (c) Fossil fuels

Coal, petroleum, and natural gas are fossil fuels formed from the remains of dead plants and animals buried millions of years ago. They are non-renewable resources and will get exhausted after some time.

> *1 mark for correct option*

Q6. Answer: (b) Gravitational force

Gravitational force is the force by which Earth attracts all objects towards its center. It is a non-contact force. Due to this force, objects fall down when dropped, and we are able to stand on the ground.

> *1 mark for correct option*

Q7. Answer: (b) Frequency

The pitch of sound depends on its frequency. High-pitched sounds have high frequency (like whistle, children's voices), while low-pitched sounds have low frequency (like drum, thunder). Frequency is measured in Hertz (Hz).

> *1 mark for correct option*

Q8. Answer: (d) Graphite

Graphite (a form of carbon) is a good conductor of electricity even though it is a non-metal. This is an exception. It is used in making electrodes and pencil leads. Plastic, wood, and rubber are insulators.

> *1 mark for correct option*

Q9. Answer: (b) Electric charges

Lightning occurs due to the accumulation of electric charges in clouds. During thunderstorms, clouds rub against each other, creating positive and negative charges. When the charge becomes very large, it discharges as lightning.

> *1 mark for correct option*

Q10. Answer: (c) Iris

The iris is the colored part of the eye that controls the size of the pupil, thereby regulating the amount of light entering the eye. In bright light, the iris makes the pupil smaller; in dim light, it makes the pupil larger.

> *1 mark for correct option*

Q11. Answer: (b) Father's genes only

The sex of a child is determined by the father's chromosomes. The mother always contributes an X chromosome, while the father can contribute either X (resulting in a girl - XX) or Y (resulting in a boy - XY) chromosome.

1 mark for correct option

Q12. Answer: (b) Endangered species

The Red Data Book contains information about endangered species - plants and animals that are at risk of extinction. It is maintained by the International Union for Conservation of Nature (IUCN).

1 mark for correct option

Q13. Answer: (a) America

A cyclone is called by different names in different regions: Hurricane in America (Atlantic Ocean), Typhoon in Japan and East Asia (Pacific Ocean), and Cyclone in India and Australia (Indian Ocean).

1 mark for correct option

Q14. Answer: (b) Seismograph

A seismograph is an instrument that detects and records earthquakes. It measures the magnitude and intensity of seismic waves. The magnitude of an earthquake is measured on the Richter scale.

1 mark for correct option

Q15. Answer: (b) Jupiter

Jupiter is the largest planet in our solar system. It is a gas giant and has the Great Red Spot, which is a giant storm. Jupiter has more than 75 moons orbiting around it.

1 mark for correct option

SECTION B ANSWERS – FILL IN THE BLANKS / TRUE-FALSE

Q16. Answer: Cellulose

The cell wall is made up of cellulose. It is present only in plant cells (not in animal cells) and provides rigidity, strength, and protection to the cell. Cellulose is a complex carbohydrate.

1 mark for correct answer

Q17. Answer: Chlorophyll

Chlorophyll is the green pigment present in the chloroplasts of plant cells. It absorbs sunlight and is essential for photosynthesis. It gives leaves their green color.

1 mark for correct answer

Q18. Answer: Omnivores

Animals that eat both plants and animals are called omnivores. Examples include humans, bears, crows, and pigs. They have a mixed diet and can survive on various food sources.

1 mark for correct answer

Q19. Answer: Malleability

Malleability is the property of metals that allows them to be beaten or hammered into thin sheets without breaking. Gold and silver are highly malleable metals. Gold can be beaten into very thin sheets called gold foil.

1 mark for correct answer

Q20. Answer: Compressed Natural Gas

CNG stands for Compressed Natural Gas. It is a cleaner fuel compared to petrol and diesel and is used in vehicles. It produces less pollution and is more eco-friendly.

1 mark for correct answer

Q21. Answer: False

Rolling friction is LESS than sliding friction. This is why wheels are used in vehicles and machines - it is easier to roll objects than to slide them. Ball bearings reduce friction by converting sliding friction into rolling friction.

1 mark for correct answer

Q22. Answer: True

The speed of sound is maximum in solids because particles in solids are closely packed and vibrations can travel faster. Speed decreases in liquids and is minimum in gases. Sound cannot travel through vacuum.

1 mark for correct answer

Q23. Answer: False

Distilled water is a POOR conductor of electricity because it does not contain any dissolved salts or ions. However, when salt or acid is added to water, it becomes a good conductor. Tap water conducts electricity because it contains dissolved minerals.

> *1 mark for correct answer*

Q24. Answer: Testosterone

Testosterone is the male hormone (sex hormone) responsible for changes during puberty in boys, such as deepening of voice, growth of facial hair, broadening of shoulders, and development of reproductive organs.

> *1 mark for correct answer*

Q25. Answer: Manuring or Fertilization

The process of adding nutrients to the soil is called manuring (when organic manure is added) or fertilization (when chemical fertilizers are added). This replenishes the nutrients that are depleted from the soil after repeated cropping.

> *1 mark for correct answer*

Q26. Answer: False

Antibiotics are NOT effective against viral diseases. Antibiotics work only against bacterial infections. Viral diseases like common cold, flu, and COVID-19 cannot be cured with antibiotics. Misuse of antibiotics can lead to antibiotic resistance.

> *1 mark for correct answer*

Q27. Answer: False

Thermosetting plastics CANNOT be remolded after heating. Once set into a shape by heating and cooling, they cannot be softened again. Examples include bakelite and melamine. Thermoplastics (like polythene and PVC) can be remolded.

> *1 mark for correct answer*

Q28. Answer: Dispersion

Dispersion is the phenomenon of splitting white light into its seven constituent colors (VIBGYOR - Violet, Indigo, Blue, Green, Yellow, Orange, Red). This happens when light passes through a prism or water droplets, forming a rainbow.

> *1 mark for correct answer*

Q29. Answer: Constellation

A constellation is a group of stars that appears to form a recognizable pattern when viewed from Earth. Examples include Ursa Major (Great Bear), Orion (The Hunter), and Scorpius (The Scorpion).

> *1 mark for correct answer*

Q30. Answer: False

Deforestation DECREASES oxygen levels and INCREASES carbon dioxide levels in the atmosphere. Trees produce oxygen through photosynthesis and absorb carbon dioxide. Cutting down forests reduces oxygen production and contributes to global warming.

1 mark for correct answer

SECTION C ANSWERS – SHORT ANSWER QUESTIONS

Q31. Answer: Role of Yeast in Baking Bread

Yeast is a microorganism (fungus) that plays a crucial role in baking bread:

- **Fermentation:** Yeast feeds on the sugar present in the dough and produces carbon dioxide (CO_2) gas and alcohol through fermentation.
- **Rising of Dough:** The carbon dioxide gas released gets trapped in the dough, forming bubbles. This makes the dough rise and become soft and fluffy.
- **Texture:** When the bread is baked, the alcohol evaporates and the CO_2 bubbles create a spongy texture in the bread.

Without yeast, bread would be hard and flat instead of soft and fluffy.

2 marks for proper explanation (Total: 2 marks)

Q32. Answer: Manure and Fertilizer

Manure: Manure is an organic substance obtained from the decomposition of plant and animal waste. It is rich in organic matter and adds humus to the soil, improving soil structure and water-holding capacity.

Example: Cow dung, compost, green manure (decaying green plants)

Fertilizer: Fertilizers are chemical substances that are rich in specific nutrients (nitrogen, phosphorus, potassium). They provide nutrients quickly to plants but do not add humus to soil.

Example: Urea, DAP (Diammonium Phosphate), NPK (Nitrogen-Phosphorus-Potassium) fertilizers

½ mark each for definitions, ½ mark each for examples (Total: 2 marks)

Q33. Answer: Biodegradable and Non-biodegradable Substances

Biodegradable Substances: These are substances that can be broken down into simpler, harmless substances by microorganisms (bacteria and fungi) over time. They do not cause pollution.

Example: Vegetable peels, paper, cotton cloth, wood, food waste, cow dung

Non-biodegradable Substances: These are substances that cannot be broken down by microorganisms. They remain in the environment for many years and cause pollution.

Example: Plastic bags, glass bottles, aluminum cans, synthetic fibres like polyester

½ mark each for definitions, ½ mark each for examples (Total: 2 marks)

Q34. Answer: Contact Force vs Non-contact Force

Contact Force	Non-contact Force
1. Force is applied when two objects are in physical contact with each other	1. Force is applied even when objects are not in physical contact
2. Examples: Muscular force, frictional force, tension in a rope	2. Examples: Gravitational force, magnetic force, electrostatic force
3. Objects must touch each other	3. Objects can be at a distance from each other

Note: Any two differences with examples are sufficient for full marks.

> *1 mark for each correct difference (Total: 2 marks)*

Q35. Answer: Atmospheric Pressure

Atmospheric Pressure: The pressure exerted by the weight of air in the atmosphere on the Earth's surface is called atmospheric pressure. At sea level, atmospheric pressure is about 1013 millibars or 76 cm of mercury.

Why don't we feel it?

- We don't feel atmospheric pressure because the pressure inside our body (blood pressure and air pressure in body cavities) is equal to the atmospheric pressure outside.
- The air inside our body balances the air pressure from outside, so we don't feel crushed or uncomfortable.
- Our bodies have evolved to function normally under atmospheric pressure, so we are adapted to it.

> *1 mark for definition, 1 mark for explanation (Total: 2 marks)*

Q36. Answer: Echo

Echo: An echo is the repetition of sound caused by the reflection of sound waves from a hard surface (like a wall, cliff, or building). When sound hits a surface, it bounces back, and we hear it again after a short delay.

Minimum distance required to hear an echo:

The minimum distance between the source of sound and the reflecting surface should be **17 meters (approximately)** for us to hear a clear and distinct echo.

Explanation: This is because the human ear can distinguish between two sounds only if there is a time gap of at least 0.1 seconds. Sound travels at about

340 m/s in air, so in 0.1 seconds, it travels 34 meters (to the wall and back = 17 meters each way).

> *1 mark for definition, 1 mark for distance with explanation (Total: 2 marks)*

Q37. Answer: Wildlife Sanctuary

Wildlife Sanctuary: A wildlife sanctuary is a protected area where wild animals and their natural habitats are conserved. Hunting, poaching, and capturing of animals are strictly prohibited. However, some human activities like tourism and research may be allowed under supervision.

Examples of Wildlife Sanctuaries in India:

- **Kaziranga Wildlife Sanctuary** – Assam (famous for one-horned rhinoceros)
- **Bharatpur Bird Sanctuary (Keoladeo National Park)** – Rajasthan
- **Periyar Wildlife Sanctuary** – Kerala (famous for elephants)
- **Gir Wildlife Sanctuary** – Gujarat (famous for Asiatic lions)

Note: Any two wildlife sanctuaries are acceptable.

> *1 mark for definition, ½ mark each for two examples (Total: 2 marks)*

Q38. Answer: Secondary Sexual Characters in Girls

Secondary sexual characters are the physical changes that occur during puberty but are not directly involved in reproduction. They help distinguish males from females.

Four secondary sexual characters in girls:

1. **Development of breasts:** Mammary glands develop and breasts enlarge
2. **Broadening of hips:** The pelvic region becomes wider
3. **Growth of body hair:** Hair grows in armpits and pubic region

4. **Onset of menstruation:** The menstrual cycle begins (menarche)
5. **Voice:** Voice becomes high-pitched (remains higher than boys)
6. **Skin changes:** Skin becomes oily, and acne may appear

Note: Any four characters are sufficient for full marks.

> *½ mark for each character (Total: 2 marks)*

Q39. Answer: Green Plants as Producers

Green plants are called **producers** because:

- **They make their own food:** Green plants can synthesize (produce) their own food through the process of photosynthesis. They don't depend on other organisms for nutrition.
- **Photosynthesis:** Using sunlight, carbon dioxide, and water, green plants produce glucose (food) and release oxygen. This process occurs in the presence of chlorophyll.
- **Base of food chain:** They are the starting point of all food chains. All other organisms (herbivores, carnivores, omnivores) directly or indirectly depend on plants for food and energy.
- **Energy conversion:** Plants convert solar energy into chemical energy (stored in food), which then flows through the food chain to all living organisms.

> *2 marks for proper explanation (Total: 2 marks)*

Q40. Answer: Refraction of Light

Refraction of Light: Refraction is the phenomenon in which light changes its direction (bends) when it passes from one transparent medium to another due to change in its speed.

Why it happens: Light travels at different speeds in different media. When it enters from a rarer medium (like air) to a denser medium (like water or glass), it slows down and bends towards the normal. When it moves from denser to rarer medium, it speeds up and bends away from the normal.

Example:

- A pencil partially immersed in water appears bent at the surface of water.
- A coin at the bottom of a water-filled container appears raised.
- A straw in a glass of water looks bent or broken at the water surface.
- Stars appear to twinkle due to atmospheric refraction.

1 mark for definition, 1 mark for example (Total: 2 marks)

SECTION D ANSWERS – LONG ANSWER QUESTIONS

Q41. Answer: Fire Extinguisher and Role of CO_2

Fire Extinguisher: A fire extinguisher is a device used to put out small fires or control them before the fire brigade arrives. It contains substances that can quickly extinguish fire by cutting off the supply of oxygen or lowering the temperature.

How Carbon Dioxide (CO_2) is used to control fire:

1. **Cuts off oxygen supply:** Fire needs three things to burn - fuel, heat, and oxygen. Carbon dioxide is heavier than air and forms a blanket around the burning material. This blanket cuts off the supply of oxygen to the fire, and the fire gets extinguished.
2. **Non-flammable:** CO_2 itself does not burn, so it is safe to use on fires.
3. **Cooling effect:** When CO_2 is released from the extinguisher, it expands rapidly and cools down, helping to reduce the temperature of the burning material.

4. **No residue:** Unlike water or foam, CO_2 does not leave any residue, making it suitable for electrical fires and fires involving valuable equipment.

Types of fires CO_2 can extinguish: Electrical fires, oil fires, and fires involving flammable liquids. It should NOT be used for fires involving metals or cooking oil in deep fryers.

1 mark for definition of fire extinguisher, 2 marks for explaining CO_2 mechanism (Total: 3 marks)

Q42. Answer: Unicellular vs Multicellular Organisms

Unicellular Organisms	**Multicellular Organisms**
Made up of only ONE cell	Made up of MANY cells
All life processes occur in a single cell	Different cells perform different functions
Cannot be seen with naked eye (microscopic)	Can usually be seen with naked eye
No division of labor	Division of labor among cells, tissues, and organs
Examples: Amoeba, Paramecium, Bacteria, Euglena, Yeast	**Examples:** Humans, plants, animals, birds, fish

[Labeled Diagram of Amoeba Expected]

Diagram Instructions: Draw an irregular-shaped Amoeba with clearly labeled parts:
- Cell membrane (outer boundary)
- Cytoplasm (jelly-like substance filling the cell)

- Nucleus (control center)
- Food vacuole (for digestion)
- Contractile vacuole (for excretion)
- Pseudopodia (false feet for movement and feeding)

1.5 marks for differences with examples, 1.5 marks for labeled diagram (Total: 3 marks)

Q43. Answer: Electroplating Process

Electroplating: Electroplating is the process of depositing a thin layer of one metal over another metal using electricity. It is based on the chemical effect of electric current.

Process of Electroplating:

1. **Setup:** The object to be electroplated is made the cathode (negative electrode), and the metal to be deposited is made the anode (positive electrode).
2. **Electrolyte:** Both electrodes are dipped in an electrolyte solution containing a salt of the metal to be deposited (e.g., copper sulfate solution for copper plating).
3. **Current flow:** When electric current is passed through the circuit, metal ions from the anode dissolve into the electrolyte and move towards the cathode.
4. **Deposition:** These metal ions get deposited on the cathode (the object), forming a thin, uniform layer.

Example: Chromium plating on bicycle handles and car parts, gold or silver plating on jewelry, tin plating on iron to make tin cans.

Why is electroplating done?

- **Protection from corrosion:** Iron objects are coated with zinc (galvanization) to prevent rusting

- **Attractive appearance:** Jewelry is coated with gold or silver to make it look beautiful
- **Preventing contamination:** Tin plating on copper vessels used for storing food
- **Making objects more durable:** Chrome plating on bicycle parts makes them shiny and resistant to wear

1.5 marks for process with example, 1.5 marks for reasons (Total: 3 marks)

Q44. Answer: Luminous vs Non-luminous Objects and Reflection

Difference between Luminous and Non-luminous Objects:

Luminous Objects	**Non-luminous Objects**
Objects that emit their own light	Objects that do not emit their own light
Can be seen in darkness	Cannot be seen in darkness
Source of light	Reflect light from luminous objects
Examples: Sun, stars, candle flame, electric bulb, firefly	**Examples:** Moon, planets, chair, book, mirror

Regular Reflection:

- Regular reflection occurs when light falls on a smooth, polished surface (like a plane mirror or still water)
- All reflected rays are parallel to each other
- Follows laws of reflection perfectly
- Forms clear images
- **Examples:** Reflection from mirrors, polished metal surfaces, calm water

Irregular Reflection (Diffused Reflection):

- Irregular reflection occurs when light falls on a rough or uneven surface (like paper, wall, or wood)
- Reflected rays scatter in different directions
- Laws of reflection still apply to each ray individually, but surface is uneven
- Does not form clear images
- **Examples:** Reflection from walls, paper, ground, unpolished wood

Note: Irregular reflection allows us to see non-luminous objects from all directions.

> *1 mark for luminous vs non-luminous, 2 marks for regular vs irregular reflection (Total: 3 marks)*

Q45. Answer: Water Cycle

Water Cycle (Hydrological Cycle): The water cycle is the continuous movement of water on, above, and below the Earth's surface. Water changes its form (solid, liquid, gas) and circulates between oceans, atmosphere, and land.

Steps in the Water Cycle:

1. **Evaporation:** The sun heats up water in rivers, lakes, and oceans. The water changes into water vapor (gas) and rises into the atmosphere. Water also evaporates from soil and plants.
2. **Transpiration:** Plants release water vapor into the atmosphere through tiny pores (stomata) in their leaves. This process is called transpiration.
3. **Condensation:** As water vapor rises higher in the atmosphere, it cools down. The cool water vapor condenses to form tiny water droplets. These droplets come together to form clouds.
4. **Precipitation:** When clouds become heavy with water droplets, they fall back to Earth as rain, snow, sleet, or hail. This is called precipitation.
5. **Collection (Runoff and Infiltration):** The water that falls as rain flows over the land surface (runoff) and collects in rivers, lakes, and oceans. Some water seeps into the ground (infiltration) and becomes groundwater.

6. **Repeat:** The cycle continues as water from these sources evaporates again.

Importance: The water cycle maintains water balance on Earth, regulates climate, and ensures continuous water supply for all living organisms.

[Diagram Expected]

Diagram Instructions: Draw a landscape showing:
- Sun (providing heat)
- Ocean/Sea/Lake with arrows showing evaporation (going up)
- Clouds with arrows showing condensation
- Rain/Precipitation (arrows coming down)
- Water flowing into rivers and ocean (collection)
- Optional: Trees showing transpiration
- Label all processes clearly

1.5 marks for explanation of cycle, 1.5 marks for labeled diagram (Total: 3 marks)

SECTION E ANSWERS – DIAGRAM BASED / CASE BASED QUESTIONS

Q46. Answer: Simple Tissues in Plants

Simple tissues are made up of only one type of cells that perform the same function. There are three types of simple tissues in plants:

1. **Parenchyma:**
    - Made up of living cells with thin cell walls
    - Cells are loosely packed with spaces between them
    - **Function:** Storage of food, provides support to the plant, and helps in photosynthesis (when it contains chloroplasts)
    - Found in: Soft parts of the plant like leaves, fruits, and roots
2. **Collenchyma:**

- Made up of living cells with thickened corners
- Cells are elongated
- **Function:** Provides mechanical support and flexibility to young stems and petioles (leaf stalks)
- Found in: Leaf stalks, below the epidermis in dicot stems

3. **Sclerenchyma:**
   - Made up of dead cells with very thick, lignified walls
   - Cells are long and narrow
   - **Function:** Provides mechanical strength and support to the plant; makes the plant hard and stiff
   - Found in: Husk of coconut, stems, veins of leaves, hard covering of seeds and nuts

[Diagram Expected]

Diagram Instructions: Draw three separate diagrams showing:
1. Parenchyma - rounded/oval cells with thin walls and spaces between them
2. Collenchyma - elongated cells with thickened corners
3. Sclerenchyma - long, narrow cells with very thick walls
Label each tissue type clearly.

1.5 marks for diagrams, 1.5 marks for functions (Total: 3 marks)

Q47. Answer: Case Study – Plastic Pollution

(i) Why is plastic considered harmful to the environment? (1 mark)

Plastic is harmful to the environment because:

- Plastics are **non-biodegradable** - they do not decompose naturally and can remain in the environment for hundreds or even thousands of years.
- They accumulate in soil and water, causing long-term pollution.

- When burned, plastics release toxic and poisonous gases that pollute the air and cause respiratory problems.
- Plastic waste clogs drainage systems, leading to waterlogging and flooding.

(ii) How does plastic affect animals and aquatic life? (1 mark)

Plastic affects animals and aquatic life in several harmful ways:

- **Animals:** Animals often eat plastic bags mistaking them for food. The plastic blocks their digestive system, preventing them from eating real food, which can lead to starvation and death. Cows, goats, and street animals are particularly affected.
- **Aquatic life:** Fish, turtles, and marine animals swallow plastic debris in oceans and rivers. Plastic can choke them or fill their stomachs, causing death. Microplastics (tiny plastic particles) enter the food chain and harm marine ecosystems.
- Birds also get entangled in plastic waste or consume plastic, leading to injury or death.

(iii) Suggest two ways to reduce plastic pollution. (1 mark)

- **Use cloth or jute bags:** Replace plastic bags with reusable cloth, jute, or paper bags for shopping and daily use.
- **Reduce and recycle:** Minimize the use of plastic products (like bottles, straws, disposable cups) and recycle plastic waste wherever possible.
- **Other measures:** Use steel or glass bottles instead of plastic bottles, avoid single-use plastics, participate in clean-up drives, support government bans on plastic.

(Any two measures are acceptable)

> *1 mark for each correctly answered sub-question (Total: 3 marks)*

Q48. Answer: Case Study – Fertilizers and Soil Health

(i) What are the benefits of using fertilizers? (1 mark)

Benefits of using fertilizers:

- **Nutrient supply:** Fertilizers provide essential nutrients like nitrogen (N), phosphorus (P), and potassium (K) to plants quickly and in the right amounts.
- **Increased crop yield:** Plants get proper nutrition, grow faster, and produce more fruits, grains, and vegetables, leading to higher agricultural productivity.
- **Quick action:** Chemical fertilizers are readily absorbed by plants, showing immediate results.
- **Targeted nutrition:** Specific fertilizers can be used to provide specific nutrients that may be deficient in the soil.

(ii) What are the harmful effects of excessive use of fertilizers? (1 mark)

Harmful effects of excessive fertilizer use:

- **Kills beneficial microorganisms:** Excessive chemical fertilizers destroy helpful bacteria and fungi in the soil that naturally improve soil fertility.
- **Reduces soil fertility:** Over time, chemical fertilizers make the soil hard and reduce its natural fertility, making it dependent on fertilizers.
- **Water pollution:** Fertilizers are washed away by rain into rivers, lakes, and groundwater. This causes eutrophication - excessive growth of algae that depletes oxygen in water, killing aquatic life.
- **Health hazards:** Nitrates from fertilizers can contaminate drinking water and cause health problems in humans.

(iii) What alternative can farmers use instead of chemical fertilizers? (1 mark)

Farmers can use **organic manure** as an alternative to chemical fertilizers:

- **Farmyard manure (FYM):** Made from cow dung, animal waste, and plant residue

- **Compost:** Made from decomposed kitchen waste, dry leaves, and plant material
- **Green manure:** Growing plants like sun hemp or guar and plowing them back into the soil
- **Vermicompost:** Manure prepared using earthworms
- **Biofertilizers:** Using beneficial microorganisms like Rhizobium bacteria that naturally fix nitrogen

Benefits: Organic manure improves soil structure, adds humus, retains moisture, and is environment-friendly.

> *1 mark for each correctly answered sub-question (Total: 3 marks)*

Q49. Answer: Case Study – Sound and Noise Pollution

(i) What is noise pollution? (1 mark)

Noise pollution is the presence of excessive, unwanted, or disturbing sounds in the environment that are harmful to human health and well-being. It is caused by loud sounds from vehicles, loudspeakers, construction activities, factories, airplanes, and other sources.

Sound becomes noise when it is unpleasant, too loud (above 80 decibels), or disturbs normal activities like sleeping, studying, or working.

(ii) List two harmful effects of noise pollution on human health. (1 mark)

- **Hearing loss:** Continuous exposure to loud sounds (above 80 dB) can damage the eardrums and cause partial or complete loss of hearing (deafness).
- **Sleep disturbances:** Noise pollution disrupts sleep patterns, causing insomnia and fatigue, which affects overall health and productivity.
- **Other effects:** Stress and anxiety, high blood pressure, headaches and migraines, reduced concentration and learning ability, heart problems, irritability and mood changes.

(Any two harmful effects are acceptable)

(iii) How can we reduce noise pollution? Suggest two measures. (1 mark)

- **Use of silencers:** Install silencers in vehicles, generators, and machinery to reduce noise.
- **Plant trees:** Trees act as natural sound absorbers. Planting trees along roads and around houses can reduce noise levels significantly.
- **Soundproofing:** Use soundproof materials in buildings, especially near busy roads or industrial areas.
- **Limit use of horns and loudspeakers:** Avoid unnecessary honking and restrict the use of loudspeakers, especially during night hours.
- **Use earplugs:** Wear earplugs in noisy environments to protect ears.
- **Follow noise regulations:** Follow government rules about permissible noise levels and timings for loudspeakers.

(Any two measures are acceptable)

> *1 mark for each correctly answered sub-question (Total: 3 marks)*

Q50. Answer: Candle Flame Diagram and Hottest Zone

Structure of a Candle Flame:

A candle flame has three distinct zones, each with different temperatures and characteristics:

1. **Innermost Zone (Dark Zone):**
    - This is the darkest part at the base of the flame
    - Contains unburnt wax vapors
    - Temperature is lowest among the three zones
    - Appears dark because combustion does not occur here - there is insufficient oxygen
2. **Middle Zone (Luminous Zone/Yellow Zone):**
    - This is the bright, yellow, glowing part of the flame

    - Partial combustion occurs here
    - Contains partially burnt carbon particles that glow and emit light
    - Moderately hot
    - This zone gives the flame its characteristic yellow color
3. **Outermost Zone (Non-luminous Zone/Blue Zone):**
    - This is the outer part of the flame, which is blue in color
    - **This is the HOTTEST part of the flame**
    - Complete combustion occurs here as there is plenty of oxygen
    - Burns with a blue flame and produces maximum heat

Why is the outermost zone the hottest?

- **Complete combustion:** The outermost zone has abundant supply of oxygen from the surrounding air, which allows complete combustion of wax vapors.
- **Maximum energy release:** Complete combustion releases the maximum amount of heat energy.
- **No unburnt particles:** All the fuel is completely burnt, leaving no unburnt carbon particles, which is why this zone is non-luminous (not bright yellow).
- The blue color indicates high temperature and complete burning.

[Diagram Expected]

Diagram Instructions: Draw a candle with flame showing three distinct zones:
1. Inner dark zone near the wick (label it)
2. Middle bright yellow zone (luminous zone - label it)
3. Outer blue zone (non-luminous zone - label it and mark as "Hottest zone")
Also label: Candle, Wick, Molten wax
Use different shading or colors to distinguish the zones clearly.

1.5 marks for labeled diagram, 1.5 marks for explanation of hottest zone (Total: 3 marks)

Marking Summary

Section	Question Type	Total Marks
Section A	Multiple Choice Questions (15 × 1)	15 marks
Section B	Fill in the Blanks / True-False (15 × 1)	15 marks
Section C	Short Answer Questions (10 × 2)	20 marks
Section D	Long Answer Questions (5 × 3)	15 marks
Section E	Diagram Based / Case Based Questions (5 × 3)	15 marks
TOTAL		80 marks

END OF ANSWER KEY – SET 2

Total Marks: 80

This is a comprehensive solved practice paper for Class 8 Science Annual Examination (Set 2).

Special focus on: Microorganisms & Vaccines | Crop Production & Manure | Synthetic Fibres | Metals & Non-metals | Fossil Fuels | Force & Friction | Sound & Echo | Electroplating | Natural Phenomena | Light Reflection & Refraction | Plant Tissues | Adolescence | Conservation | Water Cycle | Pollution Control

Study thoroughly and understand all concepts.

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This paper (Set 2) covers complete Class 8 NCERT Science syllabus with different questions from Set 1: Microorganisms & Food Preservation | Crop Production & Agricultural Practices | Synthetic & Natural Fibres | Metals, Non-metals & Their Properties | Coal, Petroleum & Natural Gas | Combustion & Flame | Conservation & Wildlife Sanctuaries | Cell Structure & Unicellular Organisms | Reproduction & Adolescence | Force, Pressure & Friction | Sound, Echo & Noise Pollution | Chemical Effects of Electric Current & Electroplating | Lightning & Earthquakes | Light, Reflection & Refraction | Water Cycle | Stars & Solar System | Air & Water Pollution | Plant Tissues | Combined Syllabus: Unit Tests + Term Exams + Annual Examination 2025-26 | High Scoring Questions for MP Board & CBSE Pattern Exams