BLOOM | BSO Bloom School Olympiad

GRADE 7

Bloom Science Olympiad
Sample Paper 1

Maximum Time : 60 Minutes **Maximum Marks : 60**

INSTRUCTIONS

1. There are 50 Multiple Choice Questions in this paper divided into two sections :

   Section A 40 MCQs; 1 Mark each

   Section B 10 MCQs; 2 Marks each

2. Each question has Four Options out of which **ONLY ONE** is correct.
3. All questions are compulsory.
4. There is no negative marking.
5. No electric device capable of storing and displaying visual information such as calculator and mobile is allowed during the course of the exam.

Roll No.

Student's Name

Section-A (1 Mark each)

1. The melting point of a substance *X* is 120°C and boiling point is 400°C. In what state will this substance exist, when the temperature is at 135°C?

(a) Liquid (b) Solid (c) Gaseous (d) Solid and liquid

2. Identify *X* and *Y* in the reaction which is shown below.

$$CaCO_3 + 2HCl \longrightarrow X + Y + H_2O$$

(a) $CaCl_2$ and CO_2 (b) NaCl and O_2

(c) $Ca(CO_3)$ and CO_2 (d) $Ca(OH)_2$ and Cl^-

3. At which of the following stages does the silkworms yields silk fibre?

(a)  (b)  (c)  (d) 

4. Which of the following substances can be used to disinfect the clear water obtained from a sewage treatment plant before being released for distribution?

I. Iodine II. Chlorine

III. Oxygen IV. Sulphur

(a) I and II (b) II, III and IV

(c) I, II and III (d) II and IV

5. How many of the following substances will undergo a physical change when kept in open?

Eggs, mothballs, ice, nail polish remover, coal and iron rod.

(a) 4 (b) 3 (c) 2 (d) 5

6. Hilly areas are colder than the plains because

(a) distance from equator decreases (b) vertical distance from sea level increases

(c) distance from sea is moderated (d) humidity increases in air

7. The air tubes of insects are also known as ....I. Air enter into the body through tiny holes called ...II.

A. diaphragm B. tubes

C. bronchi D. trachea

E. spiracles F. stomata

G. osculum H. gills

Select the option which correctly identify I and II respectively.

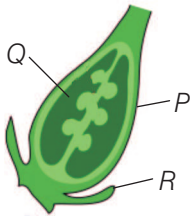
Codes

(a) A and G (b) B and H (c) C and F (d) D and E

8. I belong to an aquatic animal group such as crustaceans, fishes, etc. I produce a highly soluble waste as a result of catabolism of proteins. What do I excrete?

(a) Ammonia (b) Urea (c) Uric acid (d) May be (a) or (c)

9. The given figure shows the parts of gynoecium of a flower. Which of the parts labelled *P*, *Q* or *R* eventually developes into a fruit?



(a) P—Ovary (b) Q—Ovule (c) R—Ovary (d) None of these

10. If someone is suffering from acidity after eating too much food. Which of the following can be used for immediate relief?

(a) Lemon juice (b) Vinegar (c) Baking soda (d) Sodium chloride

11. The organisms *A* and *B* are found in the forest floor and they convert the energy stored in dead and decaying organic matter to nutrients and add them to soil. *A* and *B* are correctly identified by which option?

(a) *A*—Bacteria, *B*—Virus (b) *A*—Fungi, *B*—Virus
(c) *A*—Fungi, *B*—Bacteria (d) *A*—Vulture, *B*—Insects

12. The animals living in polar regions have small ears. This adaptation helps in

(a) swimming through water at great speed
(b) insulating against the cold
(c) reducing the heat loss
(d) listening to farther sounds

13. Read the changes that takes place in our day to day life.

(i) Tearing paper (ii) Freezing of ice cream
(iii) Drying of clothes (iv) Digestion of food
(v) Plant growth (vi) Dissolving sugar in water

Which of these changes cannot be reversed?

(a) ii, iii and vi (b) iii, iv, v and vi
(c) All of these (d) i, iv and v

14. While dumping waste in sink, cooking oils and fats should be separated because

(a) they flow through the drain freely (b) they harden and block the pipes
(c) they block the flow of O_2 (d) they kill the helpful microbes

15. Now-a-days, utensils which were made up of stainless steel are made with copper bottoms. This is done because

(a) copper is easier to clean

(b) copper increases the durability of utensils

(c) copper is a good conductor of heat than stainless steel

(d) copper takes long time to heat up

16. Arrange the organisms mentioned in the list below to construct a food chain that can exist on a terrestrial habitat.

Rat	Grass	Eagle	Snake	Plankton

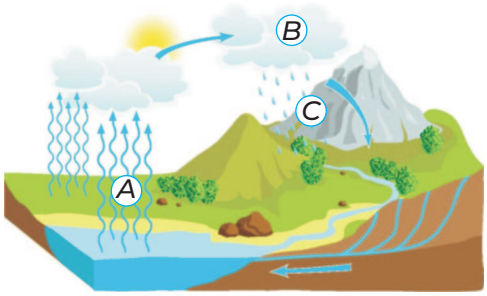
(a) Rat → Grass → Snake → Eagle

(b) Plankton → Rat → Eagle → Snake

(c) Grass → Rat → Snake → Eagle

(d) Plankton → Eagle → Rat → Snake

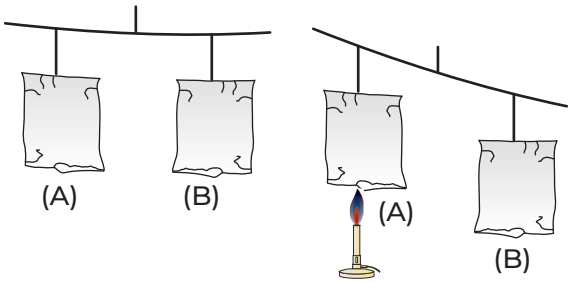
17. Refer to the diagram of a water cycle given below.



Identify the process involved in water cycle from jumbled words mentioned below.

	A	***B***	***C***
(a)	atooniaervp	acestoonnnid	ntciepirtaipo
(b)	acestoonnnid	duclos	aitfinlroniti
(c)	ntciepirtaipo	acestoonnnid	dclosu
(d)	atooniaervp	duclos	ntciepirtaipo

18. What conclusion can we draw from the experiment demonstrated below.



(a) Hot air rises up

(b) Uneven heating of air causes wind

(c) Cold air expands and rises up

(d) Increased wind speed is accompanied by a reduced air pressure

19. There is an increase in demand to ban the polythene bags and plastics. This is because

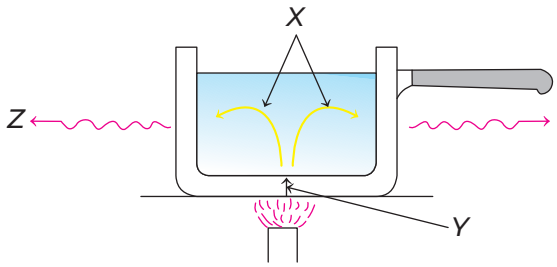
(a) plastics are inseparable part of our life

(b) they pollute the soil

(c) they help different organisms which are present in soil

(d) their exhaustible sources will get depleted in nature

20. In the figure shown below, identify the way by which heat is being transferred at *X*, *Y* and *Z*.



(a) *X*-Radiation, *Y*-Convection, *Z*-Conduction

(b) *X*-Conduction, *Y*-Radiation, *Z*-Convection

(c) *X*-Convection, *Y*-Conduction, *Z*-Radiation

(d) *X*-Conduction, *Y*-Radiation, *Z*-Convection

21. In the treatment of wastewater, following steps are included

(i) sedimentation (ii) chlorination

(iii) aeration (iv) filteration

The correct order of these steps is

(a) (i), (ii), (iii) and (iv) (b) (iv), (i), (iii) and (ii)

(c) (ii), (iv), (i) and (iii) (d) (iii), (iv), (ii) and (i)

22. Parul is blowing air using a straw into a bottle containing lime water prepared by her mom. What will she notice while doing this activity?

(a) Increase in volume of liquid (b) Lime water turns milky

(c) Lime water will taste different (d) no change is visible

23. The organs *A* of a tree have numerous tiny pores *B*. Each pore is surrounded by *C*, which also regulates the opening and closing of *B*.

Here *A*, *B* and *C* are correctly identified by which option?

	A	***B***	***C***
(a)	Roots	Chloroplast	Stems
(b)	Stems	Roots	Root hairs
(c)	Flowers	Root hairs	Leaf
(d)	Leaves	Stomata	Guard cells

24. Match the following columns.

	Column I (Animals)		**Column II** (Habitats)
A.	Siberian cranes, seal	1.	Hot and humid climate
B.	Fennec fox, kangaroo rat	2.	Extremely cold climate
C.	Monkey, lion tailed macaque	3.	Hot and dry climate

Codes

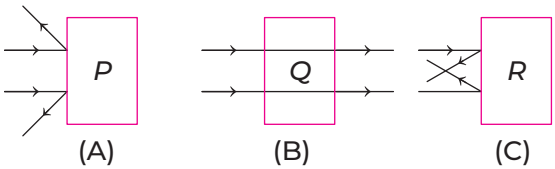
	A	B	C
(a)	1	2	3
(c)	3	1	2

	A	B	C
(b)	2	3	1
(d)	2	1	3

25. During an impending storm, people are advised to take shelter in a room that is situated deep inside the house with no windows or in a basement. The storm is most likely to be a

(a) thunderstorm (b) typhoon (c) hurricane (d) tornado

26. Figures *A*, *B* and *C* depict the falling of light and reflection from three different surfaces.

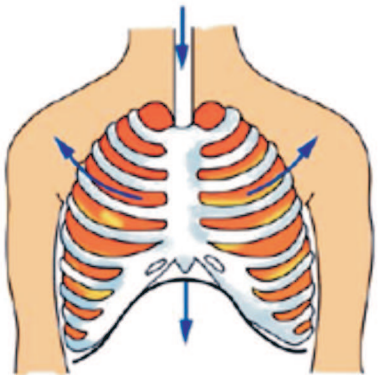


(A) (B) (C)

Based on the figures, identify the nature of materials *P*, *Q* and *R*.

	P	*Q*	*R*
(a)	Concave mirror	Concave lens	Prism
(b)	Glass	Concave mirror	Convex mirror
(c)	Water	Glass	Plastic
(d)	Convex mirror	Glass	Concave mirror

27. Given figure represents a process involved in breathing.



During this process

(a) air from outside enters the lungs (b) diaphragm moves upward

(c) air from the body is released to outside (d) diaphragm moves downward and inward

28. pH values of 5 substances are identified as

I—14 II—9.4

III—2 IV—4.7

V—7

Which of following observations derived from this w.r.t substance I-V are correct?

(a) Substances III and IV are acidic, while V is basic

(b) Substances I and II are basic, while V is neutral

(c) Substances II and V are strongly basic in nature

(d) Substances I, III and IV are neutral

29. The processing of fibres into wool can be represented by following steps.

I. Sorting, II. Shearing III. Rolling IV. Cleaning of burrs, V. Scouring VI. Dyeing

The correct order of these processes is

(a) II, I, IV, III, V and VI (b) IV, V, I, II, III and VI

(c) II, V, I, IV, VI and III (d) I, II, V, III, VI and IV

30. A lid is tightly bound to its container and is difficult to open. Which of the following processes can help in its removal?

(a) Heating the container with lid

(b) Cool the lid in ice bath

(c) First heat the lid and cooling it quickly

(d) First cool the lid in ice bath then add boiling water

31. Read the statements given below and choose the correct option.

Statement I In summers, electric wires are kept tight, so they do not snap on contracting.

Statement II The hotness of an object is determined by its temperature.

(a) Both statements are correct (b) Statement I is correct

(c) Statement II is correct (d) Both statements are incorrect

32. Given below are approximate composition of air breathed during inhaled and air exhaled out. Choose the correct option.

	Inhaled air	**Exhaled air**
(a)	21% O_2, 0.04% CO_2	16.4% O_2, 4.4% CO_2
(b)	16.4% O_2, 4.4% CO_2	21% O_2, 0.04% CO_2
(c)	45 % O_2, 15% CO_2	15% CO_2, 45% O_2
(d)	19.9% O_2, 0.03% CO_2	14.4% O_2, 6.4% O_2

33. The LPG used in our kitchens exist as a liquid within the cylinder. As it comes out, it changes to gaseous form (process I) and it lights up (process II).

Select the correct option. w.r.t to these changes.

(a) Process I is an irreversible change

(b) Process II is a physical change

(c) Process I is physical change but II is a chemical change

(d) Process I is chemical change but II is physical change

34. About 71% of the earth's surface is covered with water. Inspite of this water shortage has become a matter of concern throughout the world. The most suitable reason for this are listed as given

I. Water in most of the water bodies is saline.

II. Water in frozen form is not readily available.

(a) Both statements are true

(b) Both statements are false

(c) I is true, II is false

(d) I is false, II is true

35. The characteristics given below are found in animals having

I. strong and highly developed sense of smell.

II. run at very fast speed.

III. long, strong, sharp claws in front legs.

Which animals shows all these characteristics?

(a) Toucans

(b) Big cats

(c) Monkeys

(d) Lion tailed Macaque

36. In a forest, there are rabbits, wolves and lions along with plants. What will happen to the population of wolves, if all rabbits are killed?

(a) They will change their nature and will start eating grass

(b) They will die due to lack of food

(c) They will start eating lions to survive

(d) They will eat one another to survive

37. The structures listed below are a part of the human excretory system.

1. Bladder

2. Kidney

3. Ureter

4. Urethra

Identify the option which indicates the order in which a urine pass through these structures.

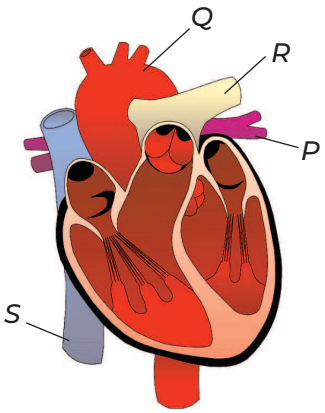
(a) $3 \rightarrow 2 \rightarrow 1 \rightarrow 4$

(b) $2 \rightarrow 4 \rightarrow 1 \rightarrow 3$

(c) $2 \rightarrow 1 \rightarrow 3 \rightarrow 4$

(d) $2 \rightarrow 3 \rightarrow 1 \rightarrow 4$

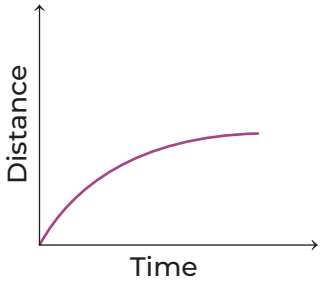
38. Refer to the figure given below.



Which of the following labels correctly identifies the blood vessel carrying impure blood from heart to lungs?

(a) *Q*-Pulmonary vein
(b) *R*-Pulmonary artery
(c) *S*-Aorta
(d) *P*-Vena cava

39. Study the distance-time graph shown below.

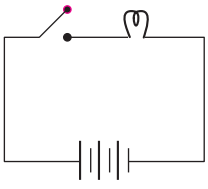


What can be concluded regarding the variation of speed of the moving object w.r.t. time?

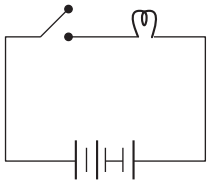
(a) Continuously increasing
(b) First increases and then becomes constant
(c) First decreases and then becomes zero
(d) First increases and then becomes infinite

40. Given below are three circuit diagrams. Which of the following circuit is prepared correctly?

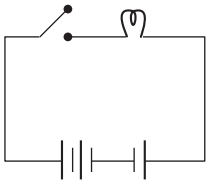
(a)



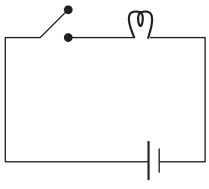
(b)



(c)

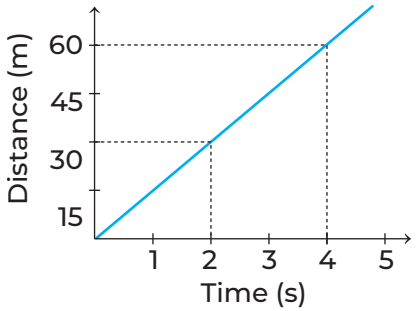


(d)



Section-B (2 Marks each)

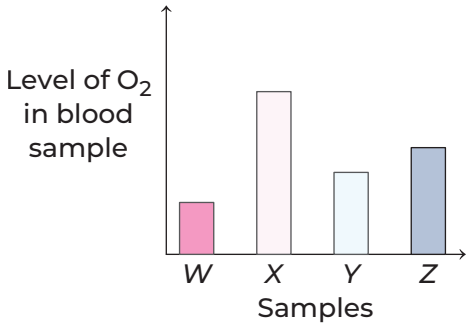
41. The distance-time graph of a truck is shown below.



Calculate the average speed of the truck over the distance travelled by the truck, as shown in the graph.

(a) 16 m/s (b) 20 m/s (c) 27.3 m/s (d) 15 m/s

42. From the bar chart shown below, identify the sample from *W, X, Y, Z* as that taken from the pulmonary vein.



(a) *W* (b) *X* (c) *Y* (d) *Z*

43. Refer to the figure given below.

Select the statements which is correct with respect to the figure?

(a) This method is responsible for excess wastage of water

(b) Farmers can use this process for economically irrigating the agricultural fields

(c) This method depletes the level of ground water

(d) This method is known as terrace farming and is practiced in hilly areas

44. Observe the experimental setups prepared below.

I. Baking soda + China rose

II. Baking soda + Turmeric

III. Baking soda + Methyl orange

IV. Baking soda + Phenolphthalein

Which of the following observations are incorrect?

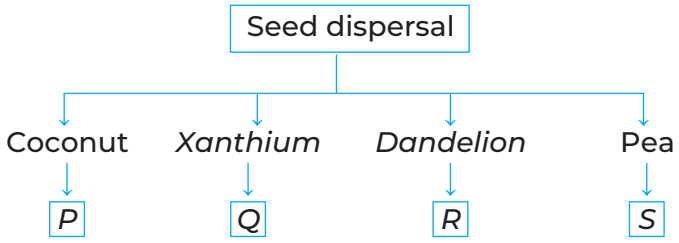
(a) China rose indicator remains colourless

(b) Methyl orange turns yellow

(c) Phenolphthalein develops pink colour

(d) Turmeric develops red colour

45. In the given flow chart, different plants are categorised on the basis of their methods of seed dispersal.



Which of the given process of seed dispersal is carried by winds and by explosive mechanism, respectively?

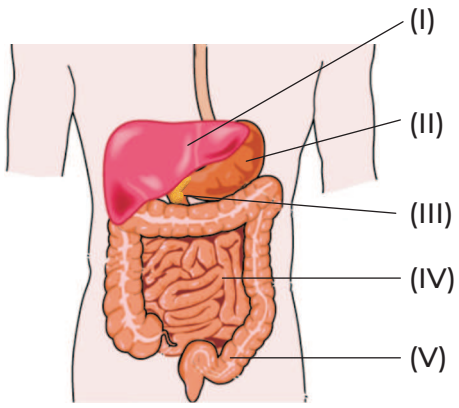
(a) *P* and *Q*

(b) *P* and *S*

(c) *R* and *S*

(d) *Q* and *R*

46. Refer to the figure of human digestive system and select the correct option for its parts labelled (I-V).



(a) Part III secretes digestive juices in stomach *viz* amylase, lipase, trypsin, pepsin, etc.

(b) Part I secretes bile juice and part II secretes mucus.

(c) In part IV, digestion begins by partial breakdown of food components.

(d) In part V, undigested food is stored till its ready to be passed out as faeces.

47. Read the characteristics of 4 substances labelled *P*—*S* are given below.

P—Used as preservative in most of the canned foods

Q—Present in cold drinks

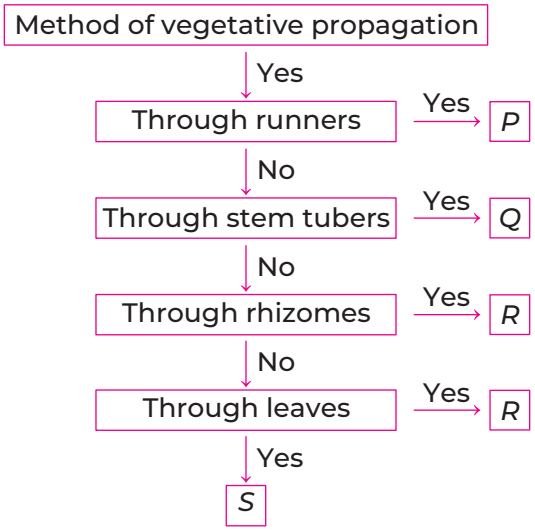
R—Main component of vitamin-C

S—Remains colourless when added to *P*, *Q* and *R*

Which of the following correctly identify with *P*, *Q*, *R* and *S* ?

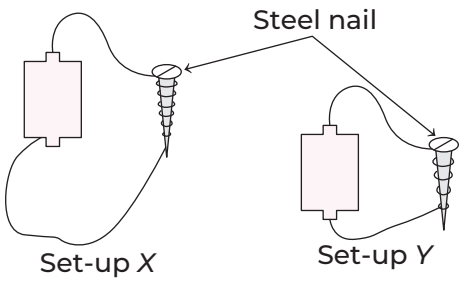
	P	***Q***	***R***	***S***
(a)	Acetic acid	Citric acid	Hydrochloric acid	Carbonic acid
(b)	Acetic acid	Carbonic acid	Ascorbic acid	Turmeric solution
(c)	Milk of magnesia	Soda water	Lime water	Red litmus
(d)	Citric acid	Ascorbic acid	Tartaric acid	Methyl orange

48. Study the table given below and select the option which correctly identifies *P*, *Q*, *R* and *S*.



	P	***Q***	***R***	***S***
(a)	Grass	Sweet potato	Ginger	*Dahlia*
(b)	*Asparagus*	Ginger	Potato	Lemon
(c)	Grass	Potato	Ginger	*Bryophyllum*
(d)	*Asparagus*	Ginger	Lemon	*Dahlia*

49. Ashwini prepared set ups for an experiment as shown below.



He observed the nail in set-up *X* attracts more iron pins than the nail in set-up *Y*. A possible reason for this could be

(a) the battery used in set-up Y is older

(b) the number of turns of coil around the nail in set-up Y is fewer than in set-up *X*

(c) a longer wire was used in set-up X

(d) the wire in set up *X* is thicker compared to that of *Y* .

50. Read the following sentences and select an option which correctly identify them as true and false.

I. Root hairs decrease the surface area of root.

II. Right atrium receives oxygen rich blood from body.

III. Transpiration cools the plant.

IV. Water can reach great heights in trees due to suction pull.

	I	**II**	**III**	**IV**
(a)	F	F	T	T
(b)	T	F	T	F
(c)	F	T	F	T
(d)	T	T	T	T

OMR SHEET

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

Answers with Hints

1. (a) Since the melting point of *X* is 120°C, so for the temperature readings between 121°C-399°C, it will remain in liquid state only. It is because, between melting point and boiling point, the substance exists in liquid state.

2 (a) When acids react with carbonates, they form salt, water and carbon dioxide.

$$\underset{\text{Calcium Carbonate}}{CaCO_3} + \underset{\text{Hydrochloric acid}}{HCl} \longrightarrow \underset{(X)}{CaCl_2} + \underset{(Y)}{CO_2} + H_2O$$

3. (c) Female silk moth lays eggs, which hatch into larvae which are called silkworms. They grow in size and when the silkworms is ready to enter the next stage of its life cycle called as pupa. It first weaves a net to hold itself, then it swing its head from side to side. During these movements of the head, the silkworm secretes fibre made up of a protein which hardens on exposure to air and becomes silk fibre. This stage is known as cocoon. Thus option (c) is correct.

4. (d) Chlorine and ozone are used to disinfect the water treated in sewage treatment plants. These chemicals completely removes the harmful microorganisms present in water.

5. (b) Mothballs, ice and nail polish remover will undergo physical change, in which a substance undergoes a change in its physical properties is called physical change. Physical change is reversible. No new substance is formed in physical change.

6. (b) As we go higher up from sea level, the temperature falls. That is why hilly areas are colder than the plains.

7. (d) Insects have tiny holes on their body surface called spiracles through which air enters into their body into air tubes, these form network of tubes called tracheae. These tubes help in exchange of gases (O_2 and CO_2). Oxygen rich air enter the body and diffuses into the tissues and every cell, similarly these tube helps in removal of CO_2 from the body.

8. (a) Depending on the availability of water in their surrounding animal excrete their waste. Ammonia need good amount of water to get dissolved. Hence, aquatic animals remove their excreta as ammonia in gaseous form as they are surrounded by plenty of water.

9. (a) Part *P* is the ovary, which develops into a fruit after fertilisation whereas *Q* is ovule which will develop into seed and '*R*' is sepal which protect the developing reproductive organ of flower.

10. (c) Baking soda with water makes a basic solution. Being basic, it neutralises excess acids in the stomach and can be used to relief acidity.

$$\underset{\text{Baking soda}}{NaHCO_3} + HCl \longrightarrow \underset{\text{Sodium chloride}}{NaCl} + CO_2 + H_2O$$

11. (c) Organisms *A* and *B* are decomposers, i.e. bacteria and fungi. Decomposers secrete digestive juices on the organic matter and break them into nutrients and add them to soil which increase the nutrient value of soil.

12. (c) Polar animals have small ears to minimise the loss of heat from their body.

13. (d) Irreversible changes are the events that cannot be restored back to their original form, e.g. tearing of paper, digestion of food and plant growth.

14. (b) Oils and fats can harden and block water pipes, clog soil pores thereby polluting water and soil.

15. (c) Copper is a good conductor of heat, so it heats up fastly and uniformly, as compared to stainless steel.

16. (c) In a terrestrial habitat, the food chain that exist is
Grass → Rat → Snake → Eagle
Planktons are a part of aquatic food chain.

17. (a) The jumbled words can be corrected as
A—Evaporation, *B*—Condensation, *C*—Precipitation
These are essential process of water cycle.

18. (a) Air on heating expands and being less dense in nature, it rises. So, when the candle in lit under (*A*), the air rise up

19. (b) Polythene and plastics are non-biodegradable pollutants. They remain in soil for long time, while releasing chemicals and degrading the soil texture. They also kill useful organisms present in soil.

20. (c) At *X*, heat is transferred through convection within water. At *Y*, heat is transferred by conduction through bottom of pan and at *Z*, the heat is transferred through radiation from the sides of pan.

21. (b) The wastewater is first filtered to remove large impurities followed by sedimentation which settles finer impurities, the wastewater is then aerated and chlorination is done to kill any germs present in water.

22. (b) Air expelled out contains high amount of CO_2. This gas reacts with lime water and turns it milky.

23. (d) The' *A*' -leaves are known as the food factory of plant. This is because, they can prepare food by the process of photosynthesis by using sunlight, water and air. The surface leaf contains tiny pores '*B*' called stomatas. These tiny pores are surrounded by '*C*' called guard cells which controls the opening and closing of stomata for transpiration and gas exchange.

24. (b) The correct matches are as follows Siberian cranes, seal are found in extremely cold climates like polar regions. Fennec fox, kangaroo rats live in hot and dry climate like deserts. Monkey and lion tailed macaque are found in hot and humid climate as found in tropical rainforests.

25. (d) The storm is most likely to be a tornado. Taking shelter in basement or a room without windows present deeper inside the house is best shelter against a tornado.

26. (d) The light falling on *P* diverges, on *R* it converges while on *Q* it passes through undeviated.
Thus, *P*-convex mirror, *R*-concave mirror and *Q* is glass.

27. (a) The figure shows 'breathing in' of air. The muscles between ribs contract, ribcage moves upward and outward, diaphragm moves down thus, space in chest cavity increases and air rushes in.

28. (b) The substance having pH value less than 7 are classified as acidic, while values above 7 are considered as basic. 7 is considered as a neutral value. Also lower the pH, higher is the acidic nature and *vice-versa*. Hence, substances I and II are basic, while V is neutral and substances III and IV are acidic.

29. (c) The correct order of processing of fibres into wool is represented as
⇒ Shearing of sheeps → Scouring (washing of sheared skin) → Sorting (fibres of different textures are separated) → Cleaning of burrs → Dyeing and Rolling.

30. (a) Heating the container with lid, will cause the lid to expand, thus making it easier to remove from container.

31. (c) Statement I is incorrect while statement II is correct. The electric wire will sag in summers due to expansion as atmospheric temperature increases and break in winters, due to contraction as atmospheric temperature decreases. So, they are kept slightly loose, so that they do not snap when they contract.

32. (a) Taking in air rich in oxygen into our body is called inhalation and giving out of air rich in carbon dioxide is known as exhalation. Hence, option (a) is correct.

33. (c) In process I, the physical form of a substance is undergoing change but no new product is formed. Thus, it is a physical change. In process II, gas is lighten up and used in cooking. It is a chemical change.

34. (a) Water covers approx 71% of the earth's surface but we still face shortage of water because most of this water is not fit for human consumption due to presence of salt (i.e saline). Apart from that water present in the form of glacier or in frozen form is not readily available. Estimated 0.006% of all the water on Earth is available for our use.

35. (b) Big cats like lions, tigers, etc., are animals associated with the characteristics mentioned in the question. These animals are found in tropical climate.

36. (b) In a forest, an organism depends either on plants or other animals for food. Thus, if all rabbits are killed, the wolves which depends on them will starve and ultimately die.

37. (d) The waste substance from kidney enters the ureter than bladder where it is stored temporarily before it is removed through the urethra to outside the body.

38. (b) The given figure is of human heart in which *R* is pulmonary artery which carry deoxygenated blood from heart to lungs. *Q* is aortic arch, it is the section of aorta between ascending and descending aorta, *P* is pulmonary vein which carry oxygenated blood from lungs to heart, and *S* is inferior vena cava. It is the largest vein in human body, it carries deoxygenated blood from the lower half of the body to heart.

39. (c) Speed is the change in position of an object w.r.t time. From the graph, it can be concluded that the change in position is decreasing with time until it cases i.e. the speed becomes zero.

40. (d) An electric circuit consists of cells, a key, an electric bulb and connecting wires. Here, only circuit (d) is correctly prepared. In all the other circuits, cells are wrongly connected. The correct way of connecting cells is

41. (d) To calculate the average speed,

$$\text{Slope of distance-time graph} = \frac{30}{2} \text{ or } \frac{60}{4} = 15 \text{ m/s}$$

42. (b) *X* is the sample collected from pulmonary vein. This is because oxygenated, i.e. oxygen rich blood is carried by this vein from lungs to heart. The level of O_2 will be highest in blood sample taken from this vein.

43. (b) This method is sprinkler irrigation used to water the agricultural fields economically. It is the method of applying water in a controlled manner in way similar to rainfall.

44. (a) Baking soda is a base, the setup in I should develop colour as China rose turns green in the presence of a base.

45. (c) Dispersal of seed is carried by different agents, it occur by various methods such as explosive method, wind, water, animal etc. In dandelion, the seeds are dispersed by wind as its seeds are

light and have feathery bristles attached to it which get blown off with wind. In peas, the dispersal takes place by explosive method as the pea pods dry up, it makes the pods twist and suddenly split open violently hence, the seed get dispersed.

46. (b) The parts labelled I-V are liver, stomach, pancreas, small intestine and large intestine respectively. Only statement (b) is correct. Because part I (liver) secreates bile juice and part II (stomach) secreates mucous to protects its walls from acid.

Pancreas (Part III) secretes digestive juices in small intestine. In small intestine

(Part IV), the digestion process gets completed. Large intestine (Part V), absorbs water and some salts from the undigested food material.

47. (b) *P*, *Q* and *R* are acids. *S* is turmeric solution, a natural indicator which remains colourless when added to an acidic solution.

P is acetic acid used in the production of cellulose acetate for wood glue and synthetic fibres. It is a carboxylic acid which is also used as preservatives.

Q is carbonic acid, it is a weak acid and is unstable in nature.

R is ascorbic acid, used to prevent low levels of vitamin-C.

48. (c) Vegetative propagation is the method by which plant parts like stem, roots, leaves and their modifications give rise to new plants. Grass propagates through runners, ginger through rhizomes, potatoes through tubers and bryophytes through leaves.

49. (b) More number of turns of coil around the nail in set up *X* increases the amount of current passing through it. As a result, greater amount of magnetic field develops around the nail *X* thereby attracting more iron pins.

50. (a) Statements III and IV are true and statements I and II are false. False statements can be corrected as root hairs increase the surface area for the absorption of water.

The right atrium receive the deoxygenated blood from body which flows to right ventricle and pumped to lungs where it become oxygenated. The oxygenated blood brought back to the heart by pulmonary vein which enter left atrium, from left atrium it enters in left ventricle and from there to arota which distribute the blood to all parts of body.