BLOOM | BSO Bloom School Olympiad

GRADE 8

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 property due to which non-metals break on hammering is called

(a) ductility (b) malleability (c) conductivity (d) brittleness

2. The lowest temperature at which a substance catches fire and starts burning is known as

(a) boiling point (b) calorific value

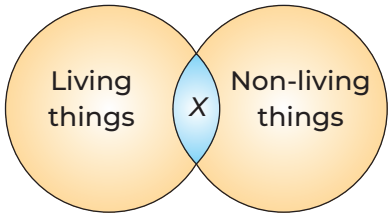
(c) melting point (d) ignition temperature

3. There are some species, which are found in a specific region only and not elsewhere naturally. Such species are known as

(a) endemic species (b) freshwater species

(c) land species (d) coniferous plant

4.



Refer to the given Venn diagram and choose the correct option for *X*.

(a) Protozoa (b) Bacteria (c) Viruses (d) Algae

5. The volume of a cube is 40 cm^3 and the mass is 80 g, the cube is thrown in water. It will

(a) float (b) sink

(c) intially floats and then sinks (d) None of these

6. If the contents of a leaf tissue are carefully fractioned, which of the fraction could be called alive?

(a) Mitochondria (b) ER (c) Cell wall (d) Ribosomes

7. Bacteria living in the intestine of herbivorous animals help in the digestion of

(a) cellulose (b) proteins (c) vitamins (d) fats

8. What is the major cause of global warming?

(a) Gaseous nitrogen oxides released by petrol engines

(b) Oxides of sulphur and nitrogen dissolved in rain water

(c) Emmision of sulphur dioxide on combustion of coal

(d) Release of carbon dioxide on combustion of fuels

9. Which of the following property is not a characteristic of a good fuel?

(a) High ignition temperature (b) Low cost

(c) Causes minimum pollution (d) Readily available

10. The membrane of a drum vibrates to produce sound. Similarly, the string of a sitar vibrates to produce sound. Then, which part of a whistle vibrates to produce sound?

(a) Body of whistle (b) Air (c) Mouth of the person (d) All of these

11. Pole star appears to be stationary in all seasons because
(a) pole star does not rotate on its axis
(b) pole star happens to lie on the axis of equator
(c) pole star happens to lie above the axis of North pole of the Earth
(d) pole star is most distant of all the stars

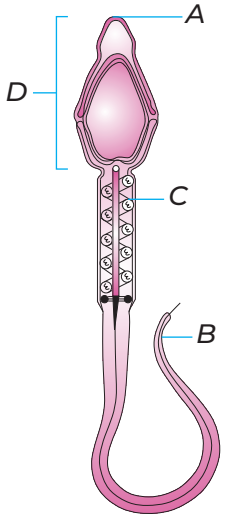
12. Which of the following is present in both plant and animal cell?
(a) Chloroplast (b) Cell membrane (c) Cell wall (d) None of these

13. A star might be much brighter than it appears to be. This is called the star's absolute magnitude. The difference in apparent magnitude and absolute magnitude is due to
(a) motion through the universe (b) surface temperature
(c) diameter (d) distance from Earth

14. Which part of our ear collects sound from outside and send it to ear canal?
(a) Anvil (b) Cochlea (c) Pinna (d) Eardrum

15. Which one of the following types of coal is of higher quality than bituminous coal?
(a) Anthracite (b) Lignite (c) Peat (d) None of these

16. Identify the figure below and which letter represents the acrosome part?



(a) *B* (b) *D* (c) *A* (d) *C*

17. The metal object on which electroplating to be done is
(a) connected to the positive terminal of battery
(b) connected to the negative terminal of battery
(c) not connected to the battery
(d) None of the above

18. A boy is pulling the cart on the road, suddenly he cried in pain due to muscle cramps. Which of the following is correct for the given situation?
(a) Muscle cramp occur due to formation of ascorbic acid in muscles

(b) Muscles cramp occur due to partial breakdown of glucose producing lactic acid
(c) Muscle cramp occur due to aerobic respiration
(d) Both (b) and (c)

19. Orion is one of the constellations. The number of stars of which orion is made up of are
(a) 5 or 6 (b) 100 (c) 7 or 8 (d) 9 or 10

20. Match the following Column I with Column II.

	Column I		**Column II**
A.	Kharif crops	1.	Wheat, gram, pea
B.	Rabi crops	2.	Urea and superphosphate
C.	Chemical fertilisers	3.	Paddy and maize
D.	Organic manure	4.	Cow dung, plant waste

Codes

	A	B	C	D		A	B	C	D
(a)	3	4	1	2	(b)	4	3	2	1
(c)	1	2	3	4	(d)	3	1	2	4

21. In which of the following methods, impure water is passed through a semi-permeable membrane to remove impurities?
(a) Boiling (b) Chlorination (c) Reverse osmosis (d) UV-radiation

22. Which of the following sequence is correct for the development of zygote after fertilisation is?
(a) Zygote → Embryo → Foetus → Baby animal
(b) Embryo → Zygote → Foetus → Baby animal
(c) Zygote → Foetus →Embryo→ Baby animal
(d) Baby animal → Zygote → Foetus → Embryo

23. Which one of the following is not a function performed by a biosphere reserve?
(a) Conservation of wildlife of the area
(b) Prevention of the commercial exploitation of the area
(c) Keeps a record of all the endangered animal of the area
(d) Maintains the lifestyle of the trible people living in the area

24. Frog lays hundred of eggs at a time in water because
(a) eggs are brown in colour
(b) frogs can reproduce only once in their life
(c) it increases the chances of survival
(d) All of the above

25. The net force is zero, when the two forces applied on an object are in
(a) the same directions and are same in magnitude
(b) the opposite directions and are of different in magnitude
(c) the same directions
(d) the opposite directions and are of equal magnitude

26. Choose the correct sequence of the metals in the increasing order of their reactivity.
(a) Ag < Pb < Cu < Na < K
(b) Cu < Pb < Ag < Na < K
(c) Ag < Cu < Pb < K < Na
(d) Ag < Cu < Pb < Na < K

27. Different colour of flowers in plants are due to the presence of
(a) cell membrane
(b) cell wall
(c) plastid
(d) mitochondria

28. Aman wants to gift a glass - painting to Simran. The packaging of a glass painting should be made of
(a) teflon
(b) polystyrene
(c) melamine
(d) PVC

29. What is the nature of the force between an electron and a proton?
(a) Force of repulsion
(b) Force of attraction
(c) No force is experienced
(d) None of these

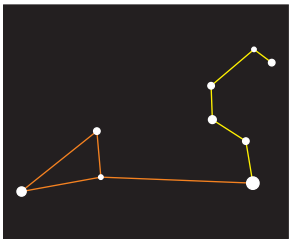
30. Which one of the following is not correct about LPG?
(a) It is liquefied methane
(b) It has high calorific value
(c) It produces carbon dioxide gas on buring
(d) All of the above

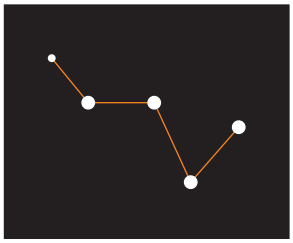
31. School bags have wide straps. Which of the following correctly gives its reason?
I. It increases the pressure on the shoulder.
II. It decreases the pressure on the shoulder.
III. It makes the bag's weight fall over a small area of the shoulder.
IV. It makes the bag's weight fall over a large area of the shoulder.

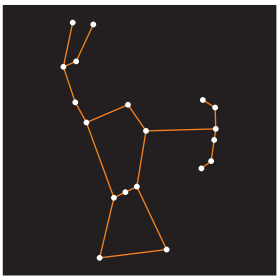
Choose the correct option.
(a) II and III
(b) II and IV
(c) II and I
(d) I and III

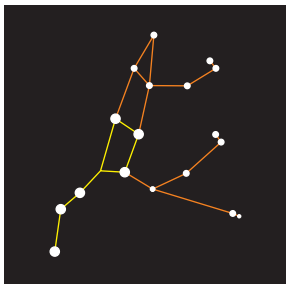
32. Which one of the following is incorrect?
(a) Sodium reacts with water to form sodium hydroxide
(b) Sulphur reacts with water to form sulphuric acid
(c) Zinc reacts with steam to produce hydrogen gas
(d) Magnesium reacts with steam to give magnesium oxide

33. Which one of the following is also known as a 'Great bear'?

(a) 

(b) 

(c) 

(d) 

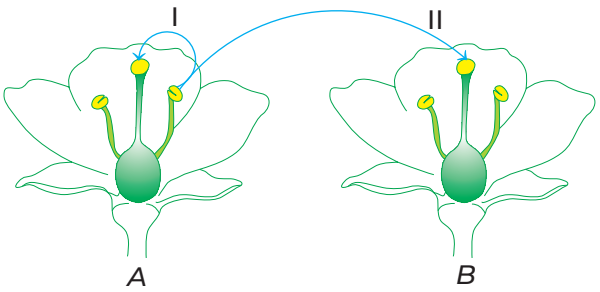
34. The mixture of organic substances obtained from vegetable and animal wastes decomposed by microbes is called

(a) fertilisers
(b) manure
(c) pesticides
(d) insectides

35. Hydrogen gas has the highest calorific value, i.e 150 kJ/kg. Yet it is not used as a fuel. The reasons are

(a) it causes storage problem
(b) it is explosive in nature
(c) it causes transportation problem
(d) All of these

36.



A and *B* both are flower of same kind but in different plant, which statement is correct regarding *A* and *B*?

(P) Process I is possible in plant but process II is not possible.

(Q) Process I and II both are possible.

(a) Statement *P* is correct
(b) Statement *Q* is correct
(c) Both *P* and *Q* are incorrect
(d) None of these

37. The part of the human eye which can be used again and again for forming different images is called

(a) iris
(b) pupil
(c) cornea
(d) retina

38. An anaerobic fermentation is a process which helps in the formation of

(a) natural gas (b) water gas (c) coal gas (d) petroleum

39. The characters which differentiate between the prokaryotes and eukaroytes are

I. Prokaryotes lack nuclear membrane, while genetic material is enclosed in the nucleus of eukaryotes.

II. Ribosomes are present in eukaryotes, but absent in prokaryotes.

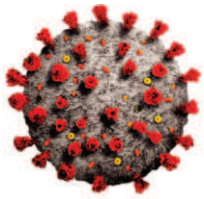
III. Prokaryotes are unicellular, while eukaryotes are multicellular.

IV. Chromosomes of eukaryotes have histones, while porkaryotes lack histones.

Choose the correct option.

(a) I and IV (b) II and III (c) I and II (d) II and IV

40. The figure given below shows four types of microorganisms. Identify the microorganisms represented by *P*, *Q*, *R* and *S* respectively?

P	***Q***	***R***	***S***
			

	P	*Q*	*R*	*S*
(a)	Bacteria	Protozoa	Viruses	Algae
(b)	Protozoa	Viruses	Algae	Bacteria
(c)	Viruses	Algae	*Amoeba*	Bacteria
(d)	Algae	Protozoa	Bacteria	Viruses

Section-B (2 Marks each)

41. The table given below has certain terms and five spaces named *A, B, C, D* and *E*.

Cell	**Feature/Part**	**Functions**
Bacteria	*A*	Movement
Plant cell	Chloroplast	*B*
C	Spindle-shaped	*D*
E	Selectively permeable	Protect the cell from its surroundings

Choose the correct option.

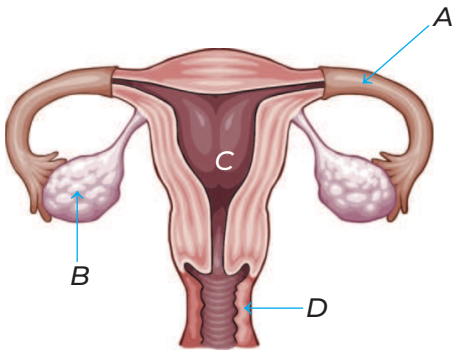
(a) *A*-Pseudopodia, *B*-Respiration, *C*-Muscle cell, *D*- Expansion, *E*-Nucleus.

(b) *A*-Flagella, *B*-Photosynthesis, *C*-Nerve cell, *D*-Contraction, *E*-Cell vacuole

(c) *A*-Cilia, *B*-Reproduction, *C*-Blood cell, *D*-Contraction, *E*-Nucleus.

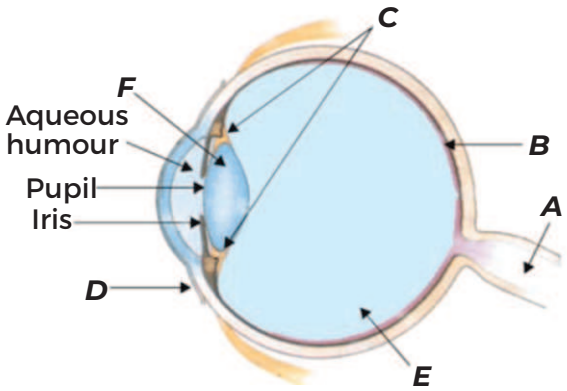
(d) *A*-Flagella, *B*-Photosynthesis, *C*-Muscle cell, *D*-Contraction, *E*-Cell membrane

42. Choose the correct option for labelling the given figure.



A	B	C	D
(a) Vagina	Uterus	Fallopian tube	Ovary
(b) Uterus	Ovary	Fallopian tube	Vagina
(c) Fallopian tube	Ovary	Vagina	Uterus
(d) Fallopian tube	Ovary	Uterus	Vagina

43. Consider the given diagram and identify the part at which the image is formed in the eye.

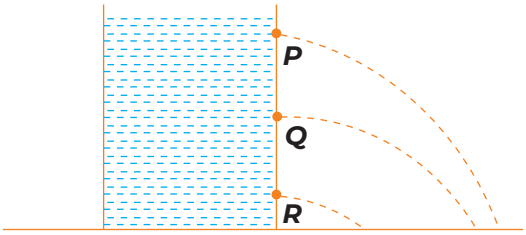


(a) *B* (b) *C* (c) *A* (d) *D*

44. When a copper vessel is exposed to moist air for long, it acquires a dull green coating. The green material is a mixture of *X* + *Y*. Identify *X* and *Y*.

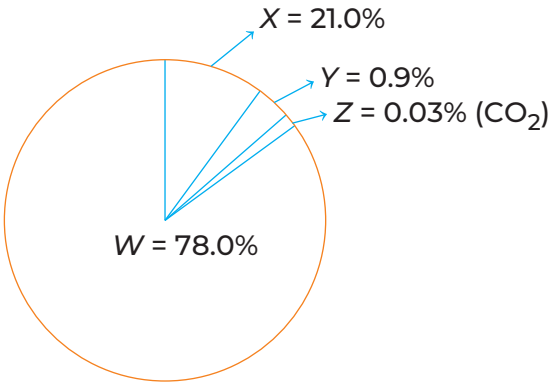
	X	Y
(a)	Copper hydroxide	Copper carbonate
(b)	Sulphur hydroxide	Sulphur carbonate
(c)	Zinc hydroxide	Zinc carbonate
(d)	Phosphorus hydroxide	Phosphorus carbonate

45. What amongst the following statement is incorrect regarding the figure given below?



(a) Water flowing through hole *P* will move a smaller distance as compared to *Q* and *R*.
(b) Water flowing through hole *Q* will be maximum.
(c) Water flowing through *R* will be more than *Q* but less than *P*.
(d) Water flowing through all holes will travel same distance as pressure exerted by a liquid is equal in all directions.

46. The given pie chart shows the composition of air. Identify the gases *W*, *X*, and *Y*.



W	*X*	*Y*
(a) Nitrogen	Rare gases	Oxygen
(b) Carbon	Oxygen	Rare gases
(c) Nitrogen	Oxygen	Rare gases
(d) Rare gases	Hydrogen	Oxygen

47. The figure given below shows the root nodules of legumes such as long beans or groundnuts.

What is the importance of the presence of bacteria in the root nodules of legumes?

(a) The ammonium compounds make the soil more fertile

(b) The nitrogen produced is required by the plants to accelerate the process of photosynthesis

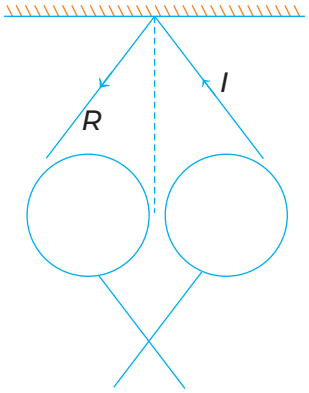
(c) The nitrate salts produced, help the plants to grow faster

(d) The nitrate salts produced are used by the plants to produce proteins

48. A gun is fired in the air at a distance of 720 m from a person. He heard the sound of the gun after 2 s. What is the speed of the sound?

(a) 350 m/s (b) 360 m/s (c) 380 m/s (d) 780 m/s

49. Which amongst the following statement is incorrect about this figure?



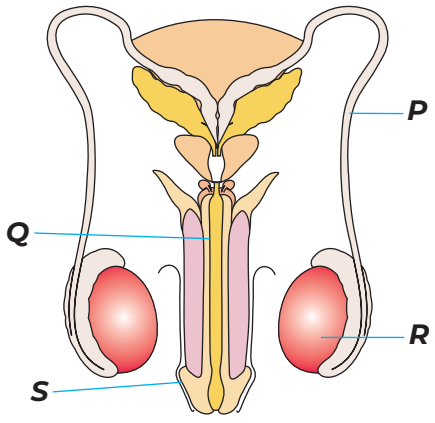
(a) Angle of incidence is equal to the angle of reflection.

(b) Angle of incidence is greater than the angle of reflection.

(c) Normal is not perpendicular to incident ray.

(d) Normal is perpendicular to reflected ray.

50. The figure given below shows the male reproductive system.



Which part is wrongly matched with its function?

(a) *P*-To transport sperms

(b) *Q*-To let out- urine or sperms

(c) *R*- To produce male gametes called ova

(d) *S*-To ejaculate sperms into the vagina

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. (d) The property due to which non-metals break on hammering is called brittleness.

2. (d) The lowest temperature at which a substance catches fire and starts burning is known as ignition temperature. Substances which spontaneously ignite in a normal atmosphere at naturally ambient temperatures are termed pyrophoric.

3. (a) The species, which are found in some specific regions are known as endemic species.

4. (c) Viruses are neither considered as living nor as non-living thing. As if they are present outside a living organism (host) body, they are found to be non-living thing, but after entering the host body, they act as living thing and reproduce efficiently.

5. (b) Given, volume of cube = 40 cm^3

mass of cube = 80g

$$\text{Density of cube} = \frac{\text{Mass}}{\text{Volume}}$$

$$= \frac{80}{40} = 2 g/cm^3$$

As, we know density of water is 1g/cm^3. Since, the density of cube is greater than that of water so, it will sinks in water.

6. (a) Mitochondria contains its own DNA and proteins. Thus, it is called semi-autonomous organelle and it can survive the fractionation process.

7. (a) Cellulose digesting bacteria, are persent in the digestive system of herbivorous animals.

8. (d) On combustion, almost every fuel releases carbon dioxide in the environment. The increased concentration of carbon dioxide is believed to capture the rays, thereby increasing the temperature of the Earth.

Hence, it leads to global warming.

9. (a) Good fuels, should not have high ignition temperature. The ignition temperature of an ideal fuel should be neither too high nor too low.

10. (b) While blowing a whistle the vibrations are produced in the air, which produces sound.

11. (c) Pole star appears to be stationary in all seasons because it lies above the axis of North pole of the Earth and this axis is the rotational axis of Earth.

12. (b) Cell wall and chloroplast are only present in plant cell. Cell membrane is present in both plant and animal cell.

13. (d) The variation in the brightness of a star is due to difference in apparent magnitude and absolute magnitude and this difference depends on the distance of star from the Earth.

14. (c) The pinna is the outer part of our ear that collects sound from outside and send it to ear canal which amplifies it and send to eardrum.

15. (a) Anthracite is the highest rank of coal, a harder, glossy, black coal used primarily for residental and commercial space heating.

16. (c) The given figure is of sperm, where, *A* represents acrosome which helps in penetration of the wall of ovum (egg). Part *B* is tail which helps to generate the wave that allows movement. Part *C* is middle piece which providing energy required for swimming. Part *D* is head, it contains the nucleus, required to form a new organism.

17. (b) The metal object on which electroplating to be done is connected to the negative terminal of battery. Electroplating is the process of applying a metal coating on another metal piece, through on electro-deposition process.

18. (b) Muscle cramps occur due to partial breakdown of glucose which produces lactic acid in muscles, this condition occur due to lack of O_2 in blood.

19. (c) The number of stars in orion are 7 to 8. It is also called the hunter. The three middle stars represent the belt of the hunter. The four of five bright stars appear to be arranged in the form of a quadrilateral.

20. (d) Paddy and maize are Kharif crops. Wheat, gram, peas are Rabi crops. Plant waste and cow dung is used to make organic manures whereas urea and superphosphate as chemical fertilisers.

21. (c) In reverse osmosis method, impure water is passed through a semi-permeable membrane to separate ions, unwanted molecules and larger particles from drinking water.

22. (a) The correct sequence of development of zygote after fertilisation is

Zygote (early two cells stage) ⟶ Embryo (more than 8-cells) ⟶ Foetus (unborn offspring) ⟶ Baby animal (new born baby)

23. (c) Red data book keeps a record of all the endangered species of that area. The red data book helps us in providing complete information for research, studies and also for monitoring the programs on rare and endangered species and their habitats.

24. (c) Frog lays hundred of eggs at a time in water because it increases the chances of survival.

25. (d) The net force is zero, when the two forces applied on an object are in the opposite directions and are of equal magnitude.

The net force is given as, $F_{net} = F_1 + F_2 = F + (-F) = 0$

26. (d) Reactivity order of elements is based on electrochemical series. This series describes the arrangement of elements in order of their increasing electrode potential. So the, correct sequence of the metals in the increasing order of their reactivity is

Ag < Cu < Pb < Na < K

27. (c) Different colour of flowers in plants are due to the presence of plastid. These are coloured cell organelle present in a plant cell. Thus, provide colour to the flower.

28. (b) The packaging of a glass painting should be made of polystyrene because, it is very strong, crease resistant, light, elastic and absorbs very little water.

29. (b) An electron is negatively charged particle while a proton is positively charged particle. As, opposite charges attract each other. So, the force which is experienced between an electron and a proton is the force of attraction.

30. (a) Statement (a) is incorrect. LPG is a mixture of butane and propane.

31. (b) School bags have wide straps so as to decrease the pressure on the shoulder by making the bag's weight fall over a large area of the shoulder.

32. (b) Sulphur does not react with water to form sulphuric acid. It is prepared industrially by the reaction of water with sulphur trioxide.

33. (d) Ursa major is also known as 'Great bear' as shown in option (d). There are seven prominent stars in this constillation. It appears like a big ladle or a question mark. So, it is also called as saktarshi.

34. (b) Vegetable and animal wastes decomposed by microbes to form manure. It is an organic matter that is used as organic fertiliser in agriculture.

35. (d) Hydrogen gas forms an explosive mixture with air or oxygen and can cause serious problem. It also cause storage and transportational problem.

36. (b) Process I is self-pollination in which transfer of pollen grain occurs from anther to stigma of same flower whereas process II is cross pollination which occurs due to transfer of pollen grain from anther to stigma of different flower of same kind hence, both the plants are of same kind then both the process can take place in them.

37. (d) The image formed on retina is not permanent. It persists only for 1/16th of a second. The retina thus can be used again and again to form images.

38. (a) Natural gas is formed from the decomposition of organic matter buried under sea beds millions of years ago by a process called anaerobic fermentation.

39. (a) The main difference between prokaryotes and eukaryotes is the eukaryotic cells have a membrane bound nucleus, i.e. nuclear membrane is present. Whereas prokaryotic cells do not have well- defined nucleus as they leck nuclear membrane. Ribosomes are present in both prokaryotic and eukaryotic cells. Eukaryotes wrap their DNA around proteins called histones to help package the DNA into smaller spaces, while prokaryotes do not have histones.

40. (c) *P*-Viruses, it replicates only inside the living cell of an organism.

Q-Algae, they are adiverse group of aquatic organisms that have the ability to conduct photosynthesis.

R-Amoeba, a single-called animal that catches food and moves about by extending figer-like projeciton of protoplasm.

S-Bacteria, they constitute a large domain of prokaryotic microorganisms.

41. (d) *A*- Movement in bacteria occur with the help of flagella.

B-Plant cell contain green pigment known as chlorophyll which is necessary for the process of photosynthesis.

C - Muscle cells are of spindle-shaped. They helps in movement by *D* - contraction and relaxation.

E-Cell membrane protects the cell from its surroundings, it is selectively permable in nature.

42. (d) The given figure is a female reproductive organ and here *A* part is Fallopian tube, *B* part is ovary, *C* part is uterus and *D* part is vagina.

43. (a) The given diagram is the structure of human eye in which part *B* shows retina of the eye. Retina is a screen at which the image is formed in the eye. The purpose of this part is to receive light that has focused by lens, convert the light into neural signals and send these signals to the brain via optic nerves for visual recognition.

44. (a) The green material is a mixture of copper hydroxide and copper carbonate. The reaction is given below

$$2Cu + \underbrace{H_2O + CO_2 + O_2}_{\text{Moist air}} \longrightarrow \underset{\substack{\text{Copper}\\\text{hydroxide}}}{Cu(OH)_2} + \underset{\substack{\text{Copper}\\\text{carbonate}}}{CuCO_3}$$

(Green in color)

45. (a) Pressure of a liquid increases with depth. So, the water flowing through hole *P* will move a smaller distance as compared to *Q* and *R*. The range is maximum at the mid-point of water filled tank.

46. (c) In composition of air, nitrogen is present in largest amount, i.e. 78.0%; oxygen is 21% and rare gases are about 0.9%.

47. (d) The importance of the presence of bacteria in the root nodules of legumes is that, the nitrate salts thus produced by the bacteria, is used by the plants to produce proteins.

48. (b) Given, distance travelled by the sound = 720 m

Time taken = 2 s

Speed of sound in air = ?

As, we know that,

$$\text{Speed of sound} = \frac{\text{Distance travelled by the sound}}{\text{Time taken by the sound}} = \frac{720}{2} = 360 \text{ m/s}$$

Thus, speed of sound is 360 m/s.

49. (b) When a ray of light falls on a polished surface, it bounces back. The incident ray makes an angle of incidence (*i*) with the normal to the reflecting surface. Similarly, the reflected ray makes an angle of refraction (*r*) with the normal and according to the laws of reflection, the angle of incidence is equal to the angle of reflection.

50. (c) The part *R* is called testes which is used to produce the male gametes called sperms.