

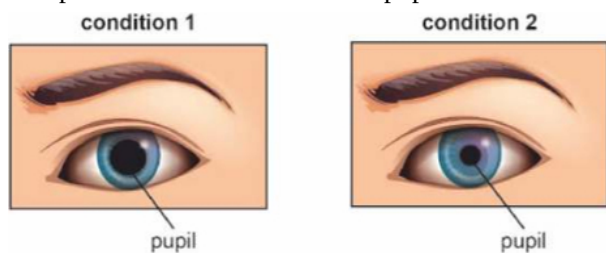
6. Animals exhibiting external fertilisation produce a large number of gametes. Pick the appropriate reason from the following. [1]
- a) Water promotes production of large number of gametes. b) To ensure better chance of fertilisation
- c) Food is available in plenty in water. d) The animals are small in size and want to produce more offsprings.
7. We should not use drugs as they are _____. [1]
- a) Banned by government b) Addictive
- c) Very costly d) Not available easily
8. Two boys A and B are applying force on a block. If the block moves towards the right, which one of the following statements is CORRECT? [1]
- a) Net force on the block is towards A b) Magnitude of force applied by A is lesser than that of B
- c) Magnitude of force applied by A is equal to that of B. d) Magnitude of force applied by A is greater than that of B
9. An object is at rest on a floor, a force is applied to move that object. Which friction force will come into action at this moment [1]
- a) Static friction b) Fluid friction
- c) Sliding friction d) Rolling friction
10. In our brain, the effect of hearing persists for a time duration equal to [1]
- a) $\frac{1}{10}$ s b) $\frac{1}{20}$ s
- c) $\frac{1}{25}$ s d) 1s
11. Which of the following substance should not be added to distilled water to make it good conductor? [1]
- a) Acids b) Bases
- c) Alcohol d) Salts
12. The boundaries of earth's plates, where earthquake tends to occurs are called [1]
- a) Fault zones b) Volatile zone
- c) Poor zone d) Default zone
13. The colour of eyes is due to colour of [1]
- a) Iris b) Eye lens
- c) Retina d) Cornea
14. State true or false: [1]

There can be a wildlife sanctuary within a biosphere reserve.

15. State true or false: [1]
Static friction is more than the sliding friction.

Section B

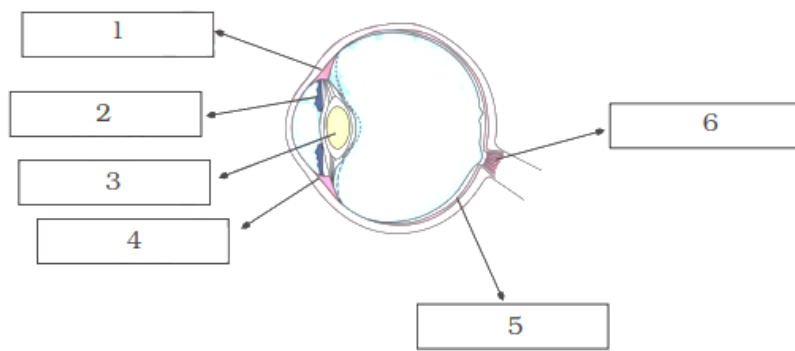
16. What are the major groups of microorganisms? [2]
17. What are petrochemicals? What are their uses? [2]
18. Two glass jars A and B are filled with carbon dioxide and oxygen gases, respectively. In each jar a lighted candle is placed simultaneously. In which jar will the candle remain lighted for a longer time and why? [2]
19. Write the name and function of one male and one female sex hormone. [2]
20. What are the consequences of noise pollution? [2]
21. Paheli had heard that rainwater is as good as distilled water. So she collected some rainwater in a clean glass tumbler and tested it using a tester. To her surprise she found that the compass needle showed deflection. What could be the reasons? [2]
22. The picture shows the size of the pupil under two different conditions. [2]



What makes the pupil change size between conditions 1 and 2?

Section C

23. Explain modern methods of irrigation. [4]
24. What are the four different use of the petroleum products? [4]
25. What are the features of asexual reproduction? [4]
26. **Define the terms** [4]
a. Menopause
b. Menarche
c. Adolescence
27. Define the following: [4]
a. Muscular force
b. Frictional force
28. a. What is one vibration in a second called as? [4]
b. What is oscillation? A vibrating object produces 156 waves in four second. Calculate the frequency of the vibrating object.
29. Describe the specific features of an LED? [4]
30. Explain the mechanism of thunderstorms. [4]
31. Write down the names of parts of the eye in the blank spaces shown in the figure. [4]



Section D

- 32. Explain briefly the female reproductive system? [5]
- 33. Explain the working of a dropper and its principle. [5]
- 34. Briefly describe an activity to show that there may be a change of colour in the solution during a chemical reaction. [5]

Solution

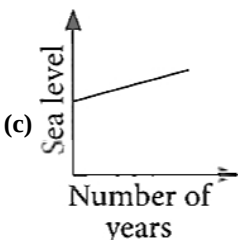
Section A

1. (c) harvesting
Explanation: harvesting

2. (a) Aspirin
Explanation: Aspirin

3. (b) 350 to 450
Explanation: 350 to 450

4. (c) Gaseous fuels
Explanation: Gaseous fuels

5. 
(c)

Explanation: Due to deforestation, there will be a rise in global temperature. This will eventually lead to rise in sea level.

6. (b) To ensure better chance of fertilisation
Explanation: A large number of gametes are released by such animals to ensure a better chance of fertilization. Since the gametes are laid in water, many of them are carried away by moving water, wind, or rain and many are eaten by other animals. Therefore, the production of a large number of gametes is necessary.

7. (b) Addictive
Explanation: We should not use drugs as drugs are addictive in nature as a person start using it, it becomes difficult to give up the same that ruin the family and health.

8. (d) Magnitude of force applied by A is greater than that of B
Explanation: Magnitude of force applied by A is greater than that of B

9. (a) Static friction
Explanation: Static friction

10. (a) $\frac{1}{10}$ s
Explanation: The human ear can hear two sounds, separately only if there is a time interval or time gap of $\frac{1}{10}$ th of a second between the two sounds.

11. (c) Alcohol
Explanation: Addition of acids, bases, and salts in distilled water makes it good conductor of electricity due to presence of ions in these substances but alcohol does not produce ions and it does not make any change in the pH value of distilled water.

12. (a) Fault zones
Explanation: The boundaries of earth's plates where earthquake tends to occurs are called fault zone. In this zone there are about a dozen large, irregularly shaped plates which slide over, under and past each other. Movement of these plates occurs in this zone causing earthquakes.



13. (a) Iris

Explanation: The colour of eyes is due to colour pigmentation present in the diaphragm of iris present around the pupil that controls the amount of light entering the eye ball.

14. (a) True

Explanation: True

15. (a) True

Explanation: True

Section B

16. Microorganisms are classified into major groups based on their size. These are :

(i) Bacteria (ii) Fungi (iii) Protozoa (iv) Some algae

Viruses are another type of microorganisms.

17. Many useful substances are obtained from petroleum and natural gas. These are called petrochemicals. Petrochemicals are used in the manufacture of detergents, fibres, polythene and other plastics and fertilizers.

18. In jar B, the candle remains lighted for a longer time because oxygen is a supporter of combustion. So, we can say that oxygen (air) is necessary for combustion to take place.

19. (i) Male sex hormone is testosterone which is produced by testes. It produces secondary sexual characters in males and supports the production of sperms.

(ii) Female sex hormone is estrogen which is produced by ovaries. It produces secondary sexual characters in female and prepare uterus for receiving the embryo.

20. i. Noise pollution damages the ears. Constant loud music can harm hearing or causes permanent damage to ears.

ii. It becomes the reason of poor health like lack of sleep, hypertension, frustration etc.

iii. Noise pollution has effects on the environment

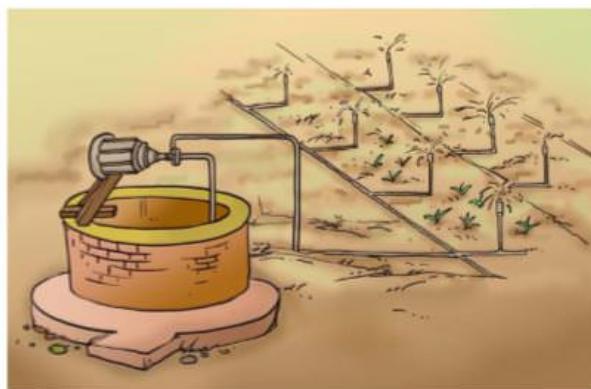
21. Though rainwater is as pure as distilled water yet it may be contaminated by the impurities suspended in the atmosphere. These impurities make the rainwater conducting. This could be the reason for the deflection of compass.

22. Intensity of light or brightness of light.

Section C

23. The main modern methods of irrigation are as follows:

i. **Sprinkler System:** This system is more useful on the uneven land where sufficient water is not available. The perpendicular pipes having rotating nozzles on top are

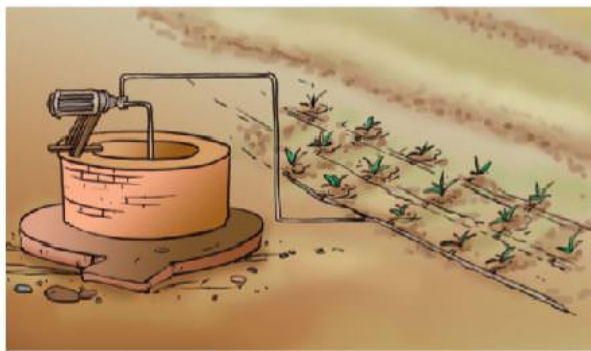


Sprinkler system

Joined to the main pipeline at regular intervals. When water is allowed to flow through the main pipe under pressure with the help of a pump, it escapes from rotating nozzles. It gets sprinkles on the crop as if it is raining. It is very useful for sandy soil.

ii. **Drip System:** In this system the water falls drop by drop just at the position of the roots. So it is called drip system. It is the best technique for watering fruit plants, gardens and trees. The system provides water to plants drop by drop. Water is not

wasted at all. It is a boon in regions where availability of water is poor.



Drip System

24. The different uses of petroleum products are :
- Petrol is used as motor fuel, aviation fuel and solvent for dry cleaning.
 - Kerosene is used as fuel for stoves, lamps and jet aircrafts.
 - Diesel is used as fuel for heavy motor vehicles, electric generators etc.
 - Paraffin wax is used as ointment, candles and vaseline.
 - Kerosene used for stores, lamps and for jet crafts.
 - Lubricating Oil used for Lubrication for different parts of engine.
 - Bitumen used in Paints and Roads surfacing.
25. The features of asexual reproduction are as follows:-
- It is uniparental.
 - Can occur with or without gamete formation.
 - Individuals produced are exact copies and are also sometimes referred to as the clones.
 - The whole process takes place in a small period of time
 - Rapid multiplication and growth
26. a. **Menopause**- stoppage of menstruation at 45 to 50 years of age is termed as menopause.
b. **Menarche** - the first menstrual flow begins at puberty and is termed as menarche.
c. **Adolescence**- the period of change when the body undergoes changes, leading to reproductive maturity is called adolescence.
27. i. Muscular force- The force exerted by the muscles of our body is called the muscular force. Both human beings and animals can exert force with their muscles. For example, we push a cart with our muscles, child riding a bicycle is using his legs muscles to ride a cycle, and a person drawing water from the well is using his muscular force.
ii. Frictional force- A force that opposes the motion of an object is called a frictional force. It acts between the surface of the two objects. For example, a ball rolling on the ground slows down and then stops after some time. It is due to the frictional force acting between the ground and the surface of the ball.
28. a. One vibration in a second is called as Hertz.
b. To and fro motion of a vibrating object is called oscillation.
Frequency = $\frac{156}{4} = 39Hz$
29. An LED or light emitting diode is an electronic device. It lights up (starts emitting light) even when a very weak current flows through it. It contains two leads one of which is longer than the other. The longer lead is connected to the cell/battery. Hence, when current flows through the circuit is too weak then bulb may not glow at all so for such cases we can utilise LED which is a more sensitive detector of current.
30. During the development of a thunderstorm, the air currents move upward while the water drops move downward. These movements cause separation of charges. The positive charges collect near the upper edges of the clouds and negative charges accumulate near the lower edges. There is accumulation of positive charges near the ground also. When the amount of accumulated charges becomes very large, the air which is normally a poor conductor of electricity, is no longer able to resist their flow. Negative and positive charges meet, producing streaks of bright light and sound. This process is called an electric discharge. The process of electric discharge can occur between two or more clouds or between clouds and the earth. In this way thunderstorm is caused.



Accumulation of charges leading to lightning.

31. The names of the parts of the eye as shown in the figure are:

1. Ciliary muscle
2. Iris
3. Lens
4. Cornea
5. Retina
6. Optic nerve

Section D

32. The female reproductive system consists of the organs for the formation of gametes or basically referred to as ova or ovum and organs for the transport of ovum to the uterus.

The female reproductive organs include the following:-

- A pair of ovaries.
- Oviducts or the fallopian tube.
- And the uterus.

It produces the female gametes referred to as the ova or ovum.

In human beings a single matured egg is released into the oviduct by one of the ovaries every month.

And in the uterus development of the baby takes place.

33. A dropper is a short glass tube with a rubber bulb at one end and a nozzle at the other end. It is used for measuring the drops of liquids as in the case of medicines. It works on the principle of atmospheric pressure.

When we press the rubber bulb, the air present in the glass tube escapes from the nozzle in the form of bubbles. The air pressure inside the rubber bulb and the nozzle is reduced and a greater atmospheric pressure is acting on the surface of the liquid which pushes the liquid inside the glass tube. This is how it works on the principle of the atmospheric pressure.

34. There may be a change of colour in the solution during a chemical reaction.

Cut a potato into two halves and insert the copper wires of a tester into it. After half an hour, there is a greenish blue spot on the potato around one wire whereas there was no such spot around the other wire. It is observed that always the wire connected to the positive terminal, develops a greenish blue spot around it. This can be used to identify the positive terminal of the battery concealed in a box. This shows that the fresh fruits and vegetables conduct electricity to some extent due to the presence of various salt solutions in them.

