



S-CAT GRAND FINALE

Sample Paper

(Based on the new exam pattern)



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.
- **New Exam Pattern:**
 1. Each question will carry 1, 2, or 4 marks, depending on its difficulty level.
 2. **Negative Marking:** Additional marks will be deducted for every incorrect answer (0.25 marks for a 1-mark question, 0.5 marks for a 2-mark question, and 1 mark for a 4-mark question).
 3. The Assessment Round score will be included in the Grand Finale score using a weighted average method. 30% of the Assessment Round and 70% of the Grand Finale score.
 4. New Method to Calculate Marks for Grand Finale Awards.

	Assessment Round	Grand Finale
Actual Marks	60	80
Weightage	30%	70%
Marks After Weighted Average Rule	$60 \times 30/100 = 18$	$80 \times 70/100 = 56$
Final Marks for Grand Finale Awards	$18 + 56 = 74$	

- 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.

All The Best !

SECTION 1: Concept Check

- 1. What is the main function of stomata in leaves? (1m)**
 - a. To store food
 - b. To exchange gases
 - c. To absorb sunlight
 - d. To produce flowers
- 2. Which adaptation helps aquatic plants to float on water? (1m)**
 - a. Thick roots
 - b. Hollow stems
 - c. Hard leaves
 - d. Deep roots
- 3. Where does the exchange of gases (oxygen and carbon dioxide) take place in the lungs? (1m)**
 - a. Bronchi
 - b. Bronchioles
 - c. Alveoli
 - d. Trachea
- 4. Why do humans need to inhale oxygen and exhale carbon dioxide? (1m)**
 - a. Oxygen is used to break down food and release energy, carbon dioxide is produced in the process and needs to be removed.
 - b. Oxygen is a waste product that needs to be expelled.
 - c. Carbon dioxide is used by the body for cellular processes and needs to be inhaled.
 - d. Oxygen helps in the storing of food, while carbon dioxide helps in respiration
- 5. What is the correct sequence for blood being pumped from the heart to the lungs? (1m)**
 - a. Left atrium → left ventricle → pulmonary artery
 - b. Left atrium → left ventricle → pulmonary vein
 - c. Right atrium → right ventricle → pulmonary artery
 - d. Right atrium → right ventricle → pulmonary vein
- 6. Which organism is responsible for causing diseases like malaria and sleeping sickness? (1m)**
 - a. Bacteria
 - b. Virus
 - c. Protozoa
 - d. Fungi
- 7. Why are vaccines important in preventing diseases? (1m)**
 - a. They completely cure diseases.
 - b. They stimulate the immune system to fight specific diseases.
 - c. They kill harmful bacteria in the body.
 - d. They directly eliminate the cause of diseases.
- 8. What is the basic structural and functional unit of life? (1m)**
 - a. Organ
 - b. Tissue
 - c. Cell
 - d. Organism
- 9. Which state of matter has a definite shape and definite volume? (1m)**
 - a. Solid
 - b. Liquid
 - c. Gas
 - d. Plasma
- 10. Which of the following forces is a non-contact force? (1m)**
 - a. Frictional force
 - b. Gravitational force
 - c. Muscular force
 - d. Normal force

SECTION 2: Skill Application

11. Given below is the nutrient profile of Black Chana. Which is the major nutrient found in them? (2m)

Nutrient Profile of Black Chana (100 grams, raw)

Nutrient	Amount	Unit
Energy	360	kcal
Protein	19.5	g
Carbohydrates	58.9	g
Dietary Fibre	17.5	g
Fat	6.7	g
Saturated Fat	0.69	g
Polyunsaturated Fat	2.67	g
Mono-unsaturated Fat	1.36	g

- a. Proteins b. Carbohydrates c. Vitamins d. Fats

12. If the xylem in a plant is damaged, which process will be affected first? (2m)

- a. Transport of food b. Formation of flowers
c. Transport of water d. Photosynthesis

13. Nerium is a desert plant, which has thick and waxy leaves. (2m)



How do these adaptations help it to survive?

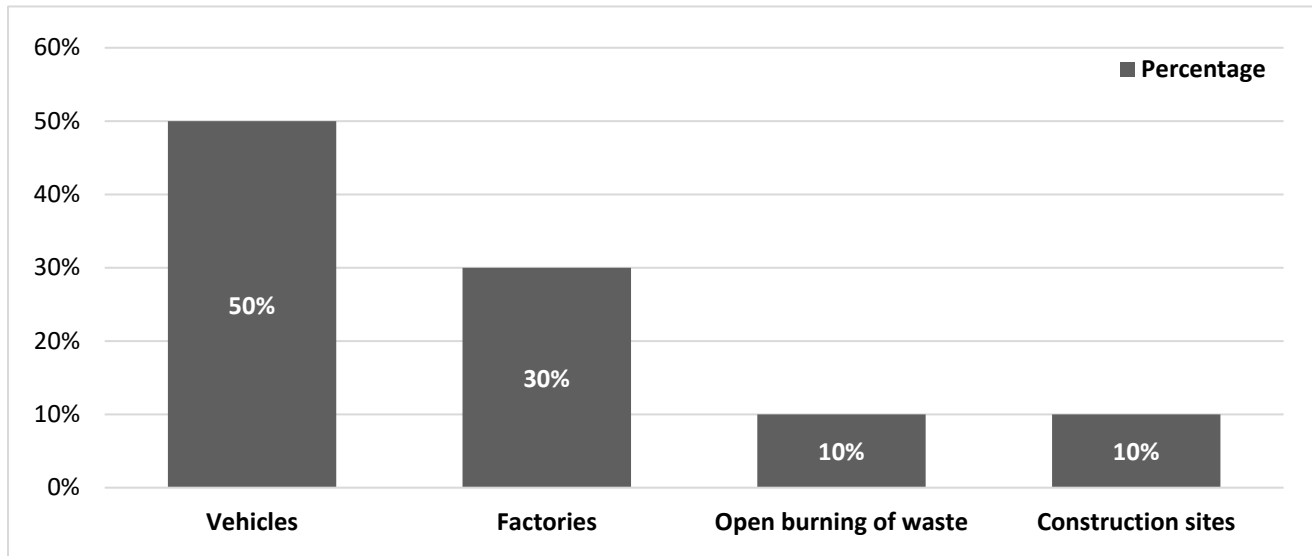
- a. To attract insects
b. To reduce water loss
c. To perform more photosynthesis
d. To store sunlight

14. If a factory releases untreated waste into a river, which of the following is most likely to happen? (2m)



- a. The water will become clearer.
b. Aquatic animals will thrive.
c. The water will become polluted and plants and animals may die.
d. Plants near the river will grow faster.

15. The following graph shows the sources of air pollution in a city. (2m)



What could be the most effective way to reduce air pollution in this city?

- a. Ban all factories.
- b. Promote electric vehicles and carpooling.
- c. Stop all construction projects.
- d. Encourage burning of waste in controlled areas.

16. Saliva contains an enzyme that begins the digestion of carbohydrates. What is this enzyme, and what is its function? (2m)

- a. Pepsin: breaks down protein
- b. Amylase: breaks down starch into simple sugars
- c. Lipase: breaks fats into fatty acids
- d. Trypsin: helps in protein digestion

17. After running a race, you notice that your breathing is rapid. Why does this happen? (2m)

- a. The body needs more oxygen to produce energy.
- b. The body is trying to release excess water.
- c. The body is cooling itself down.
- d. The heart rate decreases as you exercise.

18. If you take a drop of blood and place it on a glass slide, then observe it under a microscope, what will you observe? (2m)

- a. Only white blood cells
- b. Only plasma
- c. Red blood cells, white blood cells and platelets
- d. Platelets and plasma

19. Which of the following habits can help maintain a healthy circulatory system? (2m)

- a. Eating foods high in fats and sugars
- b. Avoiding regular exercise
- c. Eating a balanced diet and exercising regularly
- d. Smoking regularly

20. What is the best way to prevent the spread of viral infections like the flu in a crowded area? (2m)

- a. Washing hands with soap and water regularly
- b. Keeping windows closed
- c. Sharing food with others
- d. Avoiding any form of physical activity

21. What would happen to a plant if its chloroplasts stopped functioning? (2m)

- a. The plant would no longer be able to perform photosynthesis.
- b. The plant would produce more oxygen.
- c. The plant would increase its growth rate.
- d. The plant would stop breathing.

22. When observing a cell under a microscope, you see a large central vacuole. What type of cell are you most likely observing? (2m)

- a. Animal cell
- b. Plant cell
- c. Bacterial cell
- d. Fungal cell

23. Based on the table below, which substance requires the more heat to turn from solid to liquid? (2m)

Substance	Melting Point (°C)
Ice	0°C
Wax	60°C
Lead	327°C
Gold	1064°C

- a. Ice
- b. Wax
- c. Lead
- d. Gold

24. What happens to the molecules of a solid when it is heated? (2m)

- a. The molecules move slower.
- b. The molecules stay in one place.
- c. The molecules move faster.
- d. The molecules change into atoms.

25. Why is it easier to move a suitcase with wheels compared to the one without wheels? (2m)

- a. Wheels reduce friction.
- b. Gravity acts only on dragging.
- c. Air pressure decreases with wheels.
- d. The suitcase becomes lighter with wheels.

SECTION 3: Case-Based Science

26. Nisha is unable to see properly in dim light. What should be included in her diet? (2m)

- a. Pulses
- b. Fish
- c. Carrots
- d. Cheese

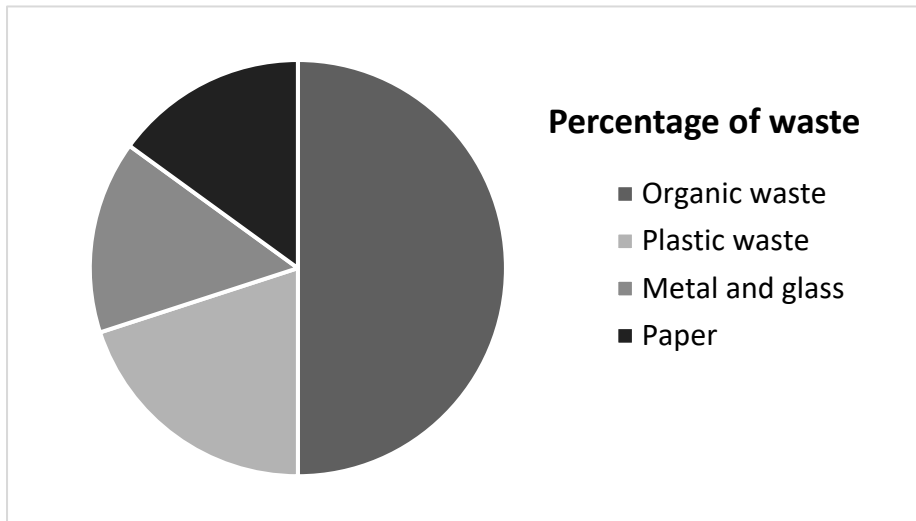
27. Manish wants to find out if a food contains starch. What is the result when iodine solution is added to a food item containing starch? (2m)

- a. It turns red.
- b. It turns blue-black.
- c. It turns yellow.
- d. No change

28. Mary notices that waste at her home is being thrown into the same bin without separating food waste, paper, plastic, and other materials. What problem may arise because of this? (2m)

- a. Increase in the recycling process
- b. Easy decomposition of waste
- c. Difficulty in managing waste
- d. Faster decomposition of plastic

29. The pie chart below shows the percentage of waste generated in a city: (2m)



Based on the data above, which type of waste can be composted to significantly reduce environmental pollution?

- a. Plastic waste b. Metal and glass c. Paper d. Organic waste
30. Anna visits a pond and notices that the water has an unpleasant smell and that there are fewer fish than usual. She also observes waste floating on the surface of the water. What could be the main reason for these changes in the pond? (2m)
- a. High oxygen levels b. Excessive waste and pollutants
c. Lack of sunlight d. More aquatic plants
31. Alice and her family live in a city where many factories have recently increased their production. She notices that the air is often filled with smoke and that several people in her neighbourhood have developed breathing problems and other respiratory diseases. What could be the most likely reason for the increase in respiratory diseases in Alice's city? (2m)
- a. Contaminated drinking water b. Poor waste management
c. Air pollution due to industrial emissions d. Excessive use of chemical fertilizers
32. Akash noticed that whenever he included fruits, vegetables, and whole grains in his meals, he was less likely to experience constipation. What conclusion can be drawn from his observation? (2m)
- a. Fibrous foods provide energy. b. Fibrous foods help clean the digestive tract.
c. Fibrous foods produce digestive enzymes. d. Fibrous foods are stored in the body.
33. During a science activity, Josh and his classmates want to find out how long it takes a toy car to travel from one end of the table to the other. Their teacher gives them a few measuring instruments. Which instrument should Josh use to measure the time taken by the toy car? (2m)
- a. Barometer b. Stopwatch c. Vernier calliper d. Spring balance
34. During a classroom experiment, Jane places a toy car at the top of a sloping surface and releases it without applying any additional force. She observes that the car moves downward along the slope. What conclusion can she draw from this observation? (2m)
- a. Friction causes the car to move downward.
b. Balanced forces keep the car moving downward.
c. Gravity pulls the car downward along the slope.
d. Air pressure causes the car to move downward.

- 35. Meera is observing her shadow at different times of the day. She notices that her shadow is very short around noon but becomes much longer in the evening. Why does the length of Meera's shadow change during the day? (2m)**
- The light source moves closer to Meera at noon.
 - The angle of the Sun changes during the day.
 - Shadows do not depend on the position of the Sun.
 - Shadows disappear completely at noon.
- 36. Ananya is about to switch on a fan after washing her hands. Her mother notices that her hands are still wet and asks her to dry them first. Why could be the reason for that? (2m)**
- To prevent the appliance from getting dirty
 - To avoid the risk of electric shock
 - To save electricity
 - To keep the appliance dry
- 37. During a science activity, Maya's teacher breaks a bar magnet into two pieces and gives one piece each to Ananya and Riya. She asks the students to test the two pieces with small iron objects. What will the students observe? (2m)**
- One piece will have only a north pole and the other only a south pole.
 - Only one of the two pieces will attract iron objects.
 - The two pieces will lose all their magnetic properties.
 - Both pieces will have their own north and south poles.
- 38. During a science activity, Varun tries to lift a heavy bucket from a well. His teacher explains that a simple machine can make the task easier. Which simple machine would help Ananya lift the bucket most easily? (2m)**
- Pulley
 - Wedge
 - Inclined plane
 - Lever
- 39. During a school science activity, Emma's teacher asks the students to observe the Sun safely. Emma suggests looking directly at the Sun while wearing sunglasses because she thinks the glasses will protect her eyes. The teacher explains that this is unsafe. Why should Emma avoid looking directly at the Sun, even with sunglasses? (2m)**
- It reduces visibility temporarily.
 - It can damage the eyes permanently.
 - It can make shadows disappear.
 - It makes light too bright to bear.
- 40. During a science experiment, Aarav connects a small bulb to a battery using a copper wire. The bulb glows brightly. He then replaces the copper wire with a plastic wire and notices that the bulb no longer glows. What can he conclude from this observation? (2m)**
- Plastic allows electricity to flow faster than copper.
 - Plastic does not allow electric current to flow through the circuit.
 - Plastic makes the battery produce less electricity.
 - Plastic makes the bulb glow dimmer.
- 41. Neha has a rope that is 2.5 metres long. She cuts the rope into 5 equal pieces to make decorations for a classroom project. What is the length of each piece? (2m)**
- 0.5 m
 - 1 m
 - 2 m
 - 2.5 m

42. A student drops a mixture of iron pins, plastic beads, and small pieces of paper on a table. He wants to separate the iron pins quickly without picking them out one by one. Which method would be **MOST** effective? (2m)
- Add water to the mixture and collect the floating objects.
 - Blow air over the mixture to remove the iron pins.
 - Heat the mixture so that the iron pins separate.
 - Use a magnet to attract and remove the iron pins.
43. A student wants to measure a piece of string but finds that the zero mark of the ruler is damaged. He places one end of the string at the 2 cm mark and the other at the 18 cm mark. What should he do to find the actual length? (2m)
- Add 2 cm and 18 cm.
 - Subtract 2 cm from 18 cm.
 - Take 18 cm as the actual length.
 - Take 2 cm as the actual length.
44. A patient has difficulty swallowing because the muscular movement of his oesophagus is not working properly. Which process is **MOST** likely affected? (2m)
- Absorption
 - Egestion
 - Assimilation
 - Peristalsis
45. A mechanic notices that the moving parts of a bicycle become hot and difficult to move after the bicycle has been used for a long time. He applies a small amount of oil to the chain and moving parts. After this, the bicycle moves more smoothly. Which of the following **BEST** explains why applying oil makes the bicycle easier to operate? (2m)
- Oil increases the weight of the bicycle, making it more stable.
 - Oil reduces friction between the moving surfaces, allowing them to move more easily.
 - Oil increases the force of gravity acting on the bicycle.
 - Oil stops the moving parts from touching the bicycle.

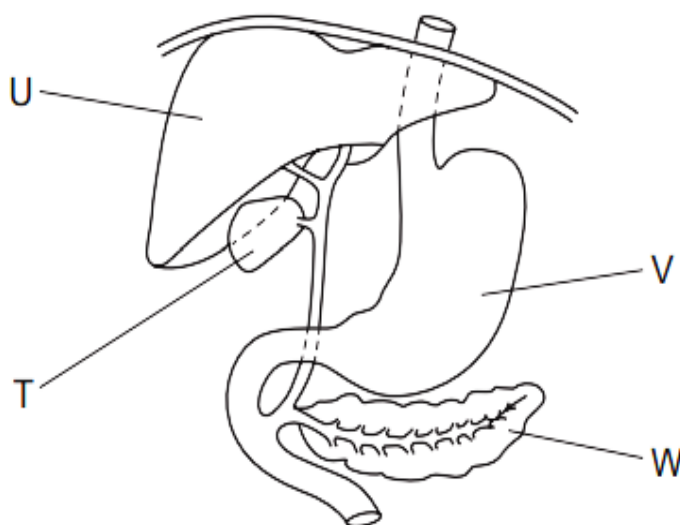
SECTION 4: Challenger's Section

46. During a science activity, Anya studies the diagram of the human digestive system shown below. (2m)

If the organ U, V, W or T stops functioning properly, which of the following statements would be correct?

Statements:

- Organ U produces bile, and digestion of fats would be affected because bile helps break large fat droplets into smaller ones.
 - Organ V produces bile, and digestion of proteins would stop completely because bile is the main enzyme for protein digestion.
 - Organ T changes starch into sugar using bile, so digestion of carbohydrates would stop.
 - Organ W controls the movement of food from the stomach into the small intestine, so food would not be able to move forward.
- Only i is correct
 - Only i and ii are correct
 - Only ii and iii are correct
 - All are correct



47. Arjun stood in front of a plane mirror and raised his right hand. He noticed that the image in the mirror appeared to raise its left hand. His teacher explained that the mirror produces a special type of reversal.

Assertion (A): The image formed by a plane mirror shows lateral inversion.

Reason (R): In lateral inversion, the left and right sides appear reversed.

Choose the correct option: (2m)

- a. Both A and R are true, and R is the correct explanation of A.
- b. Both A and R are true, but R is NOT the correct explanation of A.
- c. A is true, but R is false.
- d. A is false, but R is true.

48. Ninad wants to make electromagnet. He has the following materials: (2m)

- | | | |
|---------------|--------------------------|------------------|
| 1. Iron nail | 2. Insulated copper wire | 3. Paper sheet |
| 4. Battery | 5. Iron filings | 6. Paper clips |
| 7. Bar magnet | | |
| 8. Compass | 9. Plastic ruler | 10. Wooden stick |

Which of the following set of materials will he need to construct a simple electromagnetic?

- a. 1, 2, and 7
- b. 4, 5 and 6
- c. 1, 2, and 4
- d. 5, 6, 9 and 10

49. Arrange the following organisms in the correct order of a food chain: (2m)

- | | | |
|----------|----------------|--------|
| 1. Eagle | 2. Corn plant | 3. Rat |
| 4. Snake | 5. Grasshopper | |

- a. Corn plant → Grasshopper → Rat → Snake → Eagle
- b. Grasshopper → Corn plant → Rat → Snake → Eagle
- c. Corn plant → Rat → Grasshopper → Snake → Eagle
- d. Eagle → Snake → Rat → Grasshopper → Corn plant

50. Consider the following statements: (2m)

- | | |
|-----------------------------|----------------------------------|
| I. The diaphragm contracts. | II. The chest cavity expands. |
| III. The lungs contract. | IV. Air is drawn into the lungs. |
| V. Diaphragm moves upwards. | |

Which of the given statements are correct about inhalation?

- a. I and II only
- b. II, III and IV only
- c. I, III and V only
- d. I, II and IV only

