

MATH LOVE INSTITUTE

Annual Examination 2025-26

Class: VIII | Subject: Science (SET - 5)

Time: 3 Hours | Maximum Marks: 80

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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 practice helps in replenishing nutrients in the soil? **[1 Mark]**
- (a) Crop rotation
 - (b) Deforestation
 - (c) Overgrazing
 - (d) Mining
- Q2.** The bacterium *Lactobacillus* is used in the preparation of: **[1 Mark]**
- (a) Bread
 - (b) Curd
 - (c) Alcohol
 - (d) Cheese only
- Q3.** Which of the following is a thermosetting plastic? **[1 Mark]**
- (a) PVC
 - (b) Bakelite
 - (c) Polythene
 - (d) Teflon
- Q4.** Which non-metal is liquid at room temperature? **[1 Mark]**
- (a) Mercury
 - (b) Bromine
 - (c) Water
 - (d) Chlorine
- Q5.** Coke is used in the extraction of metals because it: **[1 Mark]**
- (a) Acts as a fuel
 - (b) Reduces metal oxides
 - (c) Both (a) and (b)
 - (d) Increases oxygen supply
- Q6.** The calorific value of a fuel is expressed in: **[1 Mark]**
- (a) kJ/kg
 - (b) J/kg
 - (c) kJ/g
 - (d) Both (a) and (c)

- Q7.** Friction always acts: **[1 Mark]**
- (a) In the direction of motion
 - (b) Opposite to the direction of motion
 - (c) Perpendicular to motion
 - (d) At an angle to motion
- Q8.** The frequency of sound is measured in: **[1 Mark]**
- (a) Decibel
 - (b) Hertz
 - (c) Meter
 - (d) Second
- Q9.** An electric bell works on the principle of: **[1 Mark]**
- (a) Heating effect of current
 - (b) Magnetic effect of current
 - (c) Chemical effect of current
 - (d) None of these
- Q10.** The splitting of white light into seven colours is called: **[1 Mark]**
- (a) Reflection
 - (b) Refraction
 - (c) Dispersion
 - (d) Diffraction
- Q11.** The cell that contains a nucleus is called: **[1 Mark]**
- (a) Prokaryotic cell
 - (b) Eukaryotic cell
 - (c) Dead cell
 - (d) Plant cell only
- Q12.** Adam's apple is more prominent in: **[1 Mark]**
- (a) Girls
 - (b) Boys
 - (c) Both equally
 - (d) None

Q13. Cyclones are caused by areas of: **[1 Mark]**

- (a) High pressure
- (b) Low pressure
- (c) Equal pressure
- (d) No pressure

Q14. Which of the following is an endangered species in India? **[1 Mark]**

- (a) Bengal Tiger
- (b) House crow
- (c) Pigeon
- (d) Rat

Q15. The tail of a comet always points: **[1 Mark]**

- (a) Towards the Sun
- (b) Away from the Sun
- (c) Towards Earth
- (d) In any direction

SECTION B – FILL IN THE BLANKS / TRUE-FALSE (15 × 1 = 15 Marks)
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Q16. Fill in the Blank: **[1 Mark]**

The process of loosening and turning of soil is called _____.

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

_____ is a carrier of malaria causing pathogen.

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

Rayon is obtained from _____ pulp.

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

Metals react with acids to produce _____ gas.

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

The least polluting fuel for vehicles is _____.

Q21. Fill in the Blank: [1 Mark]

The inner zone of a flame is _____ in colour.

Q22. Fill in the Blank: [1 Mark]

Rolling friction is _____ than sliding friction.

Q23. True or False: [1 Mark]

Sound can travel through vacuum.

Q24. True or False: [1 Mark]

An electric fuse works on the heating effect of current.

Q25. True or False: [1 Mark]

A concave lens always forms a virtual image.

Q26. Fill in the Blank: [1 Mark]

The functional unit of a kidney is called _____.

Q27. True or False: [1 Mark]

Metamorphosis occurs in frogs.

Q28. Fill in the Blank: [1 Mark]

Air exerts _____ in all directions.

Q29. True or False: [1 Mark]

Migratory birds fly to warmer regions during winter.

Q30. Fill in the Blank: [1 Mark]

The group of stars forming a pattern is called a _____.

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

Q31. What is irrigation? Name two modern methods of irrigation. [2 Marks]

Q32. Write two harmful effects of microorganisms. [2 Marks]

Q33. Differentiate between thermoplastics and thermosetting plastics with [2 Marks]
one example each.

Q34. Why is phosphorus kept immersed in water? [2 Marks]

Q35. What is the difference between exhaustible and inexhaustible [2 Marks]
natural resources? Give examples.

Q36. Write two conditions necessary for combustion to take place. [2 Marks]

Q37. Explain why vehicles are fitted with shockers. [2 Marks]

Q38. What is the audible range of human ear? What is ultrasound? [2 Marks]

Q39. State the laws of reflection of light. [2 Marks]

Q40. What are chromosomes? What is their function? [2 Marks]

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

Q41. Explain the nitrogen cycle in nature with the help of a simple [3 Marks]
diagram.

Q42. What is the difference between metals and non-metals? Give three [3 Marks]
points of difference with examples.

Q43. Describe the three zones of a candle flame. Which zone is the [3 Marks]
hottest and why?

Q44. What is an electromagnet? Write two uses of electromagnets in [3 Marks]
daily life. How is it different from a permanent magnet?

Q45. What is reproduction? Explain the difference between sexual and [3 Marks]
asexual reproduction with examples.

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

Q46. Case Study: **[3 Marks]**

Ravi noticed that during summer afternoons, cool air from the sea blows towards the land, while at night, the wind direction reverses and blows from land to sea. His teacher explained that this happens due to unequal heating of land and water.

Based on this information, answer the following:

- (a) What is the wind blowing from sea to land during the day called? (1 mark)
- (b) Why does land heat up faster than water during the day? (1 mark)
- (c) What causes the change in wind direction at night? (1 mark)

Q47. Diagram-Based Question: **[3 Marks]**

Draw a well-labelled diagram of a plant cell. Label the following parts: Cell wall, Cell membrane, Nucleus, Cytoplasm, Chloroplast, and Vacuole.

Q48. Case Study: **[3 Marks]**

In a science exhibition, students demonstrated that electric current can produce heat. They used a wire with high resistance and passed current through it. The wire became red hot and started glowing.

Answer the following:

- (a) Name the effect of electric current demonstrated by the students. (1 mark)
- (b) Give one application where this effect is used. (1 mark)
- (c) Why did they use a wire with high resistance? (1 mark)

Q49. Diagram-Based Question: **[3 Marks]**

Draw a diagram to show the dispersion of white light through a prism. Label the incident ray, emergent ray, prism, and the seven colours of the spectrum formed.

Q50. Case Study:

[3 Marks]

A farmer wanted to increase his crop yield. He decided to use excessive chemical fertilizers instead of manure. After a few years, he noticed that the soil became hard and less fertile, and the crop yield decreased.

Answer the following:

- (a) Why did excessive use of fertilizers damage the soil? (1 mark)
- (b) What would have been a better alternative to maintain soil fertility? (1 mark)
- (c) Name one disadvantage of using excessive chemical fertilizers. (1 mark)

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ANSWER KEY & SOLUTIONS

For Teacher's Reference Only

SECTION A – ANSWERS (MCQs)

Answer 1: (a) Crop rotation

Crop rotation helps replenish nutrients naturally by alternating different crops that have different nutrient requirements.

✓ Full mark for correct option

Answer 2: (b) Curd

Lactobacillus bacteria converts milk into curd by producing lactic acid.

✓ Full mark for correct option

Answer 3: (b) Bakelite

Bakelite is a thermosetting plastic that cannot be reshaped once set.

✓ Full mark for correct option

Answer 4: (b) Bromine

Bromine is the only non-metal that exists in liquid state at room temperature.

✓ Full mark for correct option (Note: Mercury is a metal)

Answer 5: (c) Both (a) and (b)

Coke acts as both a fuel (provides heat) and a reducing agent (removes oxygen from metal oxides).

✓ Full mark for correct option

Answer 6: (a) kJ/kg

Calorific value is the amount of heat energy produced on complete combustion of 1 kg of fuel, expressed in kJ/kg.

✓ Full mark for correct option

Answer 7: (b) Opposite to the direction of motion

Friction always opposes the relative motion between two surfaces in contact.

✓ Full mark for correct option

Answer 8: (b) Hertz

Frequency is the number of vibrations per second and is measured in Hertz (Hz).

✓ Full mark for correct option

Answer 9: (b) Magnetic effect of current

Electric bell uses an electromagnet which works on the magnetic effect of electric current.

✓ Full mark for correct option

Answer 10: (c) Dispersion

The phenomenon of splitting white light into its constituent seven colours is called dispersion.

✓ Full mark for correct option

Answer 11: (b) Eukaryotic cell

Eukaryotic cells have a well-defined nucleus enclosed by a nuclear membrane.

✓ Full mark for correct option

Answer 12: (b) Boys

Adam's apple (enlarged voice box/larynx) is more prominent in boys during adolescence.

✓ Full mark for correct option

Answer 13: (b) Low pressure

Cyclones form in areas of very low atmospheric pressure where air rushes in from surrounding high-pressure areas.

✓ Full mark for correct option

Answer 14: (a) Bengal Tiger

Bengal Tiger is an endangered species in India due to habitat loss and poaching.

✓ Full mark for correct option

Answer 15: (b) Away from the Sun

The tail of a comet always points away from the Sun due to solar wind and radiation pressure.

✓ Full mark for correct option

SECTION B – ANSWERS (Fill in the Blanks / True-False)

Answer 16: Tilling / Ploughing

Tilling or ploughing is the process of loosening and turning of soil.

✓ 1 mark for correct answer

Answer 17: Female Anopheles mosquito

Female Anopheles mosquito is the carrier of Plasmodium (malaria parasite).

✓ 1 mark (Accept: Anopheles mosquito)

Answer 18: Wood / Cellulose

Rayon is a semi-synthetic fibre obtained from wood pulp or cellulose.

✓ 1 mark for either answer

Answer 19: Hydrogen

Metals + Acids → Salt + Hydrogen gas

✓ 1 mark for correct answer

Answer 20: CNG (Compressed Natural Gas)

CNG is the least polluting fuel for vehicles as it produces fewer pollutants.

✓ 1 mark (Accept: LPG as alternative)

Answer 21: Dark / Black

The innermost zone (unburnt zone) of a flame is dark/black due to incomplete combustion.

✓ 1 mark for correct answer

Answer 22: Less / Smaller

Rolling friction is less than sliding friction, making it easier to roll than slide.

✓ 1 mark for correct answer

Answer 23: False

Sound requires a material medium to travel and cannot travel through vacuum.

✓ 1 mark for correct answer

Answer 24: True

An electric fuse melts due to excessive heat produced when current exceeds safe limits (heating effect).

✓ 1 mark for correct answer

Answer 25: True

A concave lens always forms a virtual, erect, and diminished image.

✓ 1 mark for correct answer

Answer 26: Nephron

Nephron is the functional and structural unit of the kidney that filters blood.

✓ 1 mark for correct answer

Answer 27: True

Frogs undergo metamorphosis - tadpole (larva) transforms into adult frog.

✓ 1 mark for correct answer

Answer 28: Pressure

Air exerts pressure in all directions on the surfaces it is in contact with.

✓ 1 mark for correct answer

Answer 29: True

Migratory birds fly to warmer regions during winter to escape cold and find food.

✓ 1 mark for correct answer

Answer 30: Constellation

A constellation is a group of stars forming a recognizable pattern in the sky.

✓ 1 mark for correct answer

SECTION C – ANSWERS (Short Answer Questions)

Answer 31:

Irrigation: Irrigation is the artificial method of supplying water to crops at regular intervals.

Two modern methods:

1. **Sprinkler System:** Water is sprayed over crops like rain using rotating sprinklers.
2. **Drip Irrigation:** Water is delivered directly to the roots of plants drop by drop through pipes.

✓ 1 mark for definition

✓ ½ mark for each method (Total 2 marks)

Answer 32:

Two harmful effects of microorganisms:

1. **Cause diseases:** Microorganisms like bacteria and viruses cause diseases such as cholera, tuberculosis, typhoid, and common cold.
2. **Food spoilage:** Microorganisms cause food to spoil by decomposing it, making it unfit for consumption and leading to food wastage.

✓ 1 mark for each point (Total 2 marks)

Answer 33:

Thermoplastics	Thermosetting Plastics
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Can be bent and reshaped on heating	Cannot be reshaped once set
Example: Polythene, PVC	Example: Bakelite, Melamine

✓ 1 mark for difference

✓ ½ mark for each example (Total 2 marks)

Answer 34:

Phosphorus is kept immersed in water because:

- It is a very reactive non-metal
- It catches fire when exposed to air at room temperature
- Water prevents it from coming in contact with atmospheric oxygen
- This prevents spontaneous combustion and keeps it safe

✓ 2 marks for complete explanation (any two valid points)

Answer 35:

Exhaustible Resources	Inexhaustible Resources
Present in limited quantity and can be exhausted by human activities	Present in unlimited quantity and cannot be exhausted
Example: Coal, Petroleum, Natural Gas, Forests	Example: Sunlight, Air, Water (in nature)

✓ 1 mark for difference

✓ ½ mark for each example (Total 2 marks)

Answer 36:

Two conditions necessary for combustion:

1. **Presence of a combustible substance:** There must be a fuel or combustible material that can burn.

2. **Presence of oxygen (air):** Oxygen is necessary to support burning.

(Note: Third condition - Ignition temperature must be reached - but only two required)

✓ 1 mark for each condition (Total 2 marks)

Answer 37:

Vehicles are fitted with shockers (shock absorbers) because:

- Shockers provide a cushioning effect
- They absorb sudden jerks and vibrations produced due to friction between tyres and uneven roads
- This makes the ride smooth and comfortable
- It also protects the vehicle from damage

✓ 2 marks for complete explanation

Answer 38:

Audible range: The audible range of frequencies for a normal human ear is **20 Hz to 20,000 Hz (20 kHz)**.

Ultrasound: Sound frequencies higher than 20,000 Hz (above the audible range) are called ultrasound. Humans cannot hear ultrasound, but some animals like dogs, bats, and dolphins can detect it.

✓ 1 mark for audible range

✓ 1 mark for ultrasound definition (Total 2 marks)

Answer 39:

Laws of Reflection:

1. **First Law:** The incident ray, reflected ray, and the normal at the point of incidence all lie in the same plane.
2. **Second Law:** The angle of incidence is equal to the angle of reflection ($\angle i = \angle r$).

✓ 1 mark for each law (Total 2 marks)

Answer 40:

Chromosomes: Chromosomes are thread-like structures present in the nucleus of a cell. They are made up of DNA and proteins.

Function: Chromosomes carry genes which contain hereditary information from parents to offspring. They determine the characteristics and traits that are passed from one generation to the next.

✓ 1 mark for definition

✓ 1 mark for function (Total 2 marks)

SECTION D – ANSWERS (Long Answer Questions)

Answer 41:

Nitrogen Cycle: The continuous circulation of nitrogen between atmosphere, soil, and living organisms is called the nitrogen cycle.

Steps:

1. **Nitrogen Fixation:** Atmospheric nitrogen (N_2) is converted into usable compounds by: - Nitrogen-fixing bacteria (Rhizobium) in root nodules of leguminous plants - Lightning during thunderstorms
2. **Absorption:** Plants absorb nitrogen compounds (nitrates) from soil through roots.

3. **Consumption:** Animals get nitrogen by eating plants (herbivores) or other animals (carnivores).

4. **Decomposition:** When plants and animals die, decomposers convert nitrogen compounds back to soil.

5. **Denitrification:** Some bacteria convert nitrogen compounds back to atmospheric nitrogen, completing the cycle.

Diagram: [Students should draw: Atmosphere → Nitrogen Fixation → Soil → Plants → Animals → Decomposers → Atmosphere]

✓ 1½ marks for explanation

✓ 1½ marks for diagram (Total 3 marks)

Answer 42:

Differences between Metals and Non-metals:

Property	Metals	Non-metals
Physical state	Generally solid at room temperature (except Mercury)	Can be solid, liquid, or gas (Bromine is liquid)
Lustre	Have metallic lustre (shiny)	Do not have lustre (dull)
Electrical conductivity	Good conductors of electricity	Poor conductors (insulators)
Examples	Iron, Copper, Aluminium, Gold, Silver	Carbon, Sulphur, Oxygen, Nitrogen, Phosphorus

✓ 1 mark for each point of difference (any 3)

(Total 3 marks)

Answer 43:

Three zones of a candle flame:

1. **Innermost Zone (Dark Zone):** - Appears dark or black - Contains unburnt wax vapours - Least hot zone - Combustion is incomplete here
2. **Middle Zone (Luminous Zone):** - Appears bright yellow - Contains partially burnt carbon particles that glow - These glowing particles make the flame luminous - Moderately hot
3. **Outermost Zone (Non-luminous Zone):** - Appears blue or almost colourless - Complete combustion occurs here - **HOTTEST zone** of the flame - Has abundant oxygen supply

Why is the outermost zone hottest?

The outermost zone is the hottest because complete combustion of fuel takes place here due to sufficient supply of oxygen from the surrounding air. Complete combustion releases maximum heat energy.

✓ 2 marks for describing three zones

✓ 1 mark for hottest zone with reason (Total 3 marks)



Answer 44:

Electromagnet: An electromagnet is a temporary magnet made by winding an insulated copper wire around an iron core. When electric current flows through the wire, the iron core becomes magnetized and behaves like a magnet.

Two uses of electromagnets:

1. **Electric bell:** Uses electromagnet to strike the gong repeatedly
2. **Electric motors:** Used in fans, washing machines, and other appliances
(Other examples: Cranes to lift heavy iron materials, MRI machines, loudspeakers)

Difference from permanent magnet:

Electromagnet loses its magnetism when current is switched off, whereas a permanent magnet retains its magnetism. The strength of electromagnet can be changed by varying current, but permanent magnet has fixed strength.

- ✓ 1 mark for definition
- ✓ 1 mark for two uses
- ✓ 1 mark for difference (Total 3 marks)

Answer 45:

Reproduction: Reproduction is the biological process by which living organisms produce new individuals of their own kind, ensuring continuation of species.

Differences:

Sexual Reproduction	Asexual Reproduction
Involves two parents (male and female)	Involves only one parent
Fusion of male and female gametes occurs	No fusion of gametes
Offspring are genetically different from parents	Offspring are genetically identical to parent
Examples: Humans, dogs, birds, frogs	Examples: Amoeba (binary fission), Hydra (budding), Planaria (regeneration)

- ✓ 1 mark for definition
- ✓ 1 mark for differences
- ✓ 1 mark for examples (Total 3 marks)

SECTION E – ANSWERS (Diagram Based / Case Based Questions)

Answer 46:

(a) **Sea Breeze** - The wind blowing from sea to land during the day is called sea breeze.

✓ 1 mark

(b) Land heats up faster than water because: • Land has lower specific heat capacity than water • Water absorbs more heat energy to increase its temperature • Land surface area absorbing heat is more exposed

✓ 1 mark (any valid reason)

(c) At night, the land cools down faster than water. The air above the sea becomes warmer and rises, creating low pressure. Cool air from land rushes towards the sea to fill this space, causing the wind direction to reverse (Land Breeze).

✓ 1 mark

Answer 47:

Well-labelled diagram of Plant Cell:

[Students should draw a plant cell showing:]

- Cell Wall (outermost boundary)
- Cell Membrane (just inside cell wall)
- Nucleus (central round structure)
- Cytoplasm (jelly-like substance filling the cell)
- Chloroplast (green oval structures)
- Vacuole (large central sac-like structure)

✓ 2 marks for correct diagram

✓ 1 mark for all six labels (½ mark deduction for each missing/incorrect label)

(Total 3 marks)

Answer 48:

(a) **Heating effect of electric current** - When current flows through a conductor with high resistance, it produces heat.

✓ 1 mark

(b) **One application:** • Electric iron / Electric heater / Electric bulb / Electric kettle / Electric toaster / Fuse wire

✓ 1 mark (any one correct application)

(c) They used high resistance wire because: • High resistance produces more heat ($H \propto R$) • Greater opposition to current flow generates more heat energy • This demonstrates the heating effect more effectively

✓ 1 mark (any valid explanation)

Answer 49:

Diagram of Dispersion of Light through Prism:

[Students should draw showing:]

- White light (incident ray) entering the prism from one side
- Triangular prism in the center
- Light splitting into seven colours (VIBGYOR) as it exits
- Seven colours clearly shown: Violet, Indigo, Blue, Green, Yellow, Orange, Red
- Labels: Incident ray, Prism, Emergent rays, VIBGYOR spectrum

✓ 1½ marks for correct diagram

✓ 1½ marks for proper labelling

(Total 3 marks)

Answer 50:

(a) **Why excessive fertilizers damaged the soil:** • Chemical fertilizers kill useful microorganisms in soil • They make soil acidic or alkaline, destroying soil structure • Continuous use reduces organic matter and makes soil hard and infertile

✓ 1 mark (any valid reason)

(b) **Better alternative:** • Use organic manure (compost, vermicompost, farmyard manure) • Practice crop rotation • Use biofertilizers • Combine organic manure with limited chemical fertilizers

✓ 1 mark (any valid alternative)

(c) **One disadvantage of excessive chemical fertilizers:** • Kills beneficial soil microorganisms • Pollutes groundwater through leaching • Destroys soil fertility in long term • Makes soil hard and less porous • Causes eutrophication in water bodies

✓ 1 mark (any one correct disadvantage)

 **END OF ANSWER KEY** 

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