

1. Answer: c

Explanation: The female frogs lay hundreds of shell less eggs which are hold together by a jelly like substance.

2. Answer: d

Explanation: The first step in reproduction is fertilization leading to the formation of zygote. The later development of zygote is called as embryo which leads to the formation of foetus.

3. Answer: c

Explanation: After fertilisation, the zygote divides repeatedly and travels down the oviduct, during which the shell of the egg is formed.

4. Answer: c

Explanation: In multicellular organisms, a group of specialized cells form tissues which in turn form organs to perform functions.

5. Answer: c

Explanation: the plasma membrane in a cell is porous which allows the movement of substance both inwards and outwards.

6. Answer: c

Explanation: Naphthalene ball is an insect and mosquito repellent which is produced from coal tar.

7. Answer: b

Explanation: Polyester is easy to wash and doesn't wrinkle easily. Hence it is used in preparation of clothes of men and women.

8. Answer: b

Explanation: Under high pressure and high temperature the remains of plants get converted to coal.

9. Answer: b

Explanation: the increase in global temperature as a result of increase in  $\text{CO}_2$  which disturbs the water cycle and causes droughts.

10. Answer: a

Explanation: Even though every option might seem to be correct, encroachment and hunting of animals by neighbourhood people is the major threat for sanctuaries.

11. Answer: a

Explanation: the frictional force depends on the shape of the object and nature of the fluids.

12. Answer: d

Explanation: In the given question, it is mentioned that force is applied on a moving truck. But the direction has not been mentioned. When force is applied on the back of the moving truck, the truck will increase its speed or change its direction. If it is applied on the front, the truck will stop.

13. Answer: c

Explanation: The muscular force can be applied only when it is in contact with any objects. From the above examples, the boxer who kicks a bag is the best example for muscular force.

14. Answer: c

Explanation: The combination of copper hydroxide  $\text{Cu}(\text{OH})_2$  and copper carbonate ( $\text{CuCO}_3$ ) will give green colour.

15. Answer: b

Explanation: The sunlit portion of the moon is visible from the earth and it is maximum on full moon day.

16. Robert Hooke in 1665, who first coined the term "cell" by observing a cork under a simple magnifying glass. Structure and functions of typical cells with size

of 0.1 to 0.5 micrometre can only be studied with the help of improved microscopes which has high magnification effects.

17. The process of reproduction starts with the fusion of sperm and ova or egg. The result is the formation of zygote, which is also single celled. This zygote further moves to uterus while undergoing multiple divisions to form embryo. This embryo on further development becomes foetus which is multicellular.

18. Groundnuts come under the category of Kharif crops. They are sown and grown during the rainy season which generally starts in June month and ends in September month in India.

19. Cytoplasm has several organelles among which nucleus is the one. The nucleus in turn carries thread like structures called chromosomes. They carry genes which has hereditary information and carries characters of parents to offspring.

20. In order to preserve the natural flora and fauna, the government lays rules to protect them by forming wildlife sanctuaries, national parks and biosphere reserves.

Example: Kalakad Mundanthurai Tiger Reserve.

21. The to and fro motion or front and back motion of an object is called as vibration. Such vibrations in objects produces sounds. In some cases it is visible while in other they are not depending on their amplitude.

22. The force that is present in the solar system is Gravitational force. This force of attraction keeps the celestial objects like planets, asteroids, meteors and comets etc., revolving around the sun.

23. i) The growth varies from person to person during adolescence. For some the growth happens throughout the body at the same time. But for some it is not.

ii) Some experience rapid increase in height and weight. While some experience rapid growth of feet, hands and arms which result in uneven matching of the body parts with the individual. But as time goes by, other parts grow equally and match up the former body parts.

24. Frogs undergo External fertilisation. The female frog lays eggs in the water where a jelly like substance holds the eggs together. The male frog then releases

the sperms which swim through the water and reach the eggs. The life cycle of frogs has three distinct stages. They include: eggs → larva or tadpoles → adults or fully grown frogs.

25. Curd contains many good microorganisms. Among all, the bacteria named "Lactobacillus" is present in milk. It multiplies rapidly and leads to the formation of curd in warm environment. That's why keeping milk in fridge delaying its conversion into curd. The use of bacteria is also extended to the production of cheese, rava (sooji) whose main ingredient is curd.

26. The chemical process where any substance reacts with oxygen to give off heat is called as combustion. The input is oxygen and the substance i.e. the fuel. The output is heat, sometimes light or glow and gas and sometimes sound. Example: the burning of coal releases large amount of soot and carbon monoxide.

27. The best method to preserve milk is by a method called Pasteurisation. In this method, the milk is heated to about 70 degree Celsius for 10-15 seconds and then chilled immediately and stored probably in cold temperatures. Pasteurised milk is ready for immediate consumption without the need of boiling as it is free from harmful microbes.

28. River Ganga is one among the ten most endangered rivers in the world. The garbage and wastes thrown out from different cities heavily pollute the river. In 1985, in order to save the river, a plan called Ganga Action Plan was launched. Recently, the government has launched National Mission for Clean Ganga to clean and save the river.

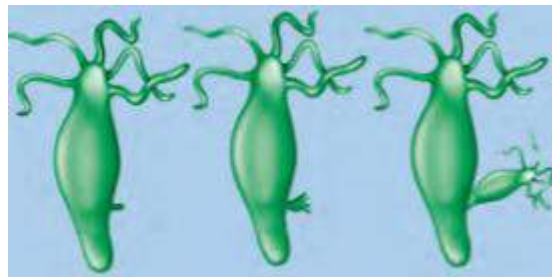
29. All metals are reactive in nature. While, Sodium (Na) is highly reactive in the presence of water and oxygen. High heat is produced during this reaction. Hence Na is stored in Kerosene.

Even though non-metals are not reactive in water, they are reactive with air. Phosphorous is such non-metal which is highly reactive with air and hence stored in water.

30. In general, the impression of an object in the retina persists for about  $1/16^{\text{th}}$  of a second. Hence, if still images of a moving object are flashed on the eye at the rate faster than 16 per second, then the eye considers the object is in motion. Movies are best examples of this process. Every second around 24 frames are moved, hence we get the feeling of motion.

31. In general, pressure is defined as force acting per unit area of a surface. Hence, smaller the area, higher the pressure is and vice versa. A perfect example for this is, nail and hammer. When you try to push the nail in the wall by its head, it won't go inside. On the other hand, if we push the nail by its sharp end, we will succeed.

32. In hydra, asexual reproduction takes place. That is individuals are produced by a single parent without the involvement of other hydra. In Hydras, every new young hydra is produced as outgrowths from a single hydra. During reproduction, each Hydra shows one or more bulges. These bulges are called as Buds and they develop into separate Hydras. This process is called as "Budding" as new ones are produced from the buds which is shown in the below figure.



33. The substances which pollute the air is called as air pollutants. They can come from both natural as well as man-made sources. Some of the important source of different pollutants are listed below.

- i) Carbon monoxide, carbon dioxide, nitrogen oxides and smoke from vehicles such as bikes, cars and buses.
- ii) Sulphur dioxide and nitrogen dioxide from petroleum refineries.
- iii) Chlorofluorocarbons (CFC's) from fridges and AC's
- iv) Tiny ash particles from power plants
- v) Nitrogen presence in smog during winter season as a result of burning of fuels.

34. i) The application of force in all cases won't always lead to change in direction or speed or any other change in state of motion of the object. For example, if a building or tree when pushed with muscular force, it won't cause any change in state of motion in the object.

ii) Tremors can be caused by disturbance deep down inside the uppermost layer of the earth called the crust. Tremors can also occur due to volcanic eruptions or underground explosions.

