



## CREST Science Olympiad (CSO)

# Sample Paper

## Pattern and Marking Scheme

Grade	Topic/Section	No. of Questions	Marks per Question	Total Marks
Grade 7	Practical Science	40	1	40
	Achiever's Section	10	2	20
<b>Grand Total</b>		<b>50</b>		<b>60</b>

The total duration of the exam is 60 minutes.

## Syllabus

**Section 1:** Heat, Motion and Time, Electric Current and its Effects, Winds, Storms and Cyclones, Light, Acids, Bases and Salts, Physical and Chemical Changes, Weather, Climate and Adaptations of Animals to Climate, Fibre to Fabric, Nutrition in Plants and Animals, Respiration in Organisms, Transportation in Plants and Animals, Reproduction in Plants, Natural Resources and Their Conservation.

**Achievers Section:** Higher Order Thinking Questions - Syllabus as per Section 1

For more details, visit <https://www.crestolympiads.com/science-olympiad-cso>

## Practical Science (Each Question is 1 Mark)

1. The following statements describe how the transport system in the plant works.

Which of these is a correct sequence?

P - Xylem tubes carry water and mineral salts to other parts of the plant.

Q - The leaves make food in the presence of sunlight.

R - The leaves receive water and mineral salts.

S - Phloem tubes transport food to other parts of the plant.

T - Root hairs absorb water and mineral salts from the soil.

a.  $P \rightarrow T \rightarrow Q \rightarrow R \rightarrow S$

b.  $T \rightarrow P \rightarrow R \rightarrow Q \rightarrow S$

c.  $T \rightarrow R \rightarrow P \rightarrow Q \rightarrow S$

d.  $R \rightarrow Q \rightarrow T \rightarrow P \rightarrow S$

2. Kevin's teacher asked him to identify the correct order of the processes listed below to purify water and make it safe for drinking.

i. Filtration

ii. Sedimentation

iii. Chlorination

iv. Addition of chemicals

Which of the following is the correct order that Kevin arranged?

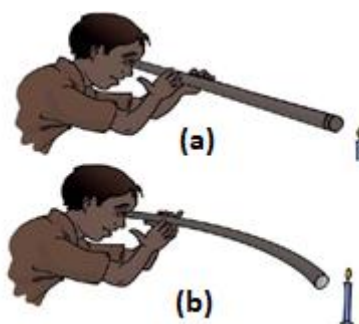
a. (i), (iii), (iv), (ii)

b. (iv), (ii), (i), (iii)

c. (ii), (iv), (i), (iii)

d. (iii), (ii), (iv), (i)

3. Peter wanted to see the light of the candle. In the given picture (a), he took a straight hose and, in the picture, (b) he took a bent hose. He saw the light of the candle from the straight hose as shown in picture (a) but could not see the light from the candle as shown in picture (b). What can we prove from the above experiment?



a. Light changes direction.

b. Light travels along a straight line.

c. Light travels along a curved line.

d. None of these

4. Which of the following pairs is/are INCORRECT?

	Name of the acid	Where is it found?
P.	Acetic acid	Vinegar
Q.	Citric acid	Orange
R.	Formic acid	Spinach
S.	Oxalic acid	Ant's sting

- a. Only P and Q
- b. Only Q and R
- c. Only P and S
- d. Only R and S

5. Read the clues carefully and answer the question that follows:

Clue 1: I live in tropical rainforests.

Clue 2: I have a long and large beak.

Clue 3: I can reach for fruits on branches which are not easily reachable.

Who am I?

- a. Penguin
- b. Siberian crane
- c. Toucan
- d. Hoopoe

6. Choose the INCORRECT statement from the following options related to photosynthesis:

- a. Green plants synthesise their food themselves by the process of photosynthesis. They are autotrophs.
- b. Algae can also prepare their own food by the process of photosynthesis.
- c. Desert plants cannot carry out photosynthesis.
- d. Plants with red and brown leaves can also prepare their own food.

7. Read the passage given below and fill in the blank:

A few plants and all animals are dependent on others for their nutrition and are called heterotrophs. Plants like \_\_\_\_\_ are parasites. They take food from the host plant.

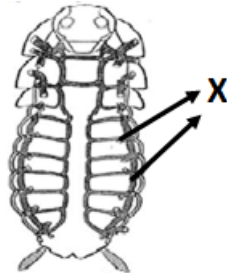
- a. cuscuta
- b. pitcher plant
- c. bacteria
- d. fungi

8. Which of the following pair is wrongly classified?

	Mode of nutrition	Examples of plants
1.	Autotrophic	Desert plants
2.	Heterotrophic	Cuscuta
3.	Saprotrophic	Algae

- a. Only 1
- b. Only 2
- c. Only 3
- d. Both 1 and 2

9. Name the part marked 'X' in the organism shown below:



- a. Spiracles
- b. Tracheae
- c. Diaphragm
- d. Gills

10. Look at the pictures of sealing wax, wooden statue and catechu and identify the similarity between them correctly:



- a. They are all forest products.                      b. They are all obtained from wood.  
 c. They all have medicinal values.                d. None of these
11. Fill in the blanks:
- We should bow down on knees protecting our head and neck using arms to protect ourselves from a \_\_\_\_\_.
  - The safest place to take shelter when a storm is accompanied by lightning is \_\_\_\_\_.
- a. 1- earthquake, 2-under a tree                      b. 1-tornado, 2-in a car or a bus  
 c. 1-hurricane, 2-on a tree                            d. 1-flood, 2-under a table

12. Look at the pictures shown below and identify the similarity between them correctly:




- a. Both are chemical changes.                      b. Both are physical changes.  
 c. Both show rusting.                                    d. Both show crystallisation.
13. Read the following statements and choose the correct one:  
**Statement 1:** Conduction can happen only if the objects are in contact.  
**Statement 2:** Conduction can happen only if their temperatures are not the same.
- a. Only statement 1                                      b. Only statement 2  
 c. Both the statements are wrong                    d. Both the statements are correct

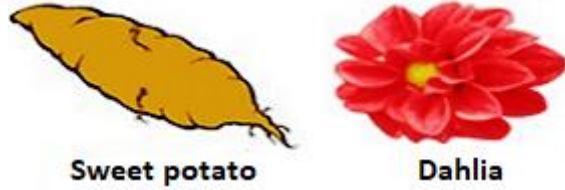
14. Picture 1 shows an athlete running a race and picture 2 shows a biker riding a bike on a rough mountain. What is the similarity seen between these two pictures?



- a. Both are moving in a uniform motion.            b. Both are moving in an oscillatory motion.  
 c. Both are moving in a circular motion.            d. Both are moving in a non-uniform motion.

15. What happens to the strength of an electromagnet when the current passing through its coil is increased?
- The strength decreases.
  - The strength remains constant.
  - The strength increases.
  - The strength reverses polarity.
16. Fill in the blank:  
 \_\_\_\_\_ helps in the efficient supply of oxygen to all the cells of the body.
- Red blood cells
  - Haemoglobin
  - White blood cells
  - Platelets
17. Complete the following sentence:  
 Pulmonary veins are thick-walled blood vessels as they \_\_\_\_\_.
- carry oxygenated blood from the heart to the lungs
  - carry oxygenated blood from the lungs to the heart
  - carry deoxygenated blood from the lungs to the heart
  - carry deoxygenated blood from the heart to the lungs
18. What is the similarity between quinine, sandalwood oil and eucalyptus oil?
- They are not forest products.
  - They are all obtained from the excretory products of plants.
  - They all help to treat malaria and dengue.
  - They all provide essential oils.
19. Complete the sentence:  
 The change in the shape of a hot tin can containing water vapour, when cold water is poured on it is because \_\_\_\_\_.
- 
- pressure outside the can is the same as that inside
  - pressure inside the can becomes less than that outside
  - pressure inside the can becomes equal to the atmospheric pressure
  - pressure inside the can becomes more than that outside
20. Fill in the blanks:  
 The water which is lost through the stomata is replaced by water from the \_\_\_\_\_ vessels in the leaf. Evaporation of water molecules from leaf's cells creates a suction which pulls the water from the \_\_\_\_\_ cells of the root.
- xylem, xylem
  - xylem, phloem
  - phloem, phloem
  - phloem, xylem

21. Look at the pictures shown below and spot the similarity between them:



- a. They have buds in their leaves which can give rise to new plants.
- b. The roots of these plants give rise to new plants.
- c. They both contain vegetative buds.
- d. They produce new plants when their parts get detached from the main plant body.

22. What will be the climate of a place where there is very less rainfall and high temperature throughout the year?

- a. Hot and dry
- b. Wet
- c. Cold
- d. Hot and wet

23. Given below are pictures of corn, papaya and cucumber. Identify the similarity between them correctly:



- a. They produce bisexual flowers.
- b. They have tri-sexual flowers.
- c. They produce unisexual flowers.
- d. They reproduce by vegetative propagation.

24. Which of the following statements is/are correct?

- a. Celsius (°C) is the unit of temperature.
- b. 30°C = 303 K
- c. When heat energy flows from one body to another, the change in temperature of the bodies need not be equal.
- d. All of the above

25. Match column I with column II and select the correct option from the codes given:

	Column I		Column II
1.	Shearing	a.	Washing sheared skin to remove dirt
2.	Scouring	b.	Removal of fleece of sheep
3.	Sorting	c.	Anthrax
4.	Fatal blood disease	d.	Hair of different textures separated

- a. 1 - a, 2 - b, 3 - d, 4 - c
- b. 1 - d, 2 - a, 3 - b, 4 - c
- c. 1 - b, 2 - a, 3 - d, 4 - c
- d. 1 - c, 2 - d, 3 - a, 4 - b

26. Fill in the blanks:

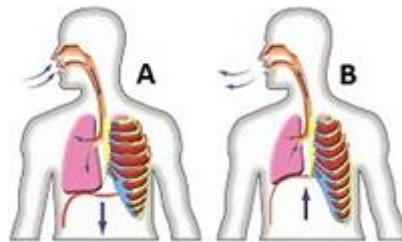
1. Angle between \_\_\_\_\_ and \_\_\_\_\_ is called as the angle of reflection.
  2. Angle of incidence is always \_\_\_\_\_ angle of reflection.
- a. 1-reflected ray, incident ray, 2-less than
  - b. 1-reflected ray, normal, 2-equal to
  - c. 1-normal, surface, 2-greater than
  - d. 1-incident ray, reflected ray, 2-less than

27. Which of the following is not an application of heat?

- a. The bending of rails due to thermal expansion
- b. Fixing the axle of a wheel
- c. Using a bimetallic strip to measure temperature
- d. None of the above

28. Observe the picture shown below and choose the correct option to complete the following sentence:

A indicates the process of \_\_\_\_\_ and B indicates the process of \_\_\_\_\_.

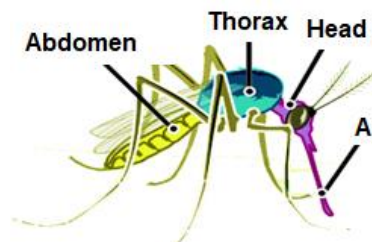


- a. inhalation, exhalation
- b. exhalation, inhalation
- c. breathing, inhalation
- d. exhalation, breathing

29. Fill in the blanks:

1. The light material which floats during wastewater treatment is \_\_\_\_\_.
  2. \_\_\_\_\_ is produced during wastewater treatment.
  3. Wastewater from \_\_\_\_\_ may contain radioactive materials.
- a. 1-biogas, 2-Sludge only, 3. rain
  - b. 1-sludge, 2-Biogas, 3. industries
  - c. 1-sewerage, 2-Scum, 3. houses
  - d. 1-scum, 2-Sludge and biogas, 3. hospitals

30. What is the labelled part A called?

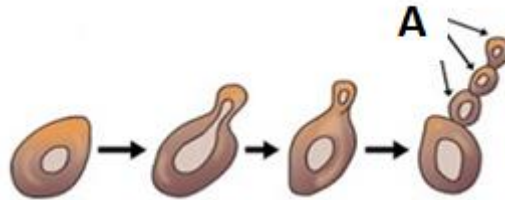


- a. Proboscis
- b. Needle
- c. Spiracles
- d. Antennae

31. Physical changes are temporary and can be easily reversed to their previous form. Which of the following physical changes is not a reversible change?

- a. Bursting of a balloon
- b. Squeezing of a balloon
- c. Cooling of a molten wax
- d. Cooling of red-hot iron

32. Look at the figure given below and answer the following question:  
What are the labelled parts called in an yeast? (plural form)



- a. Sponges
- b. Buds
- c. Fragments
- d. Eyes

33. Consider the following statements and choose the correct option:

Statement 1: When we stand in front of a bonfire, we experience heat transfer primarily by conduction.

Statement 2: If you touch a metal spoon that has been placed in a hot cup of tea, you will feel heat transfer from the spoon to your hand. This heat transfer is primarily due to convection.

- a. Statement 1 is correct but statement 2 is incorrect.
- b. Statement 1 is incorrect but statement 2 is correct.
- c. Both the statements are correct.
- d. Both the statements are incorrect.

34. Select the correct statement(s):

1. Manures and fertilizers are added to increase the fertility of the soil.
2. Sun is the ultimate source of energy for all living organisms.
3. Cells of the pitcher of Nepenthes plant secrete digestive juices to digest the insect.

- a. Only 1 is correct
- b. Only 2 is correct
- c. Only 1 and 2 are correct
- d. 1, 2 and 3 are correct

35. Fill in the blanks:

The simple form of nutrients obtained after digestion gets absorbed in \_\_\_\_(I)\_\_. The remaining matter goes into the \_\_\_\_(II)\_\_ where an excess of \_\_\_\_(III)\_\_ is absorbed. The remaining waste is called \_\_\_\_(IV)\_\_ and it is pushed into the rectum where it is stored before leaving the body through the anus.

- a. (I) small, (II) rectum, (III) water, (IV) urine
- b. (I) stomach, (II) small intestine, (III) nutrients, (IV) faeces
- c. (I) large intestine, (II) small intestine, (III) water, (IV) bolus
- d. (I) small intestine, (II) large intestine, (III) water, (IV) faeces

36. A person sitting in open car moving at constant velocity throws a ball vertically upwards in air. If effect of air resistance is neglected, the ball will fall:



- a. exactly in the hands of the person
- b. outside the car
- c. in the car behind the person
- d. in the car ahead of the person

37. In symbiosis two organisms live together and get benefit from each other which is mutually beneficial to both. Which of the following show this type of relationship?

- a. Pitcher plant
- b. Cuscuta
- c. Lichens
- d. None of these

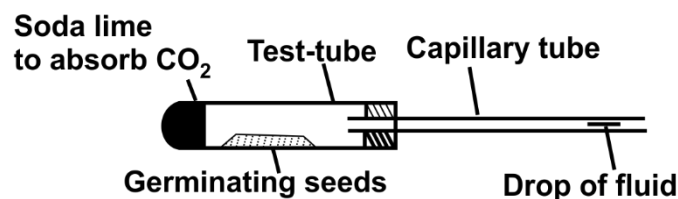
38. Which of the following statements are correct?

1. Flowers bearing stamens and pistils are bisexual flowers.
2. An ovule bears a female gamete.
3. Flowers bearing pistils only are neutral flowers.
4. Budding in yeast is sexual reproduction.

- a. 1, 2 and 3 are correct
- b. 1 and 2 are correct
- c. 2 and 4 are correct
- d. 1 and 3 are correct

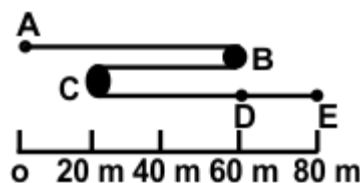
39. Study the given experimental set-up.

What will happen to the drop of fluid in the capillary tube over the next few hours?



- a. It will move away from the test tube because of oxygen output by the seeds.
- b. It will move towards the test tube because of carbon dioxide intake by the seeds.
- c. It will move towards the test tube because of oxygen intake by the seeds.
- d. It will not move, because carbon dioxide intake and oxygen output are equal.

40. A walker follows the path from A and E (figure) over an 80 s time interval. What total distance does the walker cover between A and E?



- a. 160 m
- b. 80 m
- c. 20 m
- d. 40 m

## Achiever's Section (Each Question is 2 Marks)

41. What happens when a synthetic fibre like polyester is burned?

- A. It melts and drips
- B. It produces a pleasant fragrance
- C. It produces a black, sooty smoke
- D. It ignites with a bright flame

- a. Only A
- b. Only B
- c. Both B and C
- d. Both C and D

42. Read the statements below and choose the correct one:

- 1. Eucalyptus trees release pure water vapour into the atmosphere if planted along sewage ponds.
  - 2. Cooking oil and fats if thrown in drains harden and block pipes.
  - 3. Open drains overflow in the rainy season and is a breeding place of flies and mosquitoes.
- a. 1 and 2
  - b. 1 and 3
  - c. 2 and 3
  - d. 1, 2 and 3

43. Which of the following statements is true about some solids found at room temperature?

- a. The solids have melting points above room temperature.
- b. The solids have melting points below room temperature.
- c. The solids have no melting point.
- d. Some solids have melting points below room temperature and others have melting points at 0°C.

44. Which of the following is/are chemical change(s)?

- 1. Formation of clouds
  - 2. Formation of rust
  - 3. Tearing of a paper
  - 4. Formation of black coating on the walls of the tube light
- a. Only 1
  - b. Only 2
  - c. Both 2 and 3
  - d. Both 2 and 4

45. Ron took two salts A and B in two test tubes I and II, respectively, and subjected them to heating. After that, he added water to the two test tubes, in test tube I salt regained its original colour and in test tube II water started boiling. Identify A and B:

- a. A-Blue vitriol, B-Limestone
- b. A-Nitrite, B-Baking soda
- c. A-Nitrite, B-Limestone
- d. None of these

46. When you pour hot tea suddenly into a glass tumbler, it cracks. Which of the following could be the reason for the above-given statement?

- a. Glass cannot resist heat
- b. Glass expands unevenly around the place of contact with the tea
- c. Tea has chemicals which react with glass tumblers
- d. The reason is yet to be discovered by the scientists.

47. Given below are some adaptations shown by animals:

- i. Beautiful coloured feathers
- ii. Long tail
- iii. Thick fur
- iv. Subcutaneous fat and thick skin
- v. Poison glands

- vi. Longer beaks
- vii. Keen eyesight
- viii. Smaller sized limbs and ears

Which of the above adaptations are rainforest adaptations?

- a. i, ii and vi only
- b. ii, iii, iv, vii and viii
- c. i, ii, v, vi and vii
- d. All of these

48. A motor car travels with a speed  $v_1$  from A to B and returns back from B to A with a speed  $v_2$ . What is the average speed of the car during its journey?

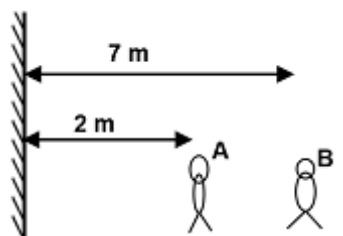
- a.  $(v_1 + v_2)/2$
- b.  $(v_1 v_2)/(v_1 + v_2)$
- c.  $(2v_1 v_2)/(v_1 + v_2)$
- d.  $\sqrt{(v_1 + v_2)}$

49. Take a small quantity of copper sulphate crystals and dissolve it in a small quantity of water to obtain a blue coloured solution. Add a few drops of dilute sulphuric acid. Now, put 3-5 medium-sized iron nails in it. Soon the colour of blue solution changes to green and a brown deposit appears on the iron nails.

Change in the colour from blue to green in the above activity represents:

- a. Physical change
- b. Chemical change
- c. Both physical and chemical change
- d. None of the above

50. Two children are standing in front of a plane mirror as shown. When the child A looks into the mirror, how far away from him will image of child B appear to be?



- a. 9 m
- b. 18 m
- c. 11 m
- d. 16 m

## Answer Key

1.	b	2.	c	3.	b	4.	d	5.	c	6.	c	7.	a
8.	c	9.	b	10.	a	11.	b	12.	b	13.	d	14.	d
15.	c	16.	b	17.	b	18.	b	19.	b	20.	a	21.	b
22.	a	23.	c	24.	d	25.	c	26.	b	27.	d	28.	a
29.	d	30.	a	31.	a	32.	b	33.	d	34.	d	35.	d
36.	a	37.	c	38.	b	39.	c	40.	a	41.	a	42.	d
43.	a	44.	d	45.	a	46.	b	47.	c	48.	c	49.	b
50.	a												