NELTAS PATH TO EDUCATIONAL EXCELLENCE | S-CAT International Science Competition

Grade **8**

Grand Finale 2024-25

S-CAT Question Paper

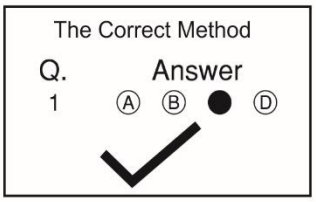
NSA025

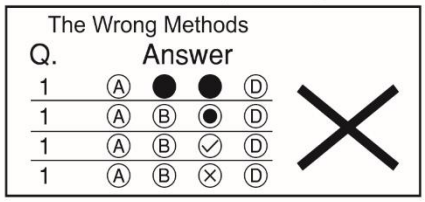
Return the answer sheet along with question paper to the invigilator at the end of the exam.

TOTAL MARKS	QUESTIONS	DURATION
100	**50**	**60 mins**

Instructions for Student:

- Read the question carefully before answering.
- Each question has 4 options (A, B, C & D).
- Choose one correct option as your answer, from the 4 options.
- Every question carries 2 marks.
- There will be an additional 0.5 Negative Marking for every wrong answer.
- On the answer sheet blacken the correct option against the corresponding question number,

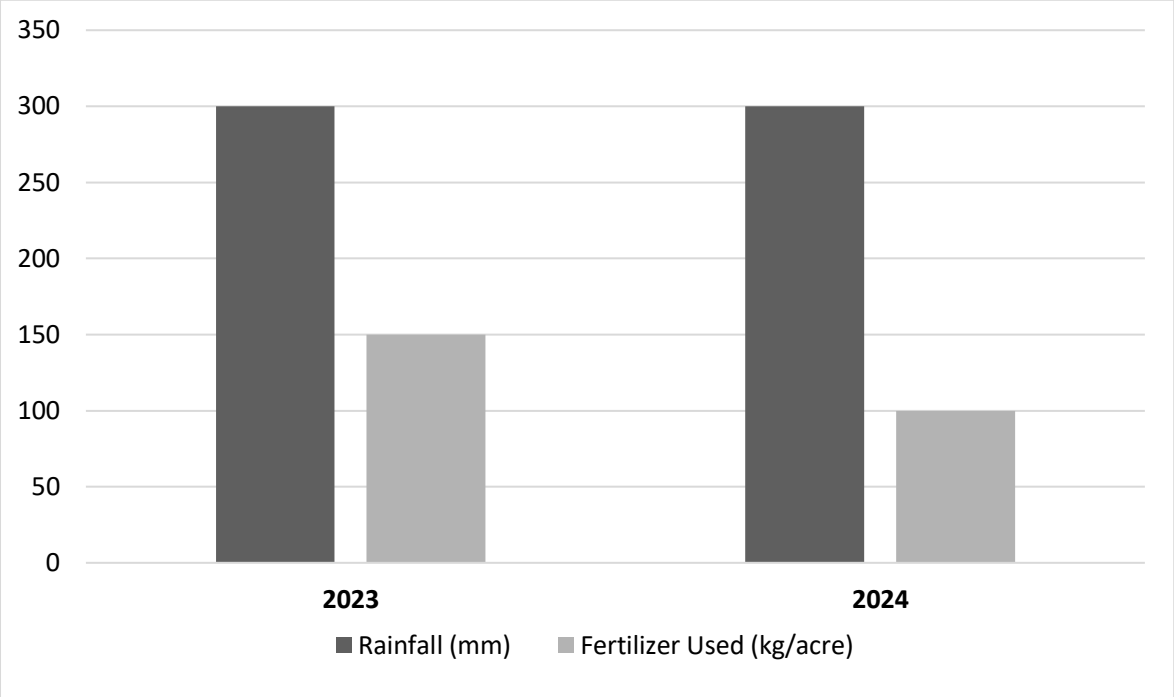




- **Use pencil to mark your answer.**
- If you wish to change your answer, erase the previous mark completely.

1. **What is the main purpose of adding manure or fertilizers to soil?**
   a. To kill weeds
   b. To improve soil fertility
   c. To control pests
   d. To increase soil water retention

2. **A farmer observes that his wheat crop yield has decreased by 30% compared to the previous year. The following chart shows the rainfall pattern and fertilizer use in both years:**



   Based on this data, which factor is most likely responsible for the decrease in crop yield?
   a. Decreased use of fertilizers
   b. Increased rainfall
   c. Decreased rainfall
   d. Increased use of fertilizers

3. **A student plants seeds of similar quality in two pots, Pot A and Pot B. In Pot A, they add compost to the soil, while in Pot B, they do not. After two weeks, they observe that plants in Pot A have grown taller than those in Pot B. What can the student infer from this experiment?**
   a. Compost inhibits plant growth.
   b. Compost helps in increasing plant growth.
   c. Pot A received less sunlight.
   d. Pot B had better quality seeds.

4. **In which condition would you expect a higher rate of transpiration?**
   a. During night time with low temperatures
   b. In bright sunlight with high temperature and low humidity
   c. In a closed, dark room with high humidity
   d. During winter with low humidity

5. **Xylem is primarily responsible for transporting:**
   a. Food from leaves to other parts
   b. Water and minerals from roots to other parts of the plant
   c. Oxygen to leaves
   d. Nutrients from flowers to fruits

6. A student places a leafy shoot in coloured water. After some time, the student observes that the leaves have taken on the colour of the water. This experiment demonstrates that:

a. Leaves absorb water directly from the atmosphere.
b. Water moves through the xylem vessels to different parts of the plant.
c. The plant is undergoing photosynthesis.
d. The roots of plants are not essential for absorbing minerals.

7. During an experiment, a student observes mould growing on a piece of bread over several days. What is most likely to increase the growth rate of the mould?

a. Placing the bread in a freezer
b. Placing the bread in a warm, humid place
c. Exposing the bread to direct sunlight
d. Keeping the bread in an oven heated to 180°C

8. A farmer uses yeast for fermentation to produce alcohol. Which of the following environments is best for yeast to perform fermentation?

a. Cold, oxygen-rich
b. Warm, oxygen-poor
c. Very hot, oxygen-poor
d. Very hot, oxygen-rich

9. A student observes a slide of a micro-organism under the microscope. It has a distinct nucleus and is moving with a tail-like structure. It lacks chlorophyll. This micro-organism is most likely:

a. Bacteria
b. Virus
c. Algae
d. Protozoa

10. In flowering plants, what role do the pollen grains play in reproduction?

a. They carry the female gamete.
b. They nourish the seed.
c. They contain the male gamete.
d. They protect the flower from insects.

11. A scientist examines a colony of amoebas and notes that each amoeba splits into two identical amoebas. What is the method of reproduction called?

a. Budding
b. Spore formation
c. Binary fission
d. Fragmentation

12. Which structure is directly involved in the nourishment and development of the embryo in humans?

a. Ovary
b. Uterus
c. Fallopian tube
d. Sperm duct

13. An adolescent feels nervous and stressed before a big exam. Which hormone released by the adrenal glands helps the body to cope with stress?

a. Insulin
b. Adrenaline
c. Estrogen
d. Testosterone

14. In a study, a researcher observes the growth patterns in children before and after puberty. If there is a rapid increase in height and weight during puberty, which of these is it associated with?

a. Thyroxine, Adrenal gland
b. Growth Hormone, Pituitary gland
c. Estrogen, Thyroid gland
d. Growth Hormone, Thyroid gland

15. A researcher notices that a teenager has low levels of thyroxine. What condition could this indicate?

a. Hyperactivity
b. Obesity
c. Goiter
d. Gigantism

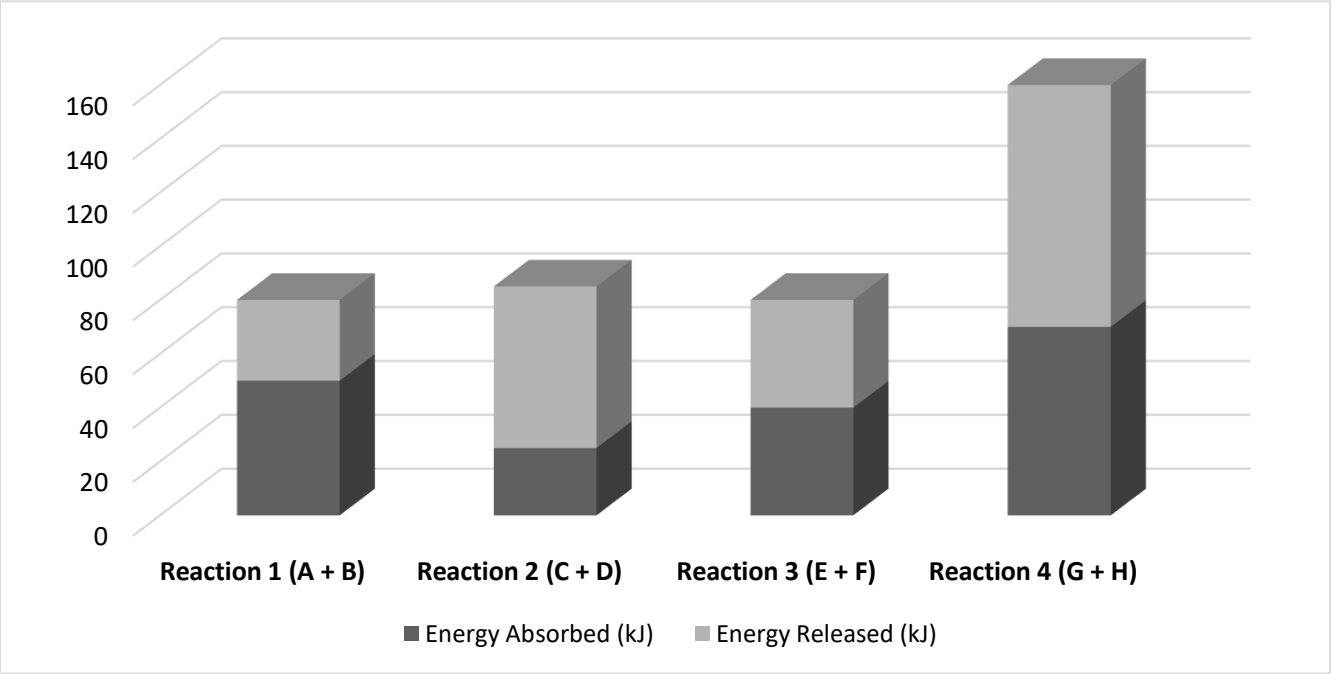
16. Which of the following glands is both an exocrine as well as an endocrine gland?

a. Pancreas
b. Adrenal
c. Thyroid
d. Pituitary

17. When limewater is exposed to carbon dioxide, it turns milky. This is an example of:

a. Chemical change
b. Physical change
c. Reversible change
d. Melting

18. The table below shows energy changes in different reactions:



Which reaction is endothermic?

a. Reaction 1
b. Reaction 2
c. Reaction 3
d. Reaction 4

19. Which type of reaction occurs when an acid reacts with a base to form salt and water?

a. Neutralization
b. Precipitation
c. Decomposition
d. Combustion

20. Which of the following best explains why gases can be easily compressed while solids cannot?

a. Gases have stronger molecular bonds.
b. Gas particles have large spaces between them.
c. Gas particles are tightly packed.
d. Solids are less dense than gases.

21. If a perfume bottle is opened in one corner of a room, the fragrance quickly spreads throughout the room. This occurs because of:

a. Evaporation
b. Diffusion
c. Melting
d. Condensation

22. The table below shows the boiling points of different substances:

Substance	Boiling Point (°C)
Water	100
Alcohol	78
Mercury	357
Oxygen	-183

Based on the data, which substance will evaporate fastest at room temperature (25°C)?

a. Water
b. Alcohol
c. Mercury
d. Oxygen

23. A student notices water droplets on the outside of a cold glass of water. This phenomenon is an example of:

a. Evaporation
b. Condensation
c. Sublimation
d. Freezing

24. In an atom, where are the neutrons located?

a. In the nucleus
b. In the electron cloud
c. Orbiting the nucleus
d. Between the protons and the electrons

25. Who proposed the planetary model of the atom?

a. John Dalton
b. J.J. Thomson
c. Ernest Rutherford
d. Niels Bohr

26. Given that the atomic number of an element is 9 and the mass number is 19, calculate the number of neutrons in the element.

a. 9
b. 19
c. 10
d. 28

27. What causes a burning candle to extinguish when covered with a glass jar?

a. The wax runs out.
b. Oxygen supply is cut off.
c. The temperature drops drastically.
d. Air pressure increases inside the jar.

28. Why is water ineffective for extinguishing oil-based fires?

a. It cools the fire.
b. It evaporates too quickly.
c. Oil floats on water and keeps burning.
d. Water itself catches fire.

29. What makes biogas an environment-friendly fuel?

a. It emits a large amount of smoke.
b. It produces only methane gas.
c. It is made from organic waste and reduces pollution.
d. It burns at very low temperatures.

30. Which of the following statements explains why aluminium is often used in the aircraft manufacturing?

a. Aluminium is very dense.
b. Aluminium is lightweight and strong.
c. Aluminium is a poor conductor.
d. Aluminium is very reactive.

31. Observe the data below:

Metal	Reaction with HCl
Magnesium	Vigorous
Zinc	Moderate
Iron	Slow
Copper	No reaction

Based on the reactivity table with HCl, which metal is the most reactive?

a. Copper
b. Iron
c. Zinc
d. Magnesium

32. In an experiment, iron nails were placed in copper sulphate solution, and the blue colour of the solution faded. This is because:

a. Iron is less reactive than copper.
b. Iron reacts with copper sulphate and displaces copper.
c. Copper reacts with iron sulphate.
d. Copper evaporates.

33. Why is milk of magnesia effective in treating stomach acidity?

a. It is acidic.
b. It neutralizes stomach acid.
c. It produces more acid in the stomach.
d. It absorbs acid.

34. To confirm that a solution is basic, which of the following would be the most reliable test?

a. Taste the solution.
b. Check if it feels soapy.
c. Measure its pH.
d. Smell the solution.

35. The following observations were made when testing three solutions with litmus paper:

- **Solution A: No change to blue litmus, but red litmus turns blue.**
- **Solution B: Blue litmus turns red, and red litmus shows no change.**
- **Solution C: No change to either blue or red litmus.**

Which solution is acidic?

a. Solution A
b. Solution B
c. Solution C
d. None of these

36. What is the SI unit of force?

a. Newton (N)
b. Joule (J)
c. Pascal (Pa)
d. Meter (m)

37. Rohan is relaxing on the snow. Why does he sink less into the snow when lying down compared to standing?

a. Pressure is less when standing.
b. Pressure is less when lying down.
c. Force is more when standing.
d. Force is more when lying down.

38. What type of reflection is observed when light strikes a plane mirror?

a. Diffuse reflection
b. Regular reflection
c. Scattering
d. Both a and b

39. A beam of light passes through two transparent media with different refractive indices. If the refractive index of the first medium is 1.5 and the second medium is 2, what will happen to the light as it enters the second medium?

a. The light will bend away from the normal.
b. The light will bend towards the normal.
c. The light will not bend.
d. The light will travel in a straight line.

40. What is the SI unit of energy?

a. Watt
b. Joule
c. Newton
d. Meter

41. Which of the following is an example of potential energy?

a. A moving car
b. A stretched rubber band
c. A running athlete
d. Water flowing in a river

42. If the work done in lifting an object is 200 J and the distance is 5 meters, what is the force applied?

a. 40 N
b. 50 N
c. 25 N
d. 10 N

43. A rocket is launched into space. During launch, chemical energy in the rocket's fuel is converted into:

a. Wind energy
b. Kinetic energy
c. Magnetic energy
d. Potential energy

44. Which device is used to measure electric current in a circuit?

a. Voltmeter
b. Ammeter
c. Ohmmeter
d. Resistor

45. The potential difference between two points in a circuit is measured in:

a. Ohms
b. Watts
c. Joules
d. Volts

46. The resistance of a conductor depends on:

a. Length and thickness
b. Type of material
c. Temperature
d. All of these

47. The following table shows the resistance of various materials in a circuit:

Material	Resistance (Ω)
Copper	0.5
Aluminum	1.5
Iron	5.0
Rubber	10,000

Which material would allow the easiest flow of current?

a. Copper
b. Aluminium
c. Iron
d. Rubber

48. Which of the following devices converts electrical energy into mechanical energy?

a. Electric bulb
b. Electric fan
c. Toaster
d. Electric iron

49. What is the transparent layer at the front of the eye that helps to focus light called?

a. Iris
b. Cornea
c. Retina
d. Lens

50. In what everyday item would you most likely find graphite?

a. Jewellery
b. Electrical wiring
c. Pencils
d. Cooking utensils