

Grade  
**7**

**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  
**100**



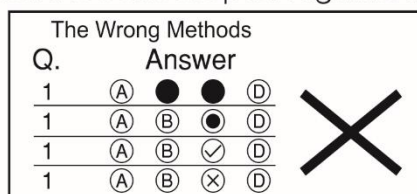
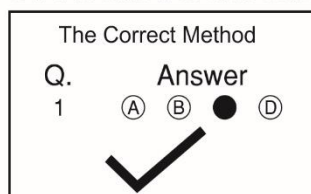
QUESTIONS  
**50**



DURATION  
**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. Which of the following is essential for photosynthesis and is obtained by stomata through gaseous exchange?
- a. Oxygen                      b. Water                      c. Carbon Dioxide                      d. Nitrogen
2. If you are testing a leaf for starch, what would be the correct sequence of steps?
- a. Boil the leaf in water → boil it in alcohol → Rinse in water → Add iodine solution  
b. Dip the leaf in alcohol → Boil in water → Add iodine solution  
c. Add iodine solution directly on the leaf  
d. Boil in water → Add iodine solution directly
3. Which pigment, responsible for the green colour of leaves, is essential for capturing light energy during photosynthesis, and where is it specifically located within the plant cell?
- a. Carotene - Located in the cytoplasm; it captures green light.  
b. Anthocyanin - Found in chloroplasts; it reflects green light.  
c. Chlorophyll - Found in the chloroplasts; it absorbs light energy.  
d. Xanthophyll - Located in the nucleus; it helps absorb blue light.
4. To observe the villi of the small intestine, which tool or process would be most useful?
- a. Staining and observing under a light microscope  
b. Using a magnifying glass  
c. Heating the sample  
d. Measuring the length of the intestine
5. The following data shows the time taken by different food types to digest in the human stomach:

Carbohydrates: 1-2 hours	Proteins: 2-4 hours	Fats: 4-6 hours
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Which food type is most likely to keep a person feeling full for the longest time?

- a. Carbohydrates                      b. Proteins  
c. Fats                      d. All keep a person full equally
6. A farmer observes that cows can efficiently digest fibrous plant materials, unlike dogs or cats. What unique feature of the cow's digestive system enables this, and how does it function?
- a. Presence of a simple stomach that secretes strong acids.  
b. Multi-chambered stomach with microbial fermentation to break down cellulose.  
c. Canine teeth for grinding plant material more effectively.  
d. Enzymes in saliva that fully digest fibres before entering the stomach.
7. In which part of the cell does cellular respiration primarily occur?
- a. Nucleus                      b. Mitochondria                      c. Ribosome                      d. Cytoplasm
8. The table below shows the average breathing rates of different organisms.

Organism	Breathing Rate (breaths/minute)
Human	16
Dog	30
Mouse	60
Elephant	8

Which organism has the highest breathing rate, and what might this indicate about its metabolic rate?

- a. Human; high metabolic rate                      b. Dog; moderate metabolic rate  
c. Mouse; high metabolic rate                      d. Elephant; low metabolic rate

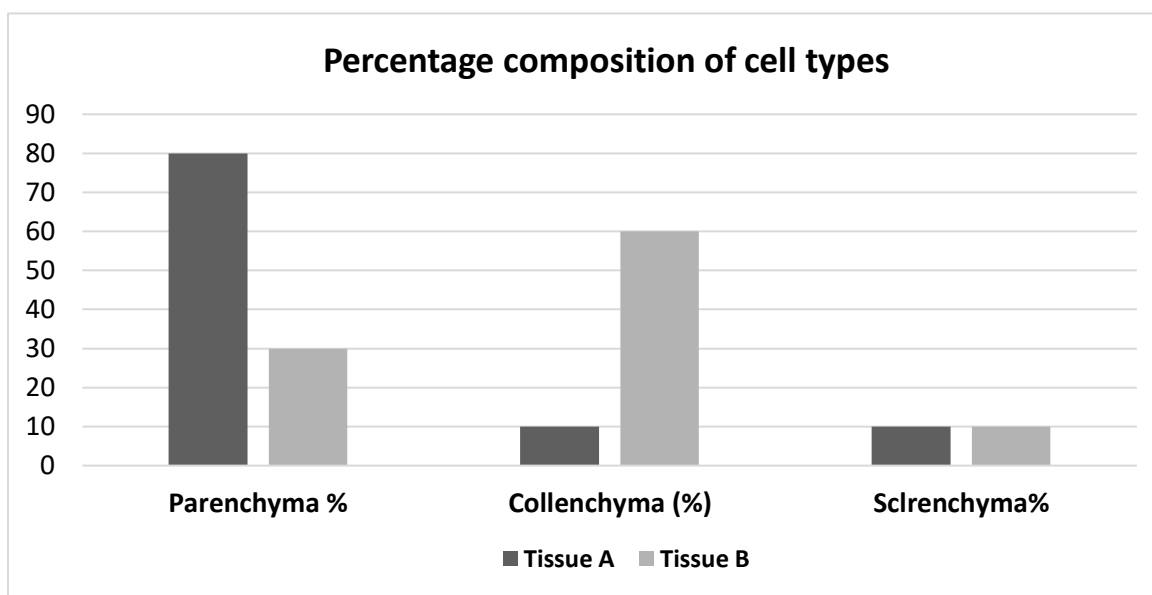
9. During physical exercise, a student notices that their breathing rate increases. What is the likely reason for this observation?

- The body needs less oxygen during exercise.
- The body produces less energy during exercise.
- The body requires more oxygen to meet the increased energy demand.
- The body does not need oxygen during exercise.

10. In an experiment, a student wants to test if bone tissue is harder than cartilage. Which of the following methods is most suitable?

- Applying equal force on both tissues and observing any breakage
- Measuring the weight of both tissues
- Heating both tissues to observe which one burns first
- Observing both tissues under a microscope to see the cellular structure

11. The bar graph below shows the percentage composition of cell types in two plant tissues.



Which tissue is likely to provide more flexibility to the plant? Why?

- Tissue A, because it has a high percentage of parenchyma.
- Tissue B, because it has a high percentage of collenchyma.
- Tissue A, because it has a high percentage of sclerenchyma.
- Tissue B, because it has a high percentage of sclerenchyma.

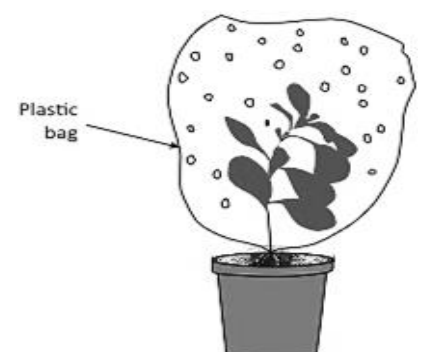
12. Sara has a ligament tear. Her doctor has advised her to take adequate rest and physiotherapy sessions along with medications. Choose the type of tissue the ligament is and its function.

- Epithelial tissue: Connects bone to bone
- Muscular tissue: Connects muscles to tissue
- Connective tissue: Connects bone to bone
- Nervous tissue: Transmits signals from one neuron to another

13. A student conducts an experiment as shown alongside.

The process he is studying is:

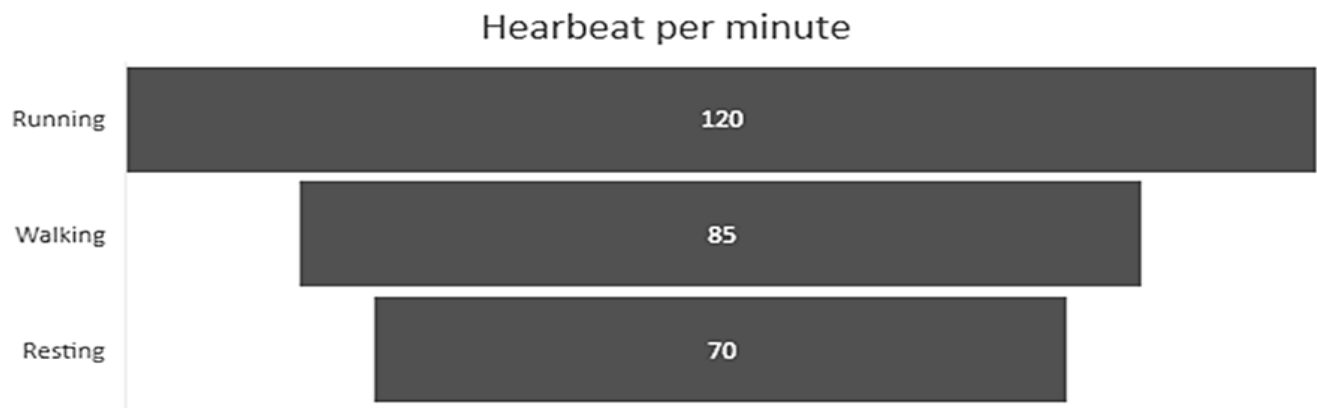
- Photosynthesis
- Transpiration
- Absorption
- Guttation



14. Which component of blood is responsible for transporting oxygen?

- a. Plasma                      b. Platelets                      c. Red blood cells                      d. White blood cells

15. Given the following data on heartbeats per minute under different activities:



During which activity is the rate of circulation the highest?

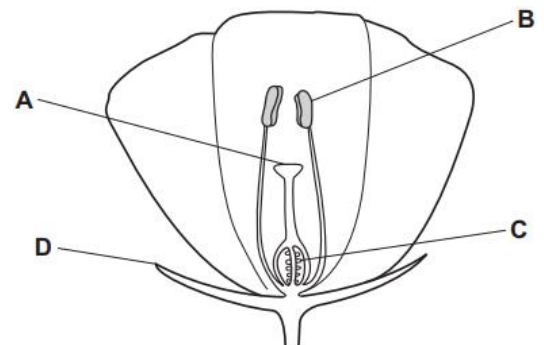
- a. Resting                      b. Walking                      c. Running                      d. Cannot be determined

16. When observing human blood under a microscope, a student identifies cells without a nucleus. What are these cells?

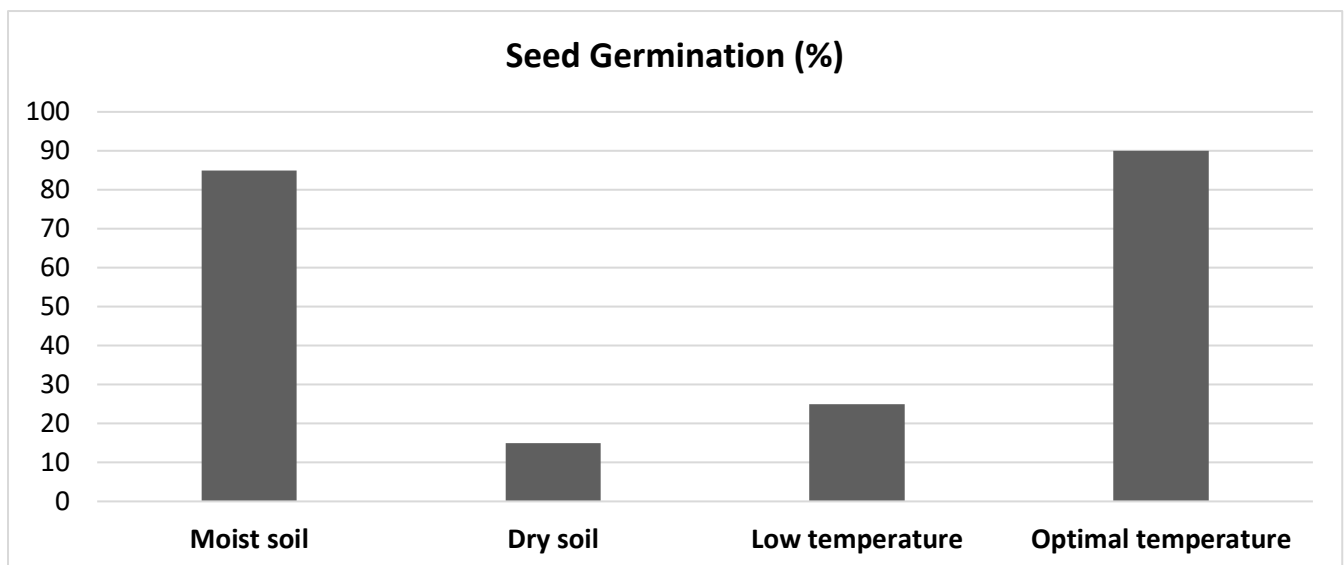
- a. White blood cells                      b. Red blood cells                      c. Plasma cells                      d. None of the above

17. Which part of a flowering plant contains the male reproductive organs?

- a. A  
b. B  
c. C  
d. D



18. The graph below shows the percentage of seed germination under different conditions.



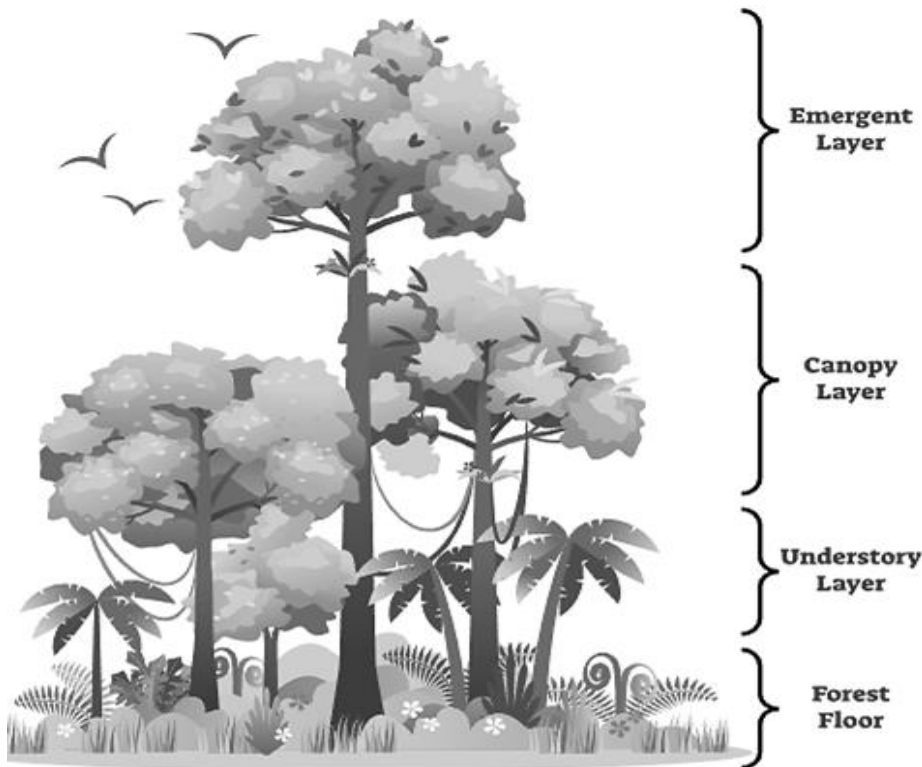
Under which condition is seed germination the highest?

- a. Moist soil                      b. Dry soil                      c. Low temperature                      d. Optimal temperature

19. Which tool would be most useful for observing pollen grains?

- a. Microscope      b. Telescope      c. Ruler      d. Stopwatch

20. Which layer of a forest receives the least amount of sunlight?



- a. Canopy      b. Understory      c. Forest floor      d. Emergent layer

21. To study the effect of light on plant growth in forests, what variable should be changed?

- a. Amount of water      b. Amount of light      c. Type of soil      d. Type of forest

22. In a forest ecosystem, different plants coexist with fungi and animals. What does this suggest?

- a. Lack of biodiversity      b. Biodiversity and interdependence  
c. Lack of decomposers      d. Monoculture

23. The table below shows mass changes during rust formation:

Iron Before (g)	Rust Formed (g)
50	55

What does the mass increase indicate?

- a. Loss of energy      b. Addition of oxygen  
c. Decomposition reaction      d. Evaporation

24. The table below shows the time taken for various substances to change state at room temperature.

Substance	State Change	Time Taken
Ice	Solid to Liquid	10 minutes
Wax	Solid to Liquid	5 minutes
Water	Liquid to Gas	15 minutes

Which substance has the fastest change of state?

- a. Ice      b. Wax      c. Water      d. All are the same

**25. Which gas is produced during the reaction of vinegar and baking soda?**

- a. Oxygen                      b. Hydrogen                      c. Carbon dioxide                      d. Nitrogen

**26. A sample's pH is recorded over several days as it decays. The pH values are given below.**

Days	1	2	3	4	5
pH values	7	6.8	6.5	6.2	6

**Which statement is correct?**

- a. The solution is becoming more acidic.                      b. The solution is becoming more basic.  
c. The solution is neutral.                      d. The solution is stable.

**27. The table below shows the effect of different indicators on solutions:**

Solution	Litmus	Phenolphthalein
A	Red	No change
B	Blue	Pink
C	No change	No change

**Which of these is likely a neutral solution?**

- a. Solution A                      b. Solution B                      c. Solution C                      d. None

**28. A fizzing sound is heard when a piece of magnesium is placed in hydrochloric acid. This indicates:**

- a. Release of hydrogen gas                      b. Dissolving reaction only  
c. Physical change                      d. No reaction

**29. Which of the following is a common household acid, used in cooking?**

- a. Sodium hydroxide                      b. Hydrochloric acid                      c. Acetic acid                      d. Ammonium hydroxide

**30. Which statement best describes a compound?**

- a. A substance made of only one kind of atom.  
b. A mixture of different substances.  
c. A substance made of two or more elements chemically combined.  
d. A mixture of gases.

**31. A mixture contains iron filings and copper filings. Which of these is the best way to separate them?**

- a. Dissolving in water and then filtering                      b. Dissolving in water and evaporation  
c. Using magnet to separate them                      d. Heating and condensation

**32. When a mixture of oil and water is left undisturbed, the oil floats. This observation indicates that:**

- a. Oil is denser than water.                      b. Water is denser than oil.  
c. Oil and water are chemically combined.                      d. Oil is soluble in water.

**33. Non-metals like nitrogen are critical in agriculture because they:**

- a. React with other non-metals                      b. Form salts needed for soil  
c. Are part of the soil's nutrient cycle                      d. Dissolve in water

**34. When element X reacts with oxygen, it forms a basic oxide. What can you infer about element X?**

- a. It is a non-metal.                      b. It is a metal.                      c. It is a gas.                      d. It is an alloy.

**35. Which non-metal is essential for respiration in all living organisms including plants?**

- a. Carbon                      b. Oxygen                      c. Nitrogen                      d. Sulfur

**36. When ice is placed on the palm of your hand, it melts. What observation supports the idea of heat transfer?**

- a. The ice absorbs heat from your hand and changes into water.  
b. The ice produces cold air.  
c. The ice expands in size.  
d. The ice absorbs water.

**37. If you place a pot of water on a stove and observe the water, you notice bubbles form at the bottom of the pot. What does this observation indicate?**

- a. The water is absorbing heat through conduction.  
b. The heat is transferred through radiation.  
c. Heat does not get transferred from solid to liquid.  
d. The water is evaporating.

**38. A metal and a non-metal are both heated at one end. In the experiment comparing heat conduction in both materials, the following data is recorded. What conclusion can be drawn?**

Material	Time Taken to Heat (s)	Temperature Change (°C)
Metal	30	15
Non-metal	90	5

- a. Metal conducts heat faster than the non-metal.  
b. Non-metal conducts heat faster than the metal.  
c. Both materials conduct heat equally.  
d. Metal and non-metal do not conduct heat.

**39. Which of the following is a method of heat transfer that does not require a medium?**

- a. Conduction                      b. Convection                      c. Radiation                      d. Evaporation

**40. If an object covers equal distances in equal intervals of time, its motion is said to be:**

- a. Non-uniform                      b. Uniform                      c. Accelerated                      d. Circular

**41. The time interval is the difference between:**

- a. Final speed and initial speed                      b. Initial speed and final position  
c. Initial position and final position                      d. Final time and initial time

**42. A car moves at a speed of 60 km/h for 2 hours. After that, it moves at 40 km/h for 3 hours. What is the total distance travelled?**

- a. 160 km                      b. 180 km                      c. 240 km                      d. 220 km

**43. Which of the following materials allows electric current to flow with minimal resistance?**

- a. Rubber                      b. Glass                      c. Copper                      d. Wood

**44. Which of the following is an effect of electric current?**

- a. Magnetic effect                      b. Chemical effect  
c. Heating effect                      d. All of these

**45. Students of grade VII are conducting experiments concerning electricity. Which safety precaution/s are essential while conducting experiments with electric circuits?**

- a. Ensuring that the wires are insulated
- b. Keeping water away from the circuit
- c. Using low-voltage power sources
- d. All of these

**46. Which of the following is true about an electromagnet?**

- a. It is a permanent magnet.
- b. It can be turned on and off by controlling the electric current.
- c. It does not work with an electric current.
- d. It is always made of permanent magnets.

**47. Which of the following surfaces would reflect light best?**

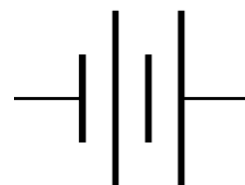
- a. Black surface
- b. Rough surface
- c. Shiny surface
- d. Transparent surface

**48. During an experiment with lenses, you notice that the image formed is inverted and magnified. What can you infer about the lens?**

- a. The lens is a concave lens.
- b. The lens is a convex lens.
- c. The lens is a plane mirror.
- d. The lens is not working properly.

**49. Observe the given diagram and identify the component:**

- a. Bulb
- b. Electric switch
- c. Electric cell
- d. Battery



**50. In an experiment to measure the angle of incidence and angle of reflection, the data shows the following:**

Angle of Incidence (°)	Angle of Reflection (°)
10	10
20	20
30	30
40	40

**Based on this data, what can be concluded?**

- a. The angle of reflection is always equal to the angle of incidence.
- b. The angle of reflection is less than the angle of incidence.
- c. The angle of reflection is more than the angle of incidence.
- d. There is no relationship between the angle of incidence and the angle of reflection.

