

- (c) (ii) and (iii)
 - (d) (iii) and (iv)
33. Fertilizers should be used carefully because
- (a) increase in soil fertility is only short lived.
 - (b) they can be harmful to the micro-organisms present in the soil.
 - (c) they can lead to water pollution.
 - (d) All of these
34. Organic farming is a farming system with _____ use of chemicals such as fertilizers, herbicides or pesticides and with a _____ input of organic manures.
- (a) almost no, minimum
 - (b) minimal, maximum
 - (c) maximum, minimum
 - (d) excessive, little
35. Use of neem leaves or turmeric during grain storage serves the purpose of
- (a) bio-pesticides
 - (b) providing nutrients
 - (c) impart the desired colours to the grain
 - (d) preparation of biofertilizers
36. Mixed cropping is
- (a) growing same crops in different seasons.
 - (b) growing two or more crops simultaneously on the same piece of land in a haphazard manner.
 - (c) growing two or more crops simultaneously on the same field in a definite pattern.
 - (d) growing different crops on a piece of land in a preplanned succession.
37. Which of the following are exotic breeds ?
- (i) Brawn
 - (ii) Jersey
 - (iii) Brown Swiss
 - (iv) Jersey Swiss
- (a) (i) and (iii)
 - (b) (ii) and (iii)
 - (c) (i) and (iv)
 - (d) (ii) and (iv)
38. Poultry farming is undertaken to raise following
- (i) Egg production
 - (ii) Feather production
 - (iii) Chicken meat
 - (iv) Milk production

- (a) (i) and (iii)
 - (b) (i) and (ii)
 - (c) (ii) and (iii)
 - (d) (iii) and (iv)
39. Animal husbandry is the scientific management of
- (i) animal breeding
 - (ii) culture of animals
 - (iii) animal livestock
 - (iv) rearing of animals
- (a) (i), (ii) and (iii)
 - (b) (ii), (iii) and (iv)
 - (c) (i), (ii) and (iv)
 - (d) (i), (iii) and (iv)
40. Kranti, Pusa Agarni and Pusa Bold are improved varieties of
- (a) urad bean
 - (b) sunflower
 - (c) chick Pea
 - (d) mustard
41. Insect pests damage the crop by
- (a) cutting the root, stem and leaf.
 - (b) sucking the cell sap.
 - (c) boring into the stems and fruits.
 - (d) All of these
42. Milk production depends on
- (a) cleaning of shelter
 - (b) lactation period of milch animal
 - (c) vaccination of animals
 - (d) None of these
43. Select the incorrect statement from the following:
Cross breeding programmes between Indian and foreign breeds for variety improvement are focused on
- (a) dwarf broiler parent for commercial chick population.
 - (b) low maintenance requirements and enhanced tolerance to high temperature.
 - (c) large number of chicks irrespective of their quality.
 - (d) reduction in the size of egg-laying bird with ability to utilize fibrous cheaper diets.
44. Composite fish culture increases the fish yield from a pond by growing a number of fish species in such a way that they don't compete for food, but the problem is

- (a) they breed only during monsoon
 - (b) lack of availability of good quality seed
 - (c) Both (1) and (2)
 - (d) None of these
45. What will happen if two drops of iodine solution are added to crushed materials of sago, sugar, chalk and common salt to which a few drops of water had been added.
- (a) No change in salt
 - (b) No change in chalk
 - (c) No change in sugar
 - (d) Blue-black colour appeared in sago
46. Rice is crushed and a solution made of it. A student poured a drop of iodine solution in small quantity of rice solution. Another student poured a drop of rice solution in iodine solution.
- (a) Solution of the first boy turned blue black but that of the other didn't.
 - (b) Solution of the second boy turned blue black but that of the first did not.
 - (c) No change in colour of the two solutions.
 - (d) Both the solutions turned blue-black.
47. A lake with an inflow of domestic sewage rich in organic waste may result in
- (a) drying of the lake very soon due to algal bloom.
 - (b) an increased production of fish due to lot of nutrient.
 - (c) death of fish due to lack of oxygen.
 - (d) increased population of aquatic web organism.
48. In poultry industry, production of hatching eggs is more expensive than the production of market eggs mainly because
- (a) cost of males and their depreciation value is high.
 - (b) mortality among females is usually lower when they are mated with males.
 - (c) number of eggs produced by hatchery flock are to be sold only as market eggs.
 - (d) some of the eggs produced by hatchery flocks are not acceptable for incubation.
49. The most common activity followed by the farmers to generate additional income is
- (a) part-time jobs in industries
 - (b) bee-keeping
 - (c) star gazing

- (d) pumping of water
50. Biofertilizers are
- micro organisms used to increase the fertility of the soil.
 - manure added to soil.
 - biochemicals added to soil.
 - None of the above
51. Eutrophication is caused by
- excessive use of fertilizers
 - excessive growing of crops
 - monocropping
 - None of the above
52. Green manure is formed by
- decomposing animal residue
 - decomposing algae
 - ploughing of leguminous plants into the soil
 - decomposition of the dead plants and animal wastes
53. Major drawback of DDT as a pesticide is that
- organisms at once develop resistance to it.
 - it is significantly less effective than other pesticides.
 - it's cost of production is high.
 - it is not easily and rapidly degraded in nature.
54. The main source of food and fodder is
- lichen
 - cereals
 - fungus
 - cotton
55. When muddy water is left undisturbed
- the mud settles down.
 - some mud particles remain floating in water.
 - the water can be decanted and separated.
 - the process of filtration can be used to completely remove undissolved particle..
- Which of the above statement(s) is correct?
- (iii) & (iv)
 - (i) only
 - (i) & (iv)
 - All the above
56. Which statement is false from the following option given below?
- Watering the crops is called irrigation.
 - Combine is used for sowing of seeds.
 - Seed drill is used for sowing of seeds.

- (d) Weedicides are called to destroy weeds.
57. Livestock refers to
- (a) pet animals
 - (b) poultry and pet animals
 - (c) domestic animals which are kept for use or profit
 - (d) None of the above
58. Honey is
- (a) acidic
 - (b) neutral
 - (c) alkaline
 - (d) basic after some days

Hints & SOLUTIONS —

1. (a)
2. (b)
3. (d)
4. (b)
5. (d) Increase in food production has been possible by the success of green revolution for food grain and white revolution for milk.
6. (c) Food security depends upon both availability of food and access to it.
7. (d) Sustained livelihood can be achieved by use of mixed farming, Intercropping and integrated farming practices.
8. (a) Cereals such as wheat, rice, and maize provide us carbohydrates for energy requirement.
9. (a) Pulses such as gram, green gram, pigeon pea and lentil provide us proteins for bodybuilding.
10. (d)
11. (d)
12. (c)
13. (c)
14. (b) Vitamins and minerals are provided by vegetable, spices & fruits.
15. (d) Mustard, linseed and peas are grown in rabi season and not in kharif season.
16. (d) The activities for improving crops yields are : crop variety improvement, crop production improvement, crop production management.
17. (d) Hybridization is done to incorporate desirable characteristics into crop varieties. It refers to crossing between genetically dissimilar plants that may be inter varietal or inter specific.
18. (d) Variety improvement is done to get higher yield not only by making it tolerant to high salinity or diverse climatic conditions, but also to increase resistance to biotic or a-biotic stresses. It is helpful in changing the maturity duration and getting desirable agronomic characteristics.
19. (d)
20. (b)
21. (a)
22. (b)

23. (c) There are sixteen nutrients that are essential for plants.
24. (c) Macronutrients available from soil are nitrogen, phosphorus, potassium, calcium, magnesium and sulphur.
25. (d) Manure helps in improving soil fertility and structure by supplying small quantities of nutrients. It is also advantageous in protecting environment from excessive use of fertilizers, recycling farm waste and disposing biological waste.
26. (d) Compost is used in very large quantities, not in little quantities.
27. (b) The practice of mulching specially grown sun hemp or guar by ploughing them into the soil helps in enriching the soil in nitrogen and phosphorus.
28. (b) Fertilizers ensure increased vegetative growth and healthy plants by supplying nitrogen, phosphorus and potassium.
29. (a)
30. (b)
31. (a)
32. (a)
33. (d) Fertilizers should be used carefully because continuous use decreases the soil fertility. They are man-made chemicals and so can be harmful to the micro-organisms present in the soil and also lead to water pollution on getting washed away in rains.
34. (b) Organic farming is a farming system with minimal use of chemicals such as fertilizers, herbicides or pesticides and with a maximum input of organic manures.
35. (a) Use of neem leaves or turmeric during grain storage serves the purpose of bio-pesticides.
36. (b) Mixed cropping is growing two or more crops simultaneously on the same piece of land in a haphazard manner.
37. (b)
38. (a)
39. (d)
40. (d)
41. (d) Insect pests damage the crop by cutting the root, stem and leaf; sucking the cell sap or boring into the stems and fruits.

42. (b) Milk production depends on lactation period of milch animals.
43. (c) Cross breeding programmes between indian and foreign breeds for variety improvement are focused on number and quality of chicks.
44. (c) Composite fish culture increases the fish yield from a pond by growing a number of fish species in such a way that they don't compete for food, but the problem is that such fish breed only during monsoon and there is lack of availability of good quality seed.
45. (d)
46. (d)
47. (c)
48. (d)
49. (b) The most common activity followed by the farmers to generate additional income is bee keeping.
50. (a) Microorganisms like cyanobacteria are added to fields to increase the N_2 content as they are capable of fixing atmospheric N_2 in the soil.
51. (a) The tremendous increase in the amount of algae and other organic matter in the waters of lakes, ponds, rivers due to the presence of nitrates and phosphate salts (fertilizers), often leading to serious depletion of dissolved oxygen in water is called eutrophication.
52. (c) Leguminous plants like sun hemp are sown in the soil and later ploughed back into the soil at flowering stage.
53. (c)
54. (b)
55. (d) The muddy water if left undisturbed, the mud starts settling down. After the mud has settled, water can be poured in another container to obtain clear water. However some water still remains mixed with mud it can be completely separated by filtration.
56. (b)
57. (c) The work livestock refers to the domestic animals kept or dealt in for use or profit.
58. (a) The pH of honey ranges from 3.4 to 6.1 average being 3.0. So honey is acidic nature.

Chapter 9

Everyday Science

- **Why on mixing salt to water the level of water remain same?**

The matter is made up of particle. When we dissolve particle of salt it occupies the space between the particles of water.

- **Why is carbon dioxide used in extinguishing fire?**

Carbon dioxide (CO_2) is heavier than oxygen, (O_2). So it makes a blanket and do not allow oxygen to come in contact for combustion.

- **Evaporation takes place at lower temperature around 60°C & above, but boiling takes place at 100°C . why?**

Evaporation is a surface phenomenon, occurs only in the upper part of water but boiling is a bulk phenomenon.

- **Why number of (white blood cell or WBC) should be maintained?**

Normally the count of WBC in normal human body is 4500 to 11000 per mg. But its increase will lead to leukaemia and decrease may decrease the immunity which may lead to HIV.

- **Why head injury is more vulnerable?**

The head cells are basically neuron cells, which are specialized cells, which do not regenerate.

- **Who will possibly learn swimming faster-a fat person or thin person ?**

The fat person displaces more water which will help him float much more freely compared to a thin person.

- **Why is a flash of lightning seen before thunder?**

As light travels faster than sound, it reaches the Earth before the sound of thunder.

- **Why cannot a fire caused by petrol be extinguished by water?**

Water, which is heavier than petrol, slips down permitting the petrol to rise to the surface and continue to burn. Besides, the existing tempera-

ture is so high that the water poured on the fire evaporates even before it can extinguish the fire. The latter is true if a small quantity of water is poured.

- **Why does water remain cold in an earthen pot?**

There are pores in an earthen pot which allow water to percolate to the outer surface. Here evaporation of water takes place thereby producing a cooling effect.

- **Why do we place a wet cloth on the forehead of a patient suffering from high fever?**

Because of the body temperature, water evaporating from the wet cloth produces a cooling effect and brings the temperature down.

- **When a needle is placed on a small piece of blotting paper which is placed on the surface of clean water, the blotting paper sinks after a few minutes but the needle floats. However, in a soap solution the needle sinks. Why?**

The surface tension of clean water being higher than that of a soap solution, it can support the weight of a needle. By addition of soap, the surface tension of water reduces, thereby resulting in the sinking of the needle.

- **To prevent multiplication of mosquitoes, it is recommended to sprinkle oil in the ponds with stagnant water. Why?**

Mosquitoes breed in stagnant water. The larvae of mosquitoes keep floating on the surface of water due to surface tension. However, when oil is sprinkled, the surface tension is lowered resulting in drowning and death of the larvae.

- **How does oil rise on a cloth tape of an oil lamp?**

The pores in the cloth tape suck oil due to the capillary action of oil.

- **How are ventilators in a room always made near the roof?**

The hot air being lighter in weight tends to rise above and escape from the ventilators at the top. This allows the cool air to come in the room to take its place.

- **How does ink get filled in a fountain pen?**

When the rubber tube of a fountain pen is immersed in ink it is pressed, the air inside the tube comes out and when the pressure is released the ink rushes in to fill the air space in the tube.

- **Why are air coolers less effective during the rainy season?**

During the rainy season the atmospheric air is saturated with moisture. Therefore, the process of evaporation of water from the moist pads of the cooler slows down thereby not cooling the air blown out from the cooler.

- **Why does grass gather more dew in nights than metallic objects such as stones?**

Grass being a good radiator enables water vapour in the air to condense on it. Moreover, grass gives out water constantly (transpiration) which appears in the form of dew because the air near grass is saturated with water vapour and slows evaporation. Dew is formed on objects which are good radiators and bad conductors.

- **If a lighted paper is introduced in a jar filled with carbon dioxide, its flame is extinguished. Why?**

Because carbon dioxide does not help in burning. For burning oxygen is required.

- **Why does the mass of an iron rod increase on rusting?** Because rust is hydrated ferric oxide which adds to the mass of the iron rod. The process of rusting involves addition of hydrogen and oxygen elements to iron.

- **Why does milk curdle?**

Lactose (milk sugar) content of milk undergoes fermentation and changes into lactic acid which on reacting with milk protein (casein), forms curd.

- **Why does hard water not lather soap profusely?**

Hard water contains sulphates and chlorides of magnesium and calcium which forms an insoluble compound with soap. Therefore, soap does not lather with hard water.

- **Why is it dangerous to have charcoal fire burning in a closed room?**

When charcoal burns it produces carbon monoxide which is suffocating and can cause death.

- **Why is it dangerous to sleep under trees at night?**

Plants respire at night and give out carbon dioxide which reduces the oxygen content of air under the trees required for breathing.

- **Why does ENO's salt effervesce on addition of water?**

It contains tartaric acid and sodium bicarbonate. On adding water, carbon dioxide is produced which when released into water causes effervescence.

- **Why does milk turn sour?**

The microbes react with milk and grow. They turn lactose into lactic acid which is sour in taste.

- **Why is a new quilt warmer than an old one?**

In the new quilt the cotton is not compressed and it encloses more air which is bad conductor of heat. Therefore, it does not allow heat to pass.

- **Eskimos live in double-walled ice houses. Why?**

Because the air in between two ice walls does not allow heat to pass. Ultimately they feel warmer in it compared to environment

- **Curved rail tracks or curved roads are banked or raised on one side. Why?**

Because a fast moving train or vehicle leans inwards while taking turn and the banked or raised track provides required centripetal force to enable it to move round the curve.

- **How do bats fly in dark?**

When bats fly they produce ultrasonic sound waves which are reflected back to them from the obstacles in their way and hence they can fly without difficulty.

- **Water pipes often burst at hill stations on cold frosty nights. Why?**

The temperature at hill stations may fall below 0°C during cold frosty nights which converts the water inside the pipes into ice, resulting in an increase in volume. This exerts great force on the pipes and as a result, they burst.

- **Why are white clothes more comfortable in summer than dark or black ones?**

White clothes are good reflectors and bad absorbers of heat, whereas dark or black clothes are good absorbers of heat. Therefore, white clothes are more comfortable because they do not absorb heat from the sun rays.

- **Why does a rose appear red and grass green in daylight?**

Rose absorbs all the constituent colours of white light except red which is reflected to us. Similarly, grass absorbs all colours except green which is reflected to us.

- **Why does a ship rise as it enters the sea from a river?**

The density of sea water is high due to impurities and salts compared to river water. As a result, the upthrust produced by the sea water on the ship is more than that of river water.

- **Why are fuses provided in electric installations?**

A safety fuse is made of a wire of metal having a very low melting point. When excess current flows in, the wire gets heated, melts and breaks the circuit. By breaking the circuit it saves electric equipment or installations from damage by excessive flow of current.

- **Why is it easier to lift a heavy object under water than in air?**

Because when a body is immersed in water, it experiences an upward thrust (Archimedes' Principle) and loses weight equal to the weight of the water displaced by its immersed portion, and hence, is easier to lift objects.

- **If a highly pumped up bicycle tyre is left in the hot sunlight, it bursts. Why?**

The air inside the tube increases in volume when heated up. As sufficient space for the expansion of the air is not available because the tube is already highly pumped, it may result in bursting of the tyre.

- **What will be the colour of green grass in blue light?**

Grass will appear dark in colour because it absorbs all other colours of the light except its own green colour. The blue light falling on grass will be absorbed by it, and hence, it will appear dark in colour.

- **Why do two eyes give better vision than one?**

Because two eyes do not form exactly similar images and the fusion of these two dissimilar images in the brain gives three dimensions of the stereoscopic vision.

- **Why do we bring our hands close to the mouth while shouting at someone far away?**

By keeping hands close to mouth the sound is not allowed to spread (phenomenon of diffraction of sound) in all directions but is directed to a particular direction and becomes louder.

- **Why does a corked bottle filled with water burst if left out on a frosty night?**

Because of low temperature the water inside the bottle freezes. On freezing it expands, thereby its volume increases and pressure is exerted on the walls.

- **Why is a small gap left at the joint between two rails?**

To permit expansion of rails due to heat generated by friction of a moving train.

- **Why cannot a copper wire be used to make elements in electric heater?**

Copper melts at 108.3°C and forms a black powder on reacting with atmospheric oxygen. For heater elements a metal should have more resistance to produce

- **Why are water or mercury droplets always round when dropped on a clean glass?**

The surface of a liquid is the seat of a special force as a result of which molecules on the surface are bound together to form something like a stretched membrane. They tend to compress the molecules below to the smallest possible volume which causes the drop to take a round shape as for a given mass the sphere has minimum volume.

- **Why does a balloon filled with hydrogen rise in air?**

Weight of hydrogen is less than the weight of air displaced by it. In balloons hydrogen is normally filled because it is lighter than air.

- **Why do we lean forward while climbing a hill?**

In order to keep the vertical line passing through our centre of gravity always between our feet, which is essential to attain equilibrium or stability.

- **Why does smoke curl up in the air?**

Smoke contains hot gases which being lighter in weight, follows a curved path because of the eddy currents that are set up in the air.

- **Why does an electric bulb explode when it is broken?**

The bulb encompasses partial vacuum and as it breaks, air rushes in causing a small explosion.

- **Why does a man fall forward when he jumps out of a running train or bus?**

He is in motion while in the train or bus. When he jumps out, his feet comes to rest while touching the ground but his upper portion which is still in motion propels him forward.

- **Why does an ordinary glass tumbler crack when very hot tea or milk is poured in it?**

When a hot liquid is poured into a tumbler, the inner layer of the tumbler gets heated, it expands before the outer layer and an unequal expansion of both layers causes the tumbler to crack.

- **Why is a compass used as an indicator of direction?**

The magnetic needles of a compass under the influence of the earth's magnetic field lie in a north-south direction. Hence, we can identify direction.

- **Why is water from a hand pump warm in winter and cold in summer?**

In winter the outside temperature is lower than that of water flowing out of the pump, and therefore, the water is warm. Whereas, in summer, the outside temperature is higher than the water of the pump, and therefore, it feels cold.

- **Why is a rainbow seen after a shower?**

After a shower the clouds containing water droplets act like a prism through which the white light is dispersed producing a spectrum.

- **Why does a swimming pool appear less deep than it actually is?**

The rays of light coming from the bottom of the pool pass from a denser medium (water) to a rarer medium (air) and are refracted (bend away from the normal). When the rays return to the surface they form an image of the bottom of the pool at a point which is little above the real position.

- **Why is one's breath visible in winter but not in summer?**

In winter, water vapour contained in the breath condenses into small droplets which become visible but in summer they are quickly evaporated and not seen.

- **Why the electric filament in an electric bulb doesn't burn up?**

Firstly, because it is made of tungsten which has a very high melting point (3410°C) whereas the temperature of the filament required to glow is only 2700°C . Secondly, oxygen is absent since the bulb is filled with an inert gas which does not help in burning.

- **Why does blotting paper absorb ink?**

Blotting paper has fine pores which act like capillaries. When a portion of blotting paper is brought in contact with ink, ink enters the pores due to surface tension (capillary action of liquids) and is absorbed.

- **Why does a small ball of iron sink in water but a large ship float?**

The weight of water displaced by an iron ball is less than its own weight, whereas water displaced by the immersed portion of a ship is equal to its weight (Archimedes' Principle).

- **Why does ice float on water?**

The weight of the ice block is equal to the weight of the liquid displaced by the immersed portion of the ice

- **Why does moisture gather outside a tumbler containing cold water?**

The water vapour in the air condenses on cooling and appears as droplets of water.

- **Why does kerosene float on water?**

Because the density of kerosene is less than that of water. For the same reason cream rises in milk and floats at the top.

- **Why is the water in an open pond cool even on a hot summer day?**

As the water evaporates from the open surface of a pond, heat is taken away in the process, leaving the surface cool.

- **Why is it less difficult to cook rice or potatoes at higher altitudes?**

Atmospheric pressure at higher altitudes is low and boils water below 100°C . The boiling point of water is directly proportional to the pressure on its surface.

- **Why is it difficult to breathe at higher altitudes?**

Because of low air pressure at higher altitudes the quantity of air is less, and so also that of oxygen.

- **Why are winter nights and summer nights warmer during cloudy weather than when the sky is clear?**

Clouds being bad conductors of heat do not permit radiation of heat from land to escape into the sky. As this heat remains in the atmosphere, the cloudy nights are warmer.

- **Why is a metal tyre heated before it is fixed on wooden wheels?**

On heating, the metal tyre expands by which its circumference also increases. This makes fixing the wheel easier and thereafter cooling down shrinks it; thus fixing the tyre tightly.

- **Why is it easier to swim in the sea than in a river?**

The density of sea water is higher; hence the upthrust is more than that of river water.

- **A man with a load jumps from a high building. What will be the load experience by him ?**

Zero, because while falling, both the man and the load are falling at the same acceleration i.e. acceleration due to gravity.

- **A piece of chalk when immersed in water, emits bubbles. Why?**

Chalk consists of pores forming capillaries. When it is immersed in water the water begins to rise in the capillaries and air present there is expelled in the form of bubbles.

- **Why does a liquid remain hot or cold for a long time inside a thermos flask?**

The presence of air, a poor conductor of heat, between the double glass wall of a thermos flask, keeps the liquid hot or cold inside a flask for a long time.

- **Why does a ball bounce upon falling?**

When a ball falls, it is temporarily deformed. Because of elasticity, the ball tends to regain its original shape for which it presses the ground and bounce up (Newton's Third Law of Motion).

- **Why is standing on boats or double decker buses not allowed, particularly on the upper deck of buses?**

On tilting the centre of gravity of the boat or bus is lowered and it is likely to overturn.

- **Why is it recommended to add salt to water while boiling dal?**

By addition of salt, the boiling point of water gets raised which helps in cooking the dal sooner.

- **Why is the boiling point of sea water more than that of pure water?**

Sea water contains salt, and other impurities which cause an elevation in its boiling point.

- **Why is it easier to spray water to which soap is added?**

Addition of soap decreases the surface tension of water. The energy for spraying is directly proportional to surface tension.

- **Which is more elastic, rubber or steel?**

Steel is more elastic for the same stress produced compared with rubber.

- **Why is the sky blue?**

Violet and blue light have short waves which are scattered more than red light waves. While red light goes almost straight through the atmos-

phere. Blue and violet light are scattered by particles in the atmosphere. Thus, we see a blue sky.

- **Why does ink leak out of partially filled pen when taken to a higher altitude?**

As we go up, the pressure and density of air goes on decreasing. A partially filled pen leaks when taken to a higher altitude because the pressure of air acting on the ink inside the tube of the pen is greater than the pressure of the air outside.

- **On the Moon, will the weight of a man be less or more than his weight on the Earth?**

The gravity of the moon is one-sixth that of the earth; hence the weight of a person on the surface of the moon will be one-sixth of his actual weight on earth.

- **Why do some liquids burn while others do not?**

A liquid burns if its molecules can combine with oxygen in the air with the production of heat. Hence, oil burns but water does not.

- **Why can we see ourselves in a mirror?**

We see objects when light rays from them reach our eyes. As mirrors have a shiny surface, the light rays are reflected back to us and enter our eyes.

- **Why does a solid chunk of iron sink in water but floats in mercury?**

Because the density of iron is more than that of water but less than that of mercury.

- **Why is cooking quicker in a pressure cooker?**

As the pressure inside the cooker increases, the boiling point of water is raised. Hence, the cooking process is quicker.

- **When wood burns, it crackles. Explain.**

Wood contains a complex mixture of gases and tar forming vapours trapped under its surface. These gases and tar vapours escape, making a crackling sound.

- **Why do stars twinkle?**

The light from a star reaches us after refraction as it passes through various layers of air. When the light passes through the earth's atmosphere, it is made to flicker by the hot and cold ripples of air and it appears as if the stars are twinkling.

- **Why is it easier to roll a barrel than to pull it?**

Because the rolling force of friction is less than the dynamic force of sliding friction .

- **If a feather, a wooden ball and a steel ball fall simultaneously in a vacuum, which one of these would fall faster?**

All will fall at the same speed in vacuum because there will be no air resistance and the earth's gravity will exert a similar gravitational pull on all.

- **When a man fires a gun, he is pushed back slightly. Why?**

As the bullet leaves the nozzle of the gun's barrel with momentum in a forward direction, as per Newton's Third Law of Motion, the ejection imparts to the gun an equal momentum in a backward direction.

- **Ice wrapped in a blanket or saw dust does not melt quickly. Why?**

Both blanket and saw dust are bad conductors of heat. They do not permit heat rays to reach the ice easily.

- **Why do we perspire on a hot day?**

When the body temperature rises, the sweat glands are stimulated to secrete perspiration. It is nature's way to keep the body cool. During the process of evaporation of sweat, body heat is taken away, thus, giving a sense of coolness.

- **Why does ice float on water but sink in alcohol?**

Because ice is lighter than water it floats on it. However, ice is heavier than alcohol and therefore it sinks in alcohol.

- **Why do we perspire before rainfall?**

Before the rainfall, the atmosphere gets saturated with water vapour, as a result, the process of evaporation of sweat is delayed.

- **Why does a thermometer kept in boiling water show no change in reading after 100°C?**

The boiling point of water is 100°C. Once water starts boiling at this temperature, thermometer records no change in temperature. The quantity of heat supplied is being utilized as latent heat of evaporation to convert the water at boiling point into vapour.

- **TB patients are suggested to live in sanatorium.**
At high altitude count of RBC (haemoglobin) increases.
- **Rate of breathing in fish is higher than human being.**
Fish lives in water, where amount of dissolved oxygen in water is less, so fish breaths at higher rate to get adequate oxygen for respiration.
- **Cornea transplant does not need blood match.**
Cornea does not have blood vessel. It takes oxygen directly from atmosphere.
- **Clay layers are poor aquifers.**
Clay minerals are dense impermeable material and act as an aquifers i.e a layer of material that is almost impermeable to water.

Exercise

1. Twinkling of stars is due to?
 - (a) Reflection of light
 - (b) Refraction of light
 - (c) Total Internal Reflection
 - (d) All of these
2. Surface tension of water isthan surface tension of soap solution
 - (a) More
 - (b) Less
 - (c) Equal
 - (d) Very Less
3. Which of the following is surface phenomenon?
 - (a) Boiling
 - (b) Evaporation
 - (c) Both 1 and 2
 - (d) None of these
4. What is the normal range of WBC count in human body per mm^3 of blood?
 - (a) 40000-60000
 - (b) 5000-80000
 - (c) 4500-11000
 - (d) $4-10 \times 10^6$
5. Water remains cold in an earthen pot due to the phenomenon of
 - (a) Transpiration
 - (b) Condensation
 - (c) Evaporation
 - (d) Sublimation
6. In comparison to clear weather the cloudy weather is
 - (a) Warmer
 - (b) Colder
 - (c) Same in both cases
 - (d) None of the above
7. Rise of oil take place in oil lamp due to
 - (a) Conduction
 - (b) Capillary action

- (c) Pulling action
 - (d) Surface tension
8. During curdling of milk, Lactose is converted into
- (a) Acetic acid
 - (b) Casein
 - (c) Lactic acid
 - (d) Lactone
9. Boiling point of water at higher altitude is
- (a) 110°C
 - (b) 100°C
 - (c) Greater than 100°C
 - (d) Less than 100°C
10. What will be the colour of grass in blue light?
- (a) Red
 - (b) Black
 - (c) Green
 - (d) Blue
11. Archimedes' Principle is related to
- (a) Floating of objects
 - (b) Movement of objects
 - (c) Rotation of objects
 - (d) Relative friction of objects
12. When water is converted into ice, its volume
- (a) Increases
 - (b) Decreases
 - (c) Remain the same
 - (d) Difficult to determine
13. A small gap is left at joint between two rails for permit
- (a) Friction
 - (b) Expansion
 - (c) Movement
 - (d) Lubrication
14. The needle of compass always stops in which direction
- (a) North-South
 - (b) East-West

- (c) North-East
 - (d) South-West
15. A feather, a plastic ball and a steel ball is dropped simultaneously from a common point in vacuum, which one will touch the ground first
- (a) Steel Ball
 - (b) The feather
 - (c) Plastic ball
 - (d) All will reach at the same time
16. In comparison to pure water, Boiling point of impure water is
- (a) Same
 - (b) Increased
 - (c) Decreased
 - (d) First decreased then increased
17. What will happen if ice is poured into a glass of alcohol?
- (a) It will float
 - (b) It will sink
 - (c) First sink then will float
 - (d) First float then will sink
18. Hardness of water is due to
- (a) Sulphates and chlorides of Mg only
 - (b) Sulphates and chlorides of Ca only
 - (c) Chlorides of Mg and Ca only
 - (d) Sulphates and chlorides of Mg and Ca both
19. In pressure cooker food is cooked faster than normal vessel because
- (a) In pressure cooker boiling point of water is increased
 - (b) In pressure cooker boiling point of water is decreased
 - (c) In pressure cooker surface area of vessel is increased
 - (d) In pressure cooker surface area of vessel is decreased

20. Sky appears blue due to which of the phenomenon of light
- (a) Diffraction
 - (b) Reflection
 - (c) Refraction
 - (d) Scattering
21. Which of the following organism produces Ultrasonic sound waves?
- (a) Rat
 - (b) Cat
 - (c) Bat
 - (d) Owl
22. When a bullet is fired from a gun, the gunman is pushed backwards due to?
- (a) Newton's First law of motion
 - (b) Newton's second law of motion
 - (c) Newton's third law of motion
 - (d) Both second and third law of motion
23. The weight of a person at Earth is 75 kg, what will be his weight at Moon?
- (a) 75 kg
 - (b) 100 Kg
 - (c) Less than 75 Kg
 - (d) More than 100 Kg
24. What will happen if a person jumps from a running train on the platform?
- (a) He will fall in the forward direction
 - (b) He will fall backward direction
 - (c) He will tumble in both directions
 - (d) None of the above
25. The melting point of fuse wire used in electric circuit is?
- (a) Low
 - (b) High
 - (c) Same as normal wire
 - (d) None of the above

Hints & SOLUTIONS —

1. (b)
2. (a)
3. (b)
4. (c)
5. (c)
6. (a)
7. (b)
8. (c)
9. (d)
10. (b)
11. (a)
12. (a)
13. (b)
14. (a)
15. (d)
16. (b)
17. (b)
18. (d)
19. (a)
20. (d)
21. (c)
22. (c)
23. (c)
24. (a)
25. (a)