



#UnicusIsUnique

## Sample Paper



**Class 8**

## Unicus Science Olympiad (USO)

Time: 60 minutes

Pattern and Marking Scheme			
Section	Total Questions	Marks per Question	Total Marks
Classic Section	40	1	40
Scholar Section	10	2	20
Grand Total	50		60

## Classic Section (Each Question is 1 Mark)

1. If the door of a running refrigerator in a closed room is kept open, what will be the net effect on the room?
- It will cool the room.
  - It will heat the room.
  - It will make no difference on the average.
  - It will make the temperature go up and down.
- 

2. Look at the pictures of a crushed can and rolling of a chapatti below. Identify the similarity between these pictures:



- Both show rusting.
  - Both show chemical changes.
  - Both show physical changes.
  - Both show galvanisation.
- 

3. The class teacher is explaining a component named Z found in the human body. Read the clues given below and identify that component:

Clue 1: It contains plasma and a lesser number of WBCs and platelets.

Clue 2: It carries a small amount of oxygen.

Clue 3: The plasma lacks proteins.

Clue 4: It is a colourless fluid.

- Capillaries
  - Lymph
  - Platelets
  - Arteries
- 

4. Select the correct pair:

- Spinning - Process of making yarn from fibres
- Weaving of yarn - Makes a fabric
- Retting - Fibres separated from seeds of cotton by combing

- b and c
  - a and c
  - a and b
  - a, b and c
- 

5. Read the clues given below and identify the component present in air correctly:

Clue 1: I am present in air.

Clue 2: I enter your lungs when you inhale air.

Clue 3: You cannot live without me.

Clue 4: I help in combustion.

- Hydrogen
  - Oxygen
  - Nitrogen
  - Carbon dioxide
-

6. What is the difference between plastic (handle of screwdriver) and copper wire?



- a. Plastic is used for making batteries whereas copper is used for dry cells.
  - b. Plastic is used for making dry cells whereas copper is used for making electric cells.
  - c. Plastic is a good conductor of electricity whereas copper is a poor conductor of electricity.
  - d. Plastic is an insulator or poor conductor of electricity whereas copper is a good conductor of electricity.
- 

7. Arya dropped the following objects in the sand as given below. Which of the following will get attracted to a magnet very easily?

- 1. A wooden comb
- 2. A toothbrush
- 3. A cushion cover
- 4. A paint brush
- 5. A plastic CD
- 6. Nickle coin
- 7. Iron nail

- |            |            |
|------------|------------|
| a. 4 and 5 | b. 1 and 2 |
| c. 3 and 6 | d. 6 and 7 |
- 

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

Statement 1: When some liquid evaporates, the average speed of the remaining molecules will decrease because the more energetic molecules have left.

Statement 2: In liquids, thermal energy is transferred mainly by convection. Change in density is the cause of 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.
- 

9. Train X travels with a speed of 85 km/h from Mumbai to Delhi. The train Y travels with a speed of 85 km/h from Delhi to Mumbai, which of the following statements is true?

- a. Both trains are travelling with the same speed and same velocity.
  - b. Both trains have the same velocity.
  - c. Trains X and Y have the same speed but different velocities.
  - d. Trains X and Y have the same velocity but different speeds.
-

10. In the given question, an assertion and a reason are given. Choose the correct option:

**Assertion:** The strength of an electromagnet can be increased by increasing the number of turns of the coil per unit length.

**Reason:** A soft iron piece, which is kept in a coil of wire, behaves as a magnet when electricity is passed through the wire.

- a. Both assertion and reason are true and reason is the correct explanation of assertion
  - b. Both assertion and reason are true but reason is not the correct explanation of assertion
  - c. Assertion is true but reason is false
  - d. Assertion is false but reason is true
- 

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

Statement 1: Sometimes during heavy physical exercise, your body cannot get enough oxygen to produce the required energy.

Statement 2: To get the additional energy, aerobic respiration occurs in your muscle cells, during which partial breakdown of glucose occurs.

- 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.
- 

12. In the following question, an assertion and a reason are given. Choose the correct option:

- i. Bryophyllum has buds in the margins of leaves.
- ii. 'Eye' of the potato tuber represents a node which contains buds.
- iii. New plants cannot be grown from roots.
- iv. Plants produced by vegetative propagation take more time to grow than those produced from seeds

Which of the above statements are true?

- |                  |                       |
|------------------|-----------------------|
| a. (i) and (ii)  | b. (iii) and (iv)     |
| c. (i) and (iii) | d. (i), (ii) and (iv) |
- 

13. The distance between a plane mirror and the image of an object placed in front of the mirror is 4.5 m. If now the object is moved 1.4 m towards the mirror, then what will be the distance between the object and its image in the mirror?

- |          |          |
|----------|----------|
| a. 6 m   | b. 9 m   |
| c. 6.2 m | d. 7.4 m |
- 

14. In a neutralisation reaction, the acid reacts with a base to form salt and water and a lot of heat energy is given out. This reaction is:

- |                                  |                                   |
|----------------------------------|-----------------------------------|
| a. an exothermic physical change | b. an endothermic chemical change |
| c. an exothermic chemical change | d. an endothermic physical change |
-

15. Peter was inside his house watching television. What should he do in case of heavy lightning?
- He should go out and lie on the ground in an open place.
  - He should go into the nearest water body.
  - He should stay indoors away from metallic doors or windows.
  - He should stand under a tall tree.
- 

16. Match the Column I with Column II:

Column I		Column II	
A.	Earthworm	p.	Through skin
B.	Cockroach	q.	Tracheal system
C.	Prawn	r.	Gills
D.	Mammal	s.	Lungs

- A - p; B - q; C - r; D - s
  - A - q; B - p; C - r; D - s
  - A - r; B - q; C - s; D - p
  - A - s; B - q; C - p; D - r
- 

17. Which of the following statements is incorrect?

- When compounds are formed, heat is often given off.
  - Unlike elements, compounds and mixtures are both impure substances.
  - Unlike compounds, a mixture can be separated into its components by physical means.
  - Compounds and mixtures are both made of elements.
- 

18. Jack is in a room where there is no source of light. He holds a mirror in front of himself in that room. Which of the following is the most likely to observe?

- He will see his black shadow in the mirror.
  - He will not be able to see the colour of his clothes in the mirror.
  - He will see his dull image in the mirror.
  - He will see the colours of his clothes in the mirror.
- 

19. Four students made the following statements:

David: Marasmus is a disease caused by the deficiency of proteins and carbohydrates.

Kate: Iron is required for the formation of haemoglobin.

Michael: Calcium and potassium are examples of vitamins.

Ron: Excessive loss of water from the body causes dehydration.

Which of them is/are incorrect?

- Only David
  - Only Michael
  - Both Ron and Michael
  - Both Kate and Ron
-

**20.** Consider the following sentence and choose the correct option:

1. Nylon is not used for the manufacture of tyre cords, fabrics and ropes.
2. The insect in the cocoon is killed before reeling the silk.
3. Rayon is artificial silk. It is cheaper than silk and can be woven like silk fibres. It can also be dyed in a wide variety of colours.

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| a. 1 is correct but 2 and 3 are false | b. 2 is correct but 1 and 3 are false |
| c. 3 is correct but 1 and 2 are false | d. 2 and 3 are correct but 1 is false |
- 

**21.** Which of the following are not correct?

1. When an electric circuit is open, current flows through it.
2. A bulb does not work if it is fused.
3. The fuse breaks the circuit if a fault in an appliance causes too much current to flow.

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

**22.** Sarah lighted a candle. She observed the following changes:

1. The candle was burning.
2. Wax was melting.
3. The size of the candle was reducing.
4. Melted wax was getting solidified.

Which of the above changes cannot be reversed?

- |                 |                 |
|-----------------|-----------------|
| a. Only 1       | b. Only 2       |
| c. Both 2 and 4 | d. Both 1 and 3 |
- 

**23.** Consider the following statements and choose the correct option:

Statement 1: Two pieces of ice stick together when pressed over each other.  
Statement 2: As the pressure increases, the melting point of ice decreases.

- 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
- 

**24.** We cannot use a mercury thermometer to measure very low temperatures in cold regions instead alcohol is used.

Which of the following food is obtained from the roots of the plant?

- a. Alcohol freezes as it has a higher freezing point than mercury.
  - b. Heat does not flow from the body whose measurement we are taking with the thermometer.
  - c. At low temperatures mercury becomes transparent and it becomes difficult to take the readings.
  - d. The freezing point of mercury is greater than that of alcohol.
-

25. Kevin took a sample of soil, mixed it with water and allowed the mixture to settle. He observed that the clear supernatant solution turns the pH paper yellowish-orange. Which of the following would change the colour of this pH paper to greenish-blue?

a. Lemon juice  
c. Common salt  
b. Vinegar  
d. An antacid

26. Match the following:

Column I		Column II	
A.	Sweet potato	i.	Stem
B.	Potato	ii.	Bulb
C.	Onion	iii.	Root
D.	Scion	iv.	Graft

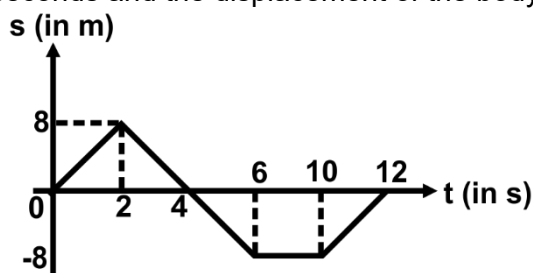
a. A - iii, B - ii, C - iv, D - i  
c. A - iii, B - i, C - ii, D - iv  
b. A - i, B - ii, C - iii, D - iv  
d. A - ii, B - i, C - iv, D - iii

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

- The humus makes the soil fertile and provides nutrients to growing plants. It is called the topsoil or B-horizon.
- C-horizon is made up of small lumps of rocks with cracks and crevices.
- Bedrock is hard and difficult to dig with a spade.

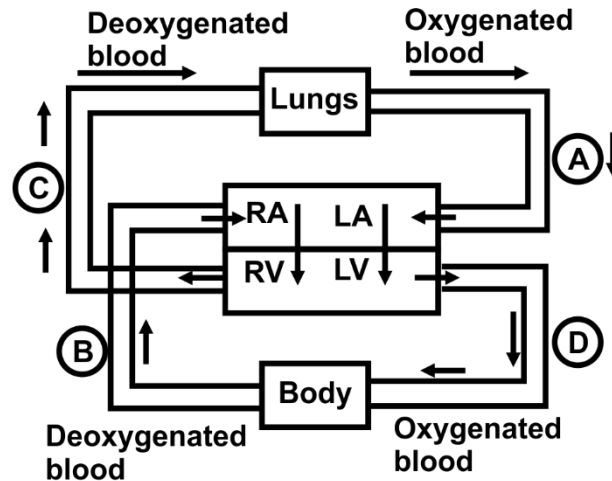
a. Only 1 is correct  
c. Both 1 and 3 are correct  
b. Only 2 is correct  
d. Both 2 and 3 are correct

28. Given below is the displacement-time graph of a body moving in a straight line. Find the distance covered in 6 seconds and the displacement of the body at the end of 12 seconds:



a. 16 m, 16 m  
c. 24 m, 0  
b. 8 m, 32 m  
d. 8 m, 0

29. The figure shows the pulmonary and systemic circulation. Identify the parts labelled as A, B, C and D in the diagrammatic representation:



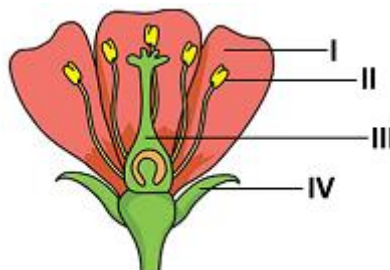
- A - Pulmonary artery, B - Pulmonary vein, C - Aorta, D - Vena cava
- A - Pulmonary vein, B - Vena cava, C - Pulmonary artery, D - Aorta
- A - Pulmonary vein, B - Aorta, C - Vena cava, D - Pulmonary vein
- A - Aorta, B - Vena cava, C - Pulmonary, D - Pulmonary artery

30. Which of the following adaptive features is not possessed by the bird shown in figure?



- It is a brightly coloured bird.
- It has strong and sharp claws called talons which help it to catch and tear its prey easily.
- It mainly feeds on fruits.
- It has a long, large and colourful beak.

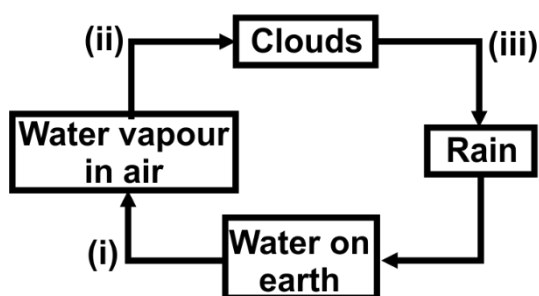
31. Which labelled part of the flower attracts bees and butterflies to help in pollination?



- I
- II
- III
- IV

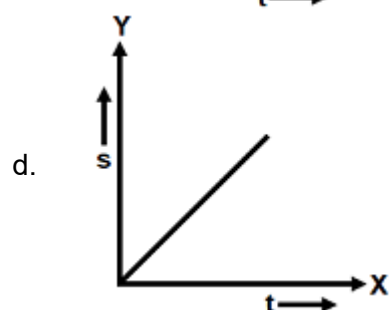
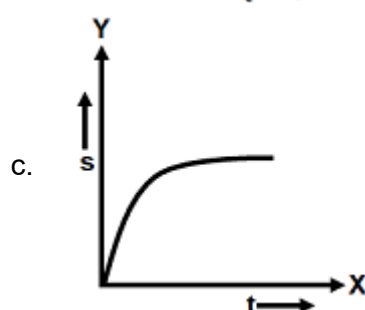
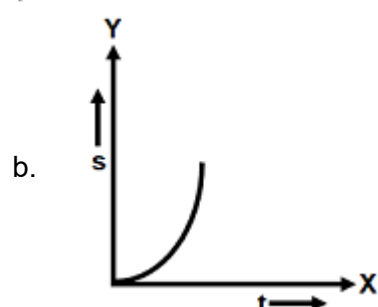
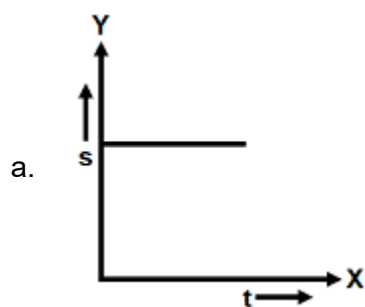
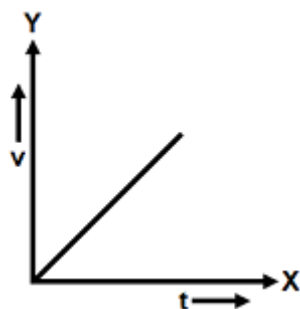


32. Study the given schematic diagram representing the water cycle. Identify the processes (i), (ii) and (iii), and select the correct option:



- a. (i) Evaporation, (ii) Condensation, (iii) Precipitation
- b. (i) Evaporation, (ii) Precipitation, (iii) Condensation
- c. (i) Precipitation, (ii) Evaporation, (iii) Condensation
- d. (i) Precipitation, (ii) Condensation, (iii) Evaporation

33. The velocity-time graph of a body is shown below. Which among the following is the displacement-time graph of the body?

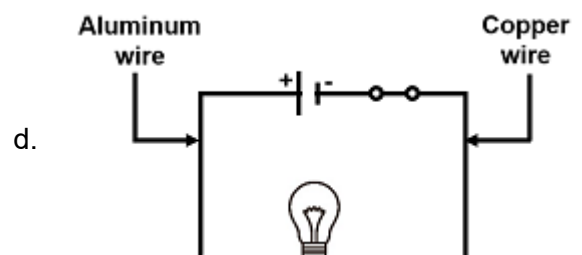
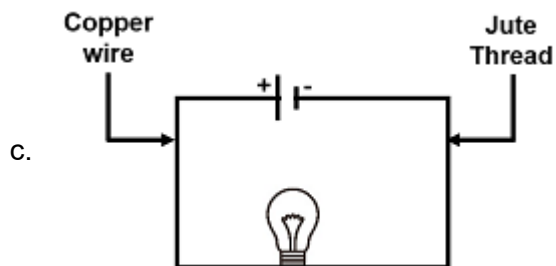
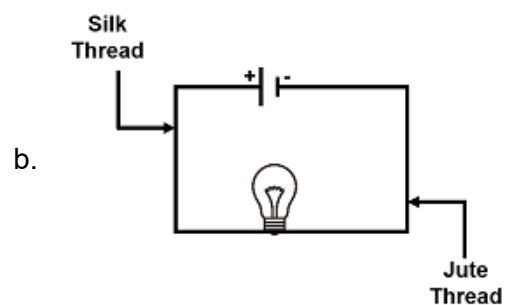
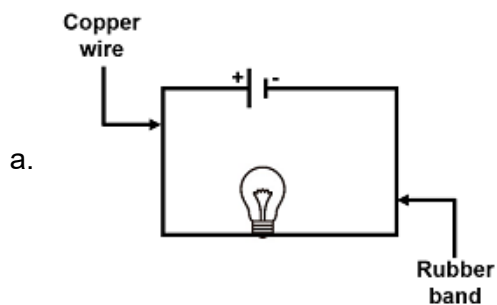


34. What is not true regarding the process shown by the given picture?

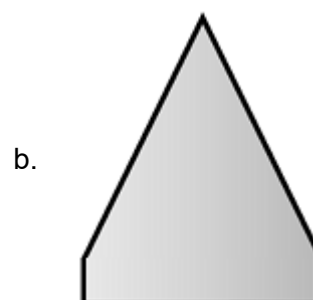
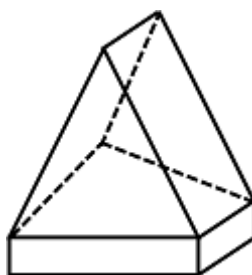


- a. A single yarn is used to make a piece of fabric.
- b. Fabric is made on a hand-operated loom.
- c. The fabric of different patterns can be made by this process.
- d. Yarns are converted into fabric.

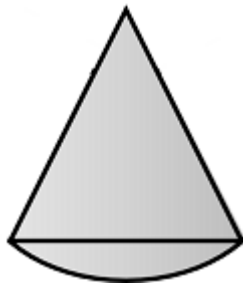
35. Identify in which of the following circuits the bulb glows:



36. The object shown below is taken out in the sun and rotated. The different shadows formed are observed. Select the option which cannot be the shadow of this object:



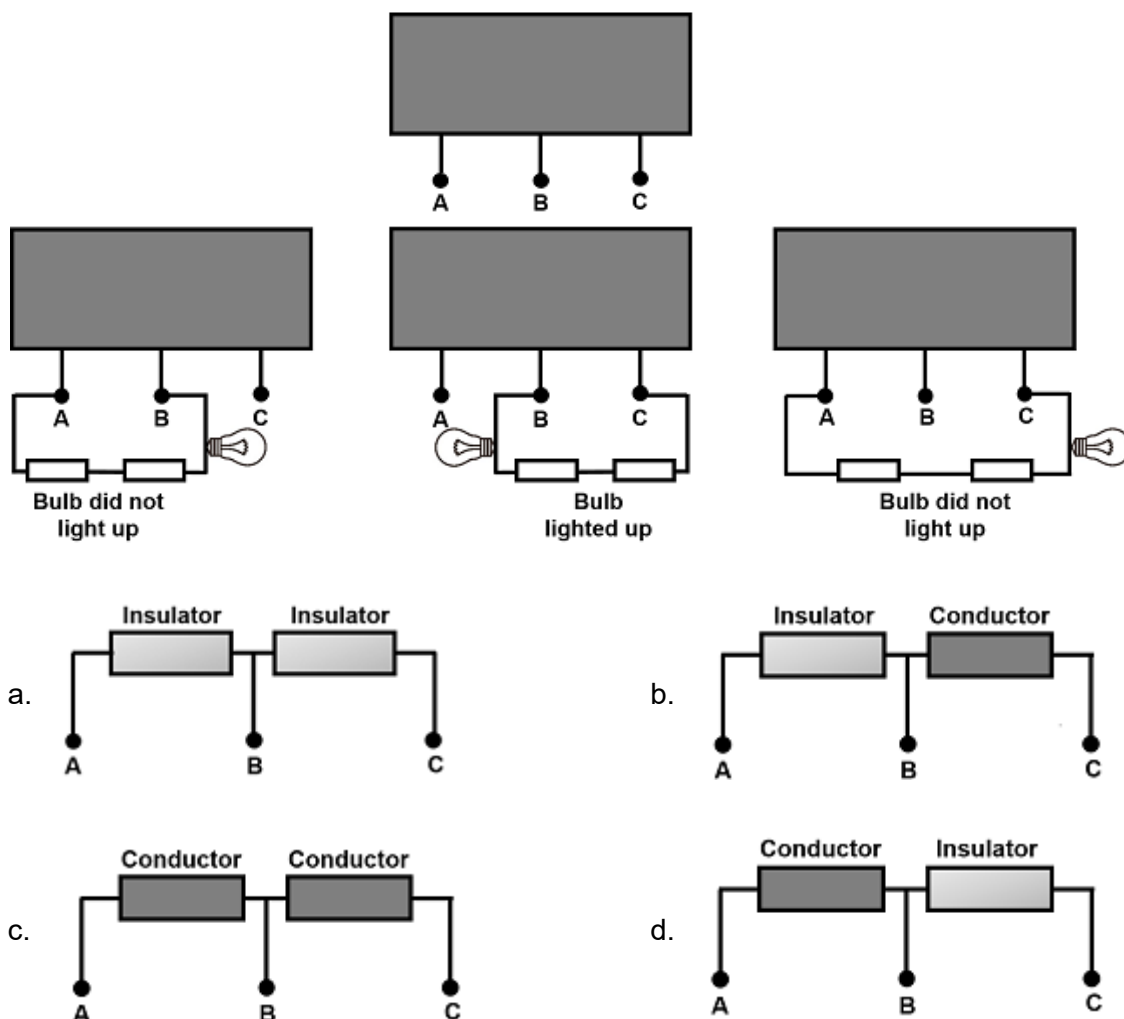
c.



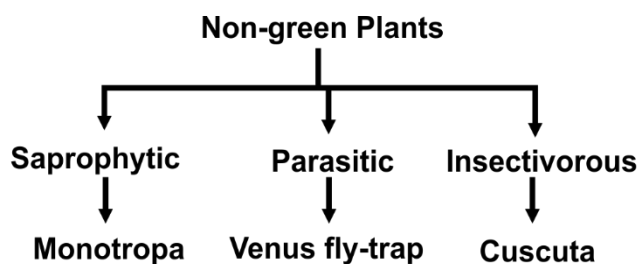
d.



37. Susan connected two different pieces of material and enclosed them in a box with three external connections A, B, C as shown. She then asked Sasha to guess how the two pieces of material were connected. Sasha conducted the following experiments with the black box. Sasha then made the four guesses of which only one is correct. Which one is that?







38. Observe and analyse the above flow chart and find the incorrect categorisation:



- a. Monotropa only  
c. Cuscuta only

- b. Venus fly-trap and Cuscuta  
d. None of the above

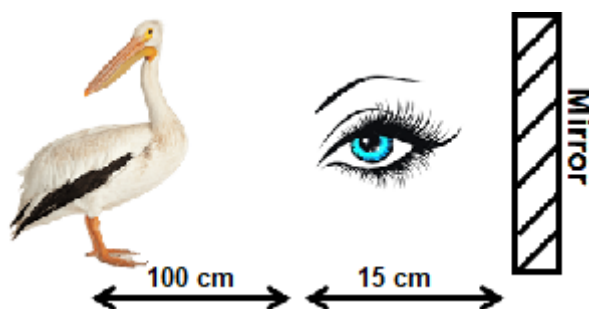
39. Study the table carefully showing birds have different types of beaks to help them survive in the environment. Which beak(s) has/have been correctly matched to its/their function(s)?

Type of beak	A	B	C	D
Example of bird				
Function	To scoop fish out of the water	To peck the ground for insects	To draw nectar from flowers	To crush hard seeds and nuts

- a. Only A  
c. B and D

- b. A and C  
d. A, B, C and D

40. A girl is holding a mirror 15 cm in front of herself to see a bird that is 100 cm behind her. What is the distance of the image of the bird from her eyes?



- a. 215 cm  
c. 115 cm

- b. 100 cm  
d. 130 cm

### Scholar Section (Each Question is 2 Marks)

41. Carbohydrates are of great importance. They are usually sweet in nature except some. They are easily found in our food in the form of sugar, starch, cellulose, etc. From the options given below, choose the correct combinations of carbohydrate and its source:



A. Cellulose



B. Lactose



C. Sucrose



D. Fructose

- a. A and B  
c. C and D

- b. B and C  
d. A, B, C and D

**42.** State which of the following statements is FALSE.

1. The melting of the solid wax to form liquid wax is a physical change.
2. Cutting of wood into small pieces is a physical change as no new substance is formed.
3. In a physical change, new substances are formed.
4. Burning of LPG involves both physical and chemical changes.

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

**43.** The table shows the nutrients present in some food items.

	<b>Carbohydrates</b>	<b>Fats</b>	<b>Proteins</b>
1.	Yes	No	Yes
2.	Yes	Yes	No
3.	No	Yes	No
4.	No	No	Yes

Here, 'Yes' means 'Present' and 'No' means 'Absent'.  
Which foods would be partly digested in the stomach?

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

**44.** Consider the following statements and choose the correct option:

1. Frogs can respire through the skin as well as the lungs.
2. Humans respire through the lungs.
3. Gas exchange takes place in the millions of alveoli in the lungs and the capillaries that envelop them.
4. During photosynthesis, plants take in oxygen and give out carbon dioxide.
5. Roots of plants get oxygen from air trapped between soil particles.
6. Respiration in cockroaches takes place only through their skin.

- a. Only 1 and 2 are incorrect  
b. Only 2 and 4 are incorrect  
c. Only 3 and 5 are incorrect  
d. 1, 2, 3, 5 are correct

**45.** Simran recorded the following observation while performing experiments with sample 'A' and sample 'B':

1. When 2-3 drops of phenolphthalein are added to sample 'A' it becomes pink.
2. When equal quantities of two samples are added in a test tube, the test tube becomes hot.

Which of the following can be concluded from the above observations?

- a. Sample 'A' is basic.  
b. Sample 'B' is acidic.  
c. Observation 2 confirms neutralisation  
d. All the above are correct

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

1. Soluble solids can be separated from liquids by sedimentation, decantation and filtration.
2. The solubility of a gas in water decreases with increase in temperature.
3. A mixture of common salt and iodine can be separated by sublimation.
4. If a mixture contains more than two components, it may need more than one method to separate all of them.

- a. Only statement 2 is correct  
b. Only statement 4 is correct  
c. Both the statements 1 and 3 are correct  
d. Statements 2, 3 and 4 are correct

47. Which of the following belongs to silk fibres and its production?

	Protein	Carbohydrates	Reeling	Fleece	Sericulture
a.	Yes	No	No	No	Yes
b.	No	Yes	Yes	No	Yes
c.	Yes	No	Yes	No	Yes
d.	No	Yes	Yes	Yes	Yes

- a. a  
b. b  
c. c  
d. d

48. Match the habitat in column I with the adaptation shown by plants in column II:

Column I			Column II
A.	Desert	p.	Broad leaves
B.	Mountains	q.	Spines instead of leaves
C.	Water	r.	Needle-shaped leaves
D.	Tropical forests	s.	Narrow and ribbon-shaped leaves

- a. A - s; B - q; C - p; D - r  
b. A - r; B - q; C - s; D - p  
c. A - r; B - q; C - p; D - s  
d. A - q; B - r; C - s; D - p

49. Peter constructed a periscope by joining different periscopes P, Q, R, S and T as shown in the figure, Then,

1. How many times does the incident light ray undergo reflection?
2. When he observes the image of an object using only one periscope what kind of variation can be observed in the image when compared with the image formed by the periscope shown in the figure?

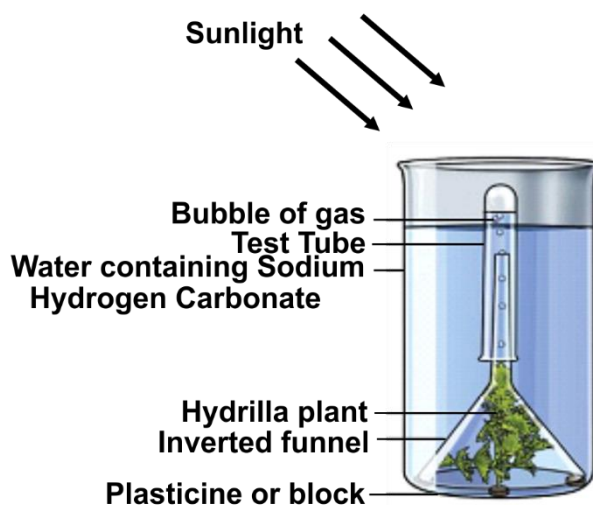


- a. 1. 10  
2. When the student views the object through periscope 'P', the image will be bright compared to the periscope formed by joining a number of periscopes.  
b. 1. 10  
2. When the student views the object through periscope 'P', the image will be less bright compared to the periscope formed by joining a number of periscopes.

- c. 1. 11  
2. When the student views the object through periscope 'P', the image will be bright compared to the periscope formed by joining a number of periscopes.
- d. 1. 9  
2. When the student views the object through periscope 'P', the image will be less bright compared to the periscope formed by joining a number of periscopes.

**50.** Pam performed the following experiment in her science laboratory. She took a few healthy twigs of Hydrilla, a water plant. Placed the plant in a funnel and inverted the funnel in a beaker of water. She then inverted a test tube over the stem of the funnel. and kept the set-up in sunlight as shown in the diagram below. After some time, she saw the bubbles rising in the test-tube. She removed the test tube carefully and inserted a glowing splinter deep into it.

Which of the following statements is correct regarding the above experiment?



- a. The glowing splinter burns brightly. This concludes that oxygen is released during photosynthesis.
- b. The glowing splinter stops burning. This concludes that oxygen is released during photosynthesis.
- c. The glowing splinter burns brightly. This concludes that carbon dioxide is also released during photosynthesis.
- d. The glowing splinter stops burning. This concludes that oxygen is released during transpiration.

## Answer Key

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