CBSE
Class VII Science
Term 1
Sample Paper – 1 Solution

Time: 2 ½ hrs   **Total Marks: 80**

SECTION A

1. **Ans.** Correct Option: [A]
   Solution: Grass eaten by ruminants is stored in the rumen. The rumen contains cellulose-digesting bacteria which digest the carbohydrate cellulose present in grass.

2. **Ans.** Correct Option: [D]
   Solution: Lichen is a symbiotic association between algae and fungi wherein both the organisms are mutually benefitted from each other. The alga provides food to the fungus, and the fungus, in turn, provides shelter to the alga.

3. **Ans.** Correct Option: [B]
   Solution: A barometer is used to measure air pressure.

4. **Ans.** Correct Option: [A]
   Solution: The process by which huge rocks are broken down into small particles by the action of heat, wind, rain and flowing water is called weathering. Biological weathering is caused by plant and animal activities.

5. **Ans.** Correct Option: [C]
   Solution: Angora wool is obtained from Angora goats which are found in the hilly regions such as Jammu and Kashmir.

6. **Ans.** Correct Option: [A]
   Solution: The picture shows a female silk moth laying eggs. A female lays hundreds of eggs at a time.

7. **Ans.** Correct Option: [C]
   Solution: Sorters are the people who separate the fleece of sheep into fibres of different quality. The bacterium anthrax causes a fatal blood disease called sorter's disease.

8. **Ans.** Correct Option: [D]
   Solution: Ammonium hydroxide is used as a cleansing agent.

9. **Ans.** Correct Option: [C]

Solution: Calamine (zinc carbonate) being a basic substance can neutralise the effect of acid present in the ant sting.

10. **Ans.** Correct Option: [C]

Solution: Baking soda is a basic substance and thus changes the colour of yellow turmeric paper to red.

11. **Ans.** Correct Option: [A]

Solution: It reduces heat transfer through conduction.

12. **Ans.** Correct Option: [C]

Solution: Conduction and convection

13. **Ans.** Correct Option: [B]

Solution: The base/fundamental unit of time is second.

14. **Ans.** Correct Option: [C]

Solution: Average speed = Total distance travelled/total time

15. **Ans.** Correct Option: [B]

Solution:

$$\text{Distance covered in first 15 minutes} = 40 \times \frac{1}{4} \text{ km} = 10 \text{ km}$$

$$\text{Distance covered in second 15 minutes} = 60 \times \frac{1}{4} \text{ km} = 15 \text{ km}$$

$$\text{Hence, total distance covered} = 10 + 15 = 25 \text{ km}$$

SECTION B

16. **Ans.** Nutrients are replenished in the soil by two ways:
    (i) Addition of fertilisers and manures: Fertilisers and manures contain plant nutrients such as nitrogen, phosphorus, potassium etc. So, when fertilisers and manures are added to the soil in the field, the soil gets enriched with the necessary nutrients.
    (ii) Growth of leguminous crops: The leguminous plants harbour nitrogen-fixing bacteria (*Rhizobium*) in their root nodules. These bacteria convert nitrogen into nitrogenous compounds which get mixed with the soil.

17. **Ans.** Earthworms ingest soil, digest the organic matter present in it and excrete soil full of plant nutrients known as worm cast which makes the soil fertile. They make burrows inside the soil and thereby aerate it.

18. **Ans.**
    (i) Scouring the sheared skin obtained from sheep helps to remove grease, dust and dirt from the fleece of sheep.
    (ii) Scouring is done by thoroughly washing the sheared skin and hair in a soap solution and a lot of water to remove all the dirt. It can be done by hands or by machines.

19. **Ans.** Magnesium hydroxide is the base present in milk of magnesia. It is used to neutralise the excess acid present in stomach and is hence used as an antacid.

20. **Ans.** Antacids are a group of mild bases which have no toxic effects on the body and are used to cure indigestion. Being basic in nature, antacids react with excess acid in the stomach and neutralise it.

21. **Ans.**
    Distance covered in first 10 min = 40 × (10/60) km = 20/3 km
    Distance covered in second 15 min = 60 × (15/60) km = 15 km
    Total distance = (20/3) + 15 = 65/3 = 21.66 km

22. Ans.
    The body starts at 10.00 am, and it covers a distance of 40 km by 11.00 am.
    Thus, the speed at B = Distance/Time = 40/1 = 40 km/hr
    Therefore, the distance covered in 6 hours is given by
    Distance = Speed × Time = 40 × 6 = 240 km

SECTION C

23. Ans.
   (i) The following adaptations of camel help it to survive in deserts:
         (a) It has long legs which prevent it from coming in contact with hot sand.
         (b) It drinks excess amounts of water in one go.
         (c) It excretes less amount of urine.
   (ii) Rats and snakes avoid the high temperature of the day by residing in burrows during the day time and become active at night. They remain inactive and show lowered metabolic rate in response to high temperature and arid conditions (undergo aestivation).

24. Ans.
   (i) The B-horizon of the soil has the highest mineral content, because when rainwater seeps through the topsoil, it dissolves minerals and deposits them in this layer.
   (ii) Soil is important for plant growth because
         (a) It provides mechanical support to the plants.
         (b) It provides water and nutrients to the plants.

25. Ans.
   (i) Our muscle cells respire anaerobically for a short period of time whenever there is a temporary deficiency of oxygen. When we do heavy physical exercise for several hours or do heavy weightlifting, the demand for energy increases. However, the supply of oxygen to produce the required energy is limited. So, anaerobic respiration takes places in the muscle cells to fulfil the increased energy demands of the body.
   (ii) Muscle cramps occur when muscle cells respire anaerobically. The partial breakdown of glucose produces lactic acid. The accumulation of lactic acid causes muscle cramps.

26. Ans.
   (i) Wool is a proteinaceous fibre and hence burns with a bad smell.
   (ii) Wool fibre is extremely porous. The air in the pores acts as an insulator and does not allow the body heat to escape. Hence, wool is used for making winter clothing.
   (iii) The quality of wool is judged on the basis of its thickness, length, shine, strength and colour of the fibre, which in turn, depends on the breed of sheep.
   (iv) In shearing, the hair of sheep along with a thin layer of skin called fleece is removed from the body of sheep. Shearing does not cause any pain to the sheep because the uppermost thin layer of their skin is dead.

27. Ans.

  (i) The process of rearing of silkworms for obtaining silk is called sericulture.

  (ii) The covering of silk fibres inside which the caterpillar covers itself is called a cocoon.

  (iii) The cocoons of silk moth are used to obtain silk fibres. The cocoons are kept under the Sun or boiled or exposed to steam. The silk fibres are then separated out. This process of separating the silk fibres from the cocoon is called reeling.

28. Ans.

Acids	Bases
1. They are sour in taste.	1. They are bitter in taste.
2. They give corrosive touch.	2. They give soapy touch.
3. They turn blue litmus to red.	3. They turn red litmus to blue.
4. They have no effect on the colour of phenolphthalein.	4. They turn phenolphthalein from pink to colourless.

29. Ans.

  (i) There will be no flow of heat either from the iron ball to water or from water to the iron ball because both are at the same temperature, so heat transfer will not take place.

  (ii) Heat flows from higher temperature to lower temperature. So, heat will go from the hotter end to the colder end.

30. Ans.

  (i) A laboratory thermometer is a thermometer used to measure temperatures in the range $-10°C$ to $110°C$.

  (ii) A pyrometer is used to measure high temperatures.

  (iii) Stainless steel pans are usually provided with copper bottoms because copper is a better conductor of heat than stainless steel, and hence, food can be cooked at a faster rate.

31. Ans.
  (i) Example 1 - Revolution of the Earth around the Sun causes the change in season on a periodic basis.
  Example 2 - Rotation of the Earth around its own axis causes days and nights periodically.
  (ii) Time = Distance/Speed
      = (25/60) + (20/50)
      = (5/12) + (2/5)
      = [(5 × 5) + (12 × 2)]/(12 × 5)
      = [25 + 24]/60
   = 49/60 h
      = 49 min

SECTION D

32. Ans.
  (i) Air containing carbon dioxide enters the plant through small openings called stomata. This air is used during photosynthesis and respiration. Oxygen produced during photosynthesis exits the plant through the stomata. Even the excess of water vapour is released into the atmosphere through these pores by the process of transpiration.
  (ii) Snakes respire through the normal contraction and relaxation of the muscles present between the ribs. However, they lack a diaphragm.

33. Ans.
  (i) The reaction in which an acid reacts with a base to form salt and water is called neutralisation.
  A neutralisation reaction can be represented as

$$Acid + Base \rightarrow Salt + water$$
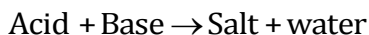
The salt formed during a neutralisation reaction depends on the acid and the base which are reacted with each other. Some heat is always evolved (or produced) in a neutralisation reaction.

  (ii) Sodium hydroxide is a base and hydrochloric acid is an acid. So, when sodium hydroxide is treated with hydrochloric acid, a neutralisation reaction takes place to form sodium chloride (salt) and water. This can be written as

    Sodium hydroxide + Hydrochloric acid $\rightarrow$ Sodium chloride + water
      (NaOH)   (HCl)   (NaCl)   (H_2O)
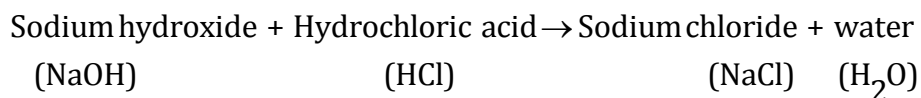
We take 5 ml of dilute hydrochloric acid solution in a test tube. The hydrochloric acid solution is colourless. Add 2 or 3 drops of phenolphthalein indicator to the acid in the test tube. Shake the test tube gently. Phenolphthalein indicator is colourless. There is no change in the colour of the phenolphthalein indicator on adding it to the hydrochloric acid solution.

Take sodium hydroxide solution (base) in a dropper. Add this sodium hydroxide solution to hydrochloric acid in the test tube drop wise (stirring the test tube gently after each addition). Continue to add sodium hydroxide solution drop by drop (while stirring) till a light pink colour just appears in the solution in the test tube. We then stop adding more of sodium hydroxide solution.

At this stage, all the hydrochloric acid taken in the test tube has been completely neutralised by the sodium hydroxide base. Thus, a neutralisation reaction has taken place in the test tube. The completion of neutralisation reaction is indicated by the fact that when all the acid has been neutralised, a little excess of the base changes the colour of the phenolphthalein indicator to pink. This makes the solution in the test tube light pink.
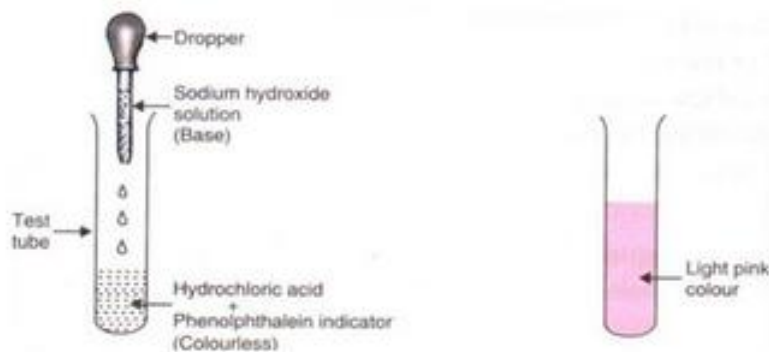
34. **Ans.**
  (i) A simple pendulum consists of a small metal ball (called bob) suspended by a long thread from a rigid support such that the bob is free to swing back and forth. The time of a simple pendulum is the time taken by the pendulum bob to make one complete oscillation.
  (ii) False. For a particular pendulum, the time remains constant throughout.
  (iii) Time for 20 complete oscillations = 36 s
     Time for 1 complete oscillation = 36/20 = 1.8 s
     So, the time of the pendulum = 1.8 s