Maharashtra State Board
Class VIII Science
Sample Paper – 2 Solution

I.

1. **(b)**
   The proton has a charge equal in magnitude but opposite in sign to that of the electron. A proton has one unit positive charge whereas an electron has one unit negative charge.

2. **(c)**
   Uranus rotates from east to west while earth rotates from west to east.

3. **(b)**
   Antibiotics are medicines produced from microorganisms which kill or stop the growth of disease causing microorganisms.

4. **(a)**
   An electric current flowing through a conductor produces magnetic field in its surrounding region.

5. **(a)**
   Society for the Prevention of Cruelty to Animals (SPCA) is developed to end cruelty towards animals and to look after the issues such as merciless torturing of animals.

6. **(c)**
   HIV progressively attacks the human immune system and leaves individuals susceptible to many other infections.

7. **(b)**
   Coal, buried deep below the earth's crust is dug out by the process of mining.

8. **(c)**
   If a charged particle does not experience any force in a magnetic field, then it is either stationary or moving in a direction parallel to the field.

9. **(a)**
   Simple distillation is the process of separating components of a mixture containing two miscible liquids that boil without decomposition and have sufficient difference in their boiling points.

10. (b)

Acid rain affects aquatic life by destroying living bodies. It corrodes water conducting pipes.

11. (d)

Irrigation of soil cannot be carried out using a plough.

12. (c)

The various physical forms in which an element can exist are called the allotropes of an element. Butane is a compound.

13. (b)

Metals react with dilute acids to form salts and evolve hydrogen gas.

$2Na + 2HCl \longrightarrow 2NaCl + H_2$

14. (c)

In fractional distillation, fractionating column gives the arrangement for providing different temperature zones inside it.

15. (b)

Pins and nails are made with pointed ends because when force is applied on their head, it exerts a large pressure on the surface and pierces and penetrates into it.

II.

16. A drinking straw is used by creating suction with the mouth. This causes a decrease in air pressure inside the straw. Since pressure acting on the surface of the drink is equal to atmospheric pressure; so, this greater pressure pushes the soft drink up the straw into the mouth.

17. Animal husbandry is the branch of agriculture dealing with feeding, caring and shelter of domestic animals.

Animals raised in animal husbandry include fish, cow, horse, buffalo and goat.

18. Reduction reactions are the reactions in which hydrogen is added or oxygen is removed.

For example: $C_3H_4 + 2H_2 \longrightarrow C_3H_8$

Propyne is reduced to propane. In this reaction, hydrogen is added to propyne.

19. Triple vaccine (also called DPT) is a combined vaccine injected to young babies to protect them from three diseases; Diphtheria, Tetanus and Whooping cough (Pertussis).

20. Copper and aluminium are used for making wires because they are good conductors of electricity and hence, allow electric current to pass through them.

III.

21. When an electric current is passed through acidulated water, the reaction is called as electrolysis of water. The chemical equation for this reaction is as follows:

$2H_2O \rightarrow 2H_2 + O_2$

This is a decomposition type of reaction as water is decomposed into its constituent substances.

22. Cell wall is present only in plants. It is made up of cellulose and provides shape and rigidity to the plant cell. It protects the cell from disease-causing agents as well as from underlying protoplasm against mechanical injuries. It is freely permeable; thereby, allowing substances in the solution to enter and leave the cell without any hindrance.

23. The three features of reflection are-

i. The image formed is virtual.
ii. The image formed is laterally inverted.
iii. The image formed is of the same size as the object.

24.

Diamond	**Graphite**
1. Pure diamond is colourless and transparent. 2. It is the hardest naturally occurring substance. 3. It has high density i.e. 3.5 g/cm^3. 4. It burns in air at 900^oC to form carbon dioxide.	1. Graphite is grayish black, opaque and shiny 2. It is soft and greasy to touch. 3. It has a comparatively low density i.e. 2.39 g/cm^3. 4. It burns in air at 700^oC to form carbon dioxide.

25. Poultry is kept for both meat and eggs. Hens that eat less and will lay more eggs are selected as layers. Such variety is White Leghorn that needs 125 grams of nourishing diet and lays 200-250 eggs in a year. Birds that are fed more and gain more weight are kept for meat and are called broilers. In 8 to 10 weeks, their weight becomes 1300-1500 grams.

IV.

26. Tissue culture is a process that involves exposing plant tissue to a specific regimen of nutrients, hormones, and light under sterile, in vitro conditions to produce many new plants.

Growing of living cells or group of cells outside plants or animals is called tissue culture. The method of tissue culture can be useful for preserving plants and preventing them from becoming extinct. By this method, a new organism is produced under a growth medium on certain environmental conditions by which the number of plants which gives fruits or flowers of good quality can be increased.

27.

Sr.No.	Real Image	Virtual Image
1	It can be obtained on a screen	It cannot be obtained on a screen
2	The rays of light after reflection meet at a point	The rays of light after reflection appear to meet at a point
3	It is always inverted.	It is always erect but laterally inverted.
4	It is formed on the same side of the mirror as the object.	It is always formed on the back side of the mirror.

28.

i. Take a long piece of insulated wire and an iron nail.
ii. Wind the wire tightly around the nail.
iii. Connect the free ends of the wire to the terminals of a cell through a switch.
iv. Place some pins on or near the end of the nail and switch on the current. The pins cling to the tip of the nail.
v. The coil behaves like a magnet till the current flows through it.

29. The conversion of atmospheric nitrogen into compounds like ammonia and nitrates which can be used by living things is called nitrogen fixation.

Nitrogen fixation can be brought about by:

i. Micro-organisms that bring about nitrogen fixation are of two types. One of these types is found in the nodules on the roots of certain plants while the other types are found in the soil.
ii. The micro-organisms in the nodules absorb nitrogen from the air and convert it into nitrogen compounds.
iii. The micro-organisms in the soil convert atmospheric nitrogen into ammonia, nitrous acid and nitric acid and eventually into nitrates.

30.

Metals	Non-metals
1. Metals are malleable and ductile.	1. Non-metals are neither malleable nor ductile.
2. Metals are good conductors of heat and electricity.	2. Non-metals are poor conductors of heat and electricity. (Except graphite which is a good conductors of electricity).
3. Metals are lustrous.	3. Non-metals are non-lustrous.
4. Metals are strong .They have high tensile strength. (Except sodium and potassium which are not strong and have low tensile strength).	4. Non-metals are not strong. They have low tensile strength.