

# Maharashtra State Board

## Class VII Science

### Sample Paper – 2

### Solution

I.

1. (b)

When elements or compounds are mixed, a mixture is obtained. The proportion of the constituents of a mixture is not fixed. The properties of the constituent elements are retained in a mixture.

2. (a)

Trapping of heat in the Earth's atmosphere causes a rise in the temperature of the Earth. Increase in temperature leads to warming of the atmosphere called global warming.

3. (c)

An object which does not allow light to pass through it is said to be opaque. A shadow is formed when light rays fall on an opaque object and are obstructed by it.

4. (d)

The mass of a unit volume of a substance is called the density of the substance.  
Density = Mass/Volume

5. (a)

Community: The group of organisms of all the various species living together in any one habitat is called a community.

Population: The total number of individual organisms of a particular plant or animal species on the Earth together constitutes the population of that species.

Biosphere: The part of the atmosphere, hydrosphere and lithosphere occupied by living things is together called the biosphere.

6. (c)

Sporogenesis: Reproduction by spores

Fragmentation: Reproduction by the formation of small fragments or segments which subsequently grow into an individual independent plant

Cell division: Reproduction by the division of a single cell to form two identical daughter cells

7. (c)

Arteries carry blood from the heart to the different parts of the body, while veins carry blood from the different parts of the body to the heart.

**8. (c)**

In convection, the particles of the medium leave their place and become a part of the convection currents.

**9. (a)**

*Amoeba* does not have parts such as hands, legs and mouth. It moves with the help of finger-like projections called pseudopodia.

**10. (d)**

Citric acid, acetic acid and boric acid are chemical preservatives which are added to foodstuffs to preserve them for a long period of time.

**11. (c)**

<b>Vitamin/Mineral</b>	<b>Deficiency disease</b>
Vitamin C	Scurvy
Vitamin D	Rickets
Iodine	Goitre

**12. (a)**

In photosynthesis, plants convert light energy into chemical energy and store it in the form of carbohydrates. This process is aided by chlorophyll.

**13. (d)**

Part A represents gold leaves of a gold leaf electroscope. Gold leaves are attached to the end of the flask to make the electroscope more sensitive.

**14. (c)**

Sound travels fastest through a solid medium. It travels faster in liquids as compared to gases.

**15. (a)**

22<sup>nd</sup> March is observed as World Water Day every year to make people aware of the water crisis.

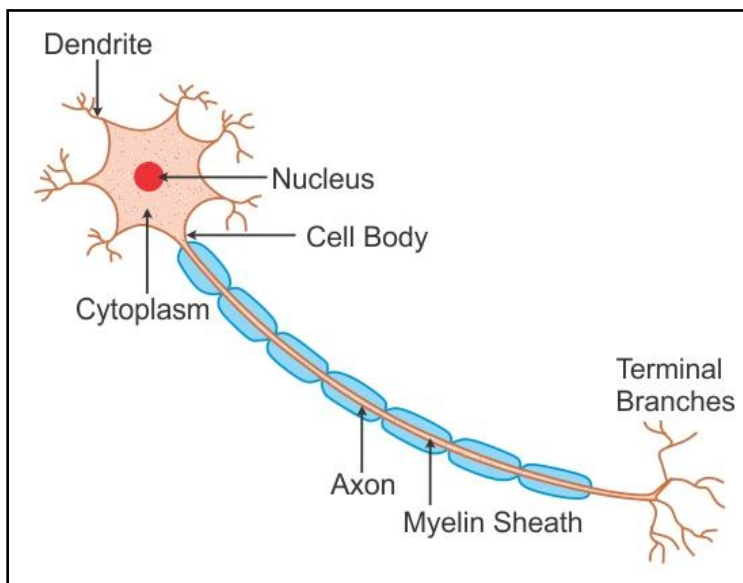
**II.**

**16.**

(a) True.

(b) False. Salts are formed by the neutralisation reaction between acids and bases.

**17. Neuron**



**18.**

Column A	Column B
Glass rod	Positive charge
Ebonite rod	Negative charge
Like charges	Repel
Unlike charges	Attract

**19.**

(a) Saliva

(b) Pancreas

**20. Differences between conduction and convection:**

Conduction	Convection
1. Conduction is the process of heat transfer without the particles of the substance moving away from their original position.	1. Convection is the process of heat transfer in which the particles of the substance leave their place and become a part of the convection currents.
2. It occurs in solids only.	2. It occurs in liquids and gases only.

### III.

#### 21.

- (a) Water is colourless, tasteless and odourless.
- (b) It is transparent and liquid at normal temperature.
- (c) Chemically, water is a neutral substance.
- (d) It is a universal solvent and does not react chemically with any of the dissolved substances.
- (e) Therefore, water is an ideal medium for chemical reactions.

#### 22. Adulteration of food:

- (a) Food adulteration is the mixing of cheap, low quality and generally undesirable substances in the food to make a profit.
- (b) Eating of adulterated food can make us fall sick.
- (c) Adulteration of food can be detected by simple methods.
- (d) The Food and Drug Administration Department inspects all the food items from time to time to prevent food adulteration.
- (e) It is our duty to be alert while buying any type of foodstuffs.

#### 23.

- (a) Tomato seeds contain calcium oxalate crystals.
- (b) Eating of tomatoes causes these crystals to get deposited in the urinary tract in the form of small prickly stones.
- (c) These stones cause severe pain during urination and it is also difficult to remove them from the body.
- (d) Hence, a person with kidney stones is advised not to eat tomatoes.

#### 24.

- (a) When we wear a cardigan, static electric charges are produced on the wool of the cardigan and the fine hair on our arms because of friction.
- (b) They both get oppositely charged and attract each other.
- (c) The charges jump from the cardigan to our hair and *vice versa*.
- (d) This produces a crackling sound as we wear a cardigan.

#### 25. Uses of ultrasound in medical and other sciences:

- (a) As ultrasonic sound waves are reflected from any obstruction, it is possible to scan soft tissues inside the body by the ultrasound technique.
- (b) It is mostly used to scan the condition of the foetus in the womb of the mother.
- (c) The depth of the oceans can be measured through the ultrasound technique.
- (d) Reflection of ultrasonic sound from the inside of a metal helps us to detect faults or impurities inside the metals.

#### IV.

#### 26.

- (a) Strong acids – Hydrochloric acid, Sulphuric acid  
Strong bases – Sodium hydroxide, Calcium hydroxide
- (b) Differences between acids and bases:

<b>Acids</b>	<b>Bases</b>
1. The main constituent is H.	1. The main constituent is OH.
2. Acids turn blue litmus red.	2. Bases turn red litmus blue.
3. They have a sour taste.	3. They have an astringent taste.
4. Acid solutions are not soapy to touch.	4. Basic solutions are soapy to touch.
5. Examples: Hydrochloric acid, acetic acid	5. Examples: Sodium hydroxide, calcium hydroxide

- 27.** Growth is an irreversible process because of which there is an increase in height, weight, shape and size of an organism.

Various stages of growth:

- (a) Production: In this stage, a new organism is produced. Growth at this stage is slow.
- (b) Growth: The parts of the new organism grow in length, weight and size. The rate of growth is more.
- (c) Differentiation: The new parts formed become stabilised. Growth is slow. Animals grow only for a definite period of time.

#### 28.

- (a) Figure A – Cell division  
Figure B – Segmentation/Fragmentation
- (b) Cell division: Reproduction by the division of a single cell to form two identical daughter cells is called cell division. Example: *Amoeba*  
Fragmentation: Reproduction by the formation of small fragments or segments which subsequently grow into an individual independent plant is called fragmentation or segmentation. Example: *Spirogyra*

#### 29.

- (a) Causes of soil pollution:
- Overuse of chemical fertilisers for growing crops
  - Release of polluted water, chemicals and slag from factories into the soil
- (b) Measures for protecting soil:
- Use of organic fertilisers
  - Planting of trees

**30. Construction of a thermos flask:**

- (a) A thermos flask consists of two thin glass bottles fitted one inside the other.
- (b) The inner surfaces of the bottle are covered with a silvery coating which shines like a mirror.
- (c) A vacuum is created by removing air in the space between the two bottles.
- (d) A plastic or cork lid is fitted on the mouth of the bottle.

