ERUDITE ACADEMY, 2025–26
PA1 EXAMINATION
SUBJECT: SCIENCE
CLASS: VIII
MARKS: 40
TIME: 1.5 HOURS

Student's Name: _____

SECTION A (2 × 5 = 10 Marks)

1. What does NSC stand for? What role does it play in agriculture?
Ans: NSC stands for **National Seeds Corporation**. It plays a key role in producing and supplying high-quality certified seeds to farmers, which helps improve agricultural productivity.

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2. What are crops? Name two types of crops on the basis of their growing season.
Ans: Crops are plants grown by farmers for food or other purposes. Two types are:

- **Rabi crops** (e.g., wheat)
- **Kharif crops** (e.g., rice)

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3. Complete the equations.
Ans:
$CO_2 + H_2O \rightarrow$ **H_2CO_3 (Carbonic acid)**
$2Na + 2H_2O \rightarrow$ **$2NaOH + H_2$ (Sodium hydroxide + Hydrogen gas)**

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4. How does the sodium metal react with water? Give two examples of metals that do not react with water.
Ans: Sodium reacts **vigorously** with water, producing **sodium hydroxide and hydrogen gas** with heat and sometimes flame.
Equation:
$2Na + 2H_2O \rightarrow 2NaOH + H_2\uparrow$
Examples of non-reactive metals: **Gold (Au)** and **Silver (Ag)**

5. What is a vaccine? Name two diseases that can be prevented by a vaccine.
Ans: A vaccine is a substance that helps the body develop immunity against diseases.
Examples: **Polio and Measles**

OR

What are communicable diseases? Give two examples of communicable diseases in animals.
Ans: Communicable diseases are **infectious diseases** that can spread from one animal to another.
Examples: **Foot and Mouth Disease** and **Rabies**

SECTION B (3 × 4 = 12 Marks)

(Answer in 30–50 words)

6. What are the various ways in which we protect crops from weeds and pests?
Ans:

- Weeds are removed using weedicides or manual weeding.
- Pests are controlled by using pesticides and natural predators.
- Crop rotation and timely sowing also help reduce pest attacks.

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7. Explain with examples how an object can be charged by friction.
Ans:
When two objects are rubbed together, electrons transfer from one to another, creating charge.
Example: When a balloon is rubbed on dry hair, it becomes charged and sticks to walls.

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8. Explain how a lightning conductor can protect a building from a lightning strike.

Ans:
A **lightning conductor** is a **metal rod** placed at the highest point of a building. It is connected to a **thick wire** that runs down the building and goes **deep into the ground**.

How it works:

- When lightning strikes, the conductor gives the electric charge a **safe path** to travel from the top of the building into the ground.
- This prevents the lightning from damaging the building or causing a fire.

It's like giving lightning a shortcut to the Earth so that it doesn't harm anything.

9. What are the various ways in which we protect crops from weeds and pests?
(Repeated; Attempt OR)

OR

How can we ensure increase in crop yield?
Ans:
Crop yield can be increased by:

- Using **high-yield variety seeds**
- Applying **fertilizers and manure**
- Ensuring **irrigation** and protecting crops from pests
- Practicing **modern farming techniques**

SECTION C (4 × 2 = 8 Marks)

(Answer in 50–80 words)

10. What happened when:
) Vinegar is added to baking soda
Ans:
A chemical reaction occurs between **acetic acid (vinegar)** and **sodium bicarbonate (baking soda)**.
Equation:
$CH_3COOH + NaHCO_3 \rightarrow CH_3COONa + CO_2\uparrow + H_2O$
(CO_2 causes fizzing and bubbling)

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ii) Carbon dioxide is passed through lime water
Ans:
CO_2 reacts with lime water ($Ca(OH)_2$), forming **calcium carbonate**, which turns the solution **milky**.
Equation:
$Ca(OH)_2 + CO_2 \rightarrow CaCO_3\downarrow + H_2O$

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iii) Potassium reacts with water
Ans:
Potassium reacts even more **violently than sodium**, producing **potassium hydroxide and hydrogen gas**.
Equation:
$2K + 2H_2O \rightarrow 2KOH + H_2\uparrow$ + heat + flame

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iv) Sodium reacts with aluminium sulphate
Ans:

Sodium displaces aluminium from aluminium sulphate due to its higher reactivity.
Equation:
$6Na + Al_2(SO_4)_3 \rightarrow 3Na_2SO_4 + 2Al$

11. What are fertilizers? Why is it important to add them to soil? Differentiate between natural and chemical fertilizers.
Ans:
Fertilizers are substances that are added to soil or plants to supply essential nutrients required for plant growth. They can be in the form of organic (natural) or synthetic (chemical) compounds and contain key nutrients like **nitrogen (N), phosphorus (P), and potassium (K)**, often referred to as **NPK**. Fertilizers help improve soil fertility and increase crop yield.

Why is it Important to Add Fertilizers to Soil?

- **Nutrient Deficiency Prevention:** Soil may lack essential nutrients due to previous crops depleting them. Fertilizers restore these nutrients and maintain soil health.
- **Promote Growth:** Fertilizers supply nutrients that promote healthy plant growth, root development, and flowering.
- **Increase Yield:** Fertilizers improve the productivity of the soil and lead to higher crop yields, ensuring food security.
- **Soil Fertility:** Regular addition of fertilizers helps in maintaining soil fertility, ensuring that crops grow efficiently and produce quality products.

Difference between Natural and Chemical Fertilizers:

Aspect	**Natural Fertilizers**	**Chemical Fertilizers**
Source	Derived from organic matter like compost, manure, or plant/animal residues.	Synthetic or manufactured, derived from chemicals or minerals.
Nutrient Content	Provides a wide range of nutrients but in small amounts.	Provides concentrated nutrients (usually NPK) in precise proportions.

OR

i) How are microorganisms useful in the field of medicine? (2 Points)
Ans:

Microorganisms play an important role in medicine, including:

- **Antibiotic Production:** Fungi like *Penicillium* and bacteria like *Streptomyces* produce antibiotics that treat bacterial infections.
- **Vaccine Development:** Viruses are used to create vaccines that protect against diseases such as measles, polio, and influenza.
- **Probiotics:** Beneficial bacteria, such as *Lactobacillus*, are used to restore balance in the gut, promoting digestive health.
- **Enzyme Production:** Microorganisms are used to produce enzymes that aid in various medical treatments, such as digestive enzyme supplements.
- **Bioremediation:** Microorganisms help in cleaning up pollutants from the environment, such as oil spills, contributing to environmental medicine.

ii) What are the various ways in which we protect crops from weeds and pests?
Ans:
To ensure healthy crop growth and high yields, crops need protection from weeds and pests. The following are the main ways to protect crops:

a. Manual Weeding:

- Description: Weeds are removed manually using tools like hoes or by hand.
- Advantages: Safe, eco-friendly, and ensures selective removal of unwanted plants.
- Disadvantages: Labor-intensive and time-consuming.

b. Chemical Control (Weedicides):

- Description: Chemical substances called weedicides are used to kill or control weed growth.
- Advantages: Effective, fast, and covers large areas.
- Disadvantages: Can be harmful to the environment, beneficial organisms, and soil health if overused.

Protection from Pests:

a. Chemical Control (Pesticides):

- Description: Pesticides are chemicals sprayed on crops to kill or control harmful insects and pests.
- Advantages: Quickly controls pest infestations.
- Disadvantages: Can lead to pesticide resistance, harm beneficial insects, and contaminate the environment.

b. Biological Control:

- Description: Using natural predators, parasites, or pathogens (e.g., ladybugs to eat aphids) to control pest populations.
- Advantages: Eco-friendly and sustainable method.
- Disadvantages: May not be as fast-acting as chemical pesticides and is specific to certain pests.