

SCIENCE OLYMPIAD

PRACTICE BOOK



GRADE
6

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Preface

Our education system effectively provides an introduction to the concepts of Math and Science and helps us understand the underlying concepts. But in its overly generalized approach, which aims to enlighten and test all students of varying caliber and interests, it leaves the exploration of application of all these concepts completely on the students.

This workbook is designed to enable students to explore Science effectively. Designed in accordance with the requirements of the Science Olympiads, the workbook is an efficient tool to achieve comprehensive success at the **ISFO – Science Olympiad**.

The main aim of this workbook is to assist students in developing and improving their ability to solve problems.

Each chapter of the book consists of 3 sets of questions.

- **Section A** (Scientific Reasoning) : This section is created to test the knowledge of scientific concepts and topics pertaining to the respective grades.
- **Section B** (Everyday Science) : This section deals with the application of the concept learnt.
- **Section C** (BrainBox) : Questions to prepare students with HOTS (Higher Order Thinking Skills), based on the syllabus provided.

Logical Reasoning section is provided to equip students with verbal and non-verbal analysis and reasoning skills.

Sample Test Papers and Answer keys have been provided to accelerate the learning process.





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Food and Its Components

- There is a lot of variation in the food eaten in different regions of India.
- The main sources of our food are plants and animals.
- Animal which eat only plants are called herbivores.
- Animals which eat only animals are called carnivores.
- Animals which eat both plants as well as other animals are called omnivores.
- The major nutrients in our food are carbohydrates, proteins, fats, vitamins and minerals. In addition, food also contains dietary fibres and water.
- Carbohydrates and fats mainly provide energy to our body.
- Proteins and minerals are needed for the growth and the maintenance of our body.
- Vitamins help in protecting our body against diseases.
- Balanced diet provides all the nutrients that our body needs, in right quantities, along with adequate amount of roughage and water.
- Deficiency of one or more nutrients in our food for a long time may cause certain diseases or disorders.

SECTION - A : SCIENTIFIC REASONING

1. A list of some edible plants is given below:

- | | |
|-----------------|-------------|
| I. Banana | II. Pumpkin |
| III. Ladyfinger | IV. Brinjal |

Which plants have two or more edible parts?

- a. I & II b. II & III
c. III & IV d. I & IV

2. A student wrote names of some animals as-

- | | |
|----------------|------------------|
| I. Goat | II. Human Beings |
| III. Cockroach | IV. Eagle |

Which of these animals are omnivores?

- a. I & II b. II & III
c. III & IV d. II & IV

3. Which of the following nutrients is not present in milk?

- a. Protein b. Calcium
c. Vitamin C d. Vitamin D

4. Read the steps given to test the presence of proteins in a food item:

1. Take a small quantity of food item in a test tube. Add 10 drops of water to it and shake it.

2. Make a paste or powder of the food to be tested.
3. Add 10 drops of caustic soda solution to the test tube and shake well.
4. Add 2 drops of copper sulphate solution to it.

Arrange the steps in a correct sequence

- a. 1,2,4,3
 - b. 2,1,4,3
 - c. 2,1,3,4
 - d. 4,2,1,3
5. Humans eat parts of plants. Most commonly they eat seeds, fruits and leaves.
Which of the following options contains foods obtained from the stem of the plants?
- a. Asparagus, Broccoli, Birch, Bamboo
 - b. Celery, Spinach, Cabbage
 - c. Cauliflower, Radish, Mango
 - d. Potato, Tomato, Sugarcane
6. Study the given table and identify X, Y & Z.

Protein-rich Food	Carbohydrate-rich food	Vitamin-rich food
Pulse	Potato	Guava
Egg	Rice	Orange
X	Sweet Potato	Z
Chicken Breast	Y	Papaya

Choose the correct option.

- a. X – Kiwi, Y – Sugar, Z – Almond
 - b. X – Green Pepper, Y – Oat, Z – Spinach
 - c. X – Oat meal, Y – Brinjal, Z – Kiwi
 - d. X – Almond, Y – Yam, Z – Kiwi
7. Read the given statements and find the incorrect one :
- a. Starch-rich food items turn bluish – black in colour with the addition of iodine solution.

- b. Fats deposited in our body act as shock absorber and protect us from injury.
- c. Roughage neither releases energy nor helps in tissue or body building.
- d. Marasmus is caused due to the deficiency of proteins, vitamins and carbohydrates.

8. Choose the incorrect match:

Deficiency Diseases	Deficient Nutrients
Beri-Beri	Vitamin B1
Tooth decay	Vitamin C
Goiter	Iodine
Anaemia	Iron

9. Observe the given pictures showing various deficiency diseases.



Rickets



Scurvy

In what way are these diseases similar?

- a. Both are vitamin deficiency diseases.
- b. Both are protein deficiency diseases.
- c. Both occur in old aged people.
- d. Both are incurable diseases.

10. Choose the incorrect statement about a balanced diet.

- a. A balanced diet consists of several food groups which provide all the required nutrients in proper amount.
- b. All deficiency diseases can be treated by taking a balanced diet.
- c. Eating too much of fat rich food may result in from obesity.
- d. Water is not a part of balanced diet.

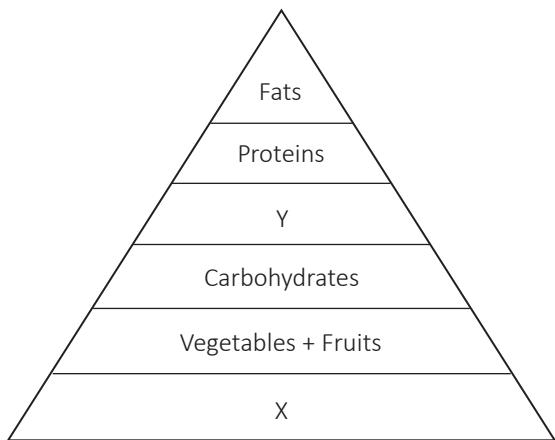
11. A list of food items is given as –

Papaya, Broccoli, Strawberries, Mustard greens, Brussels Sprouts

They are _____ food items.

- a. Protein rich
- b. Carbohydrate rich
- c. Vitamin rich
- d. Fat rich

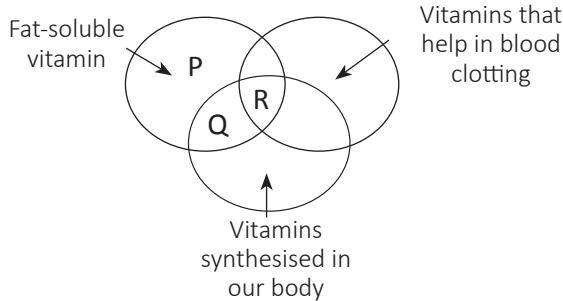
12. Study the given diagram.



Identify X and Y

- a. X – Salads, Y – Water
- b. X – Pulses, Y – Breads
- c. X – Water, Y – Vitamins
- d. X – Vitamins, Y – Water

13. Study the given Venn diagram.



Choose the correct statement about P, Q and R

- a. Deficiency of 'P' causes night blindness while deficiency of 'Q' causes rickets.
- b. 'P' is stored in the fat tissues of our body and keeps our reproductive system healthy.
- c. 'Q' repairs bones while 'R' causes marasmus.
- d. 'R' can be Vitamin B12.

14. Read the following statements about diseases.

- I. They are caused by germs.
- II. They are caused due to the lack of nutrients in our diet.
- III. They can be passed on to another person through contact.
- IV. They can be prevented by taking a balanced diet.

Which pair of statement best describes a deficiency disease?

- a. I & II
- b. II & III
- c. II & IV
- d. I & III

15. In order to have healthy bones what kind of nutrition do we need to make sure our daily food contains?

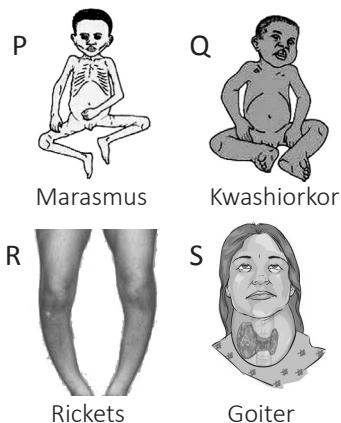
- a. Vitamin D, Calcium, Phosphorus
- b. Vitamin A, Vitamin B, Calcium
- c. Phosphorus Calcium, iron
- d. Calcium, iodine, iron

SECTION - B : EVERYDAY SCIENCE

16. Aditya's parents notice some changes in him. Those are-
- Swelling in his ankle, feet and belly
 - Scaly skin
 - Mental retardation
 - Diarrhoea
- Doctor told them that Aditya is suffering from a deficiency disease. Identify the disease and the deficient nutrient.
- | Deficiency disease | Deficient nutrient |
|--------------------|--------------------|
| a. Kwashiorkor | Proteins |
| b. Goiter | Iodine |
| c. Anaemia | Iron |
| d. Rickets | Vitamin D |
17. Riya soaked black grain seeds overnight in water. Next day she drained out the water and wrapped the seeds in a wet cloth. She kept it in a warm place for 24 hours. When she opened the cloth piece, she observed small white structures growing out of seeds. What do these structures develop into?
- Stem
 - Leaves
 - Roots
 - Flowers
18. Anushka always prefers to eat *samosa*, *poori*, *bhature*, *pakora* etc.
- What could happen to her?
- She may not be able to digest other kinds of food items.
 - She may suffer from obesity and heart disease.
 - She may suffer from hypertension and dyslipidemia diseases.
 - Both b & c.
19. Aman's mother always cooks delicious food items in kitchen. But Aman always feels that the food does not contain sufficient amount of nutrients. His mother-
- Washes pulses repeatedly.
 - Washes fruits and vegetables after cutting.
 - Washes fruits and vegetables before cutting.
 - Uses excess water for cooking and drains out the excess water.
- Which one of the given statements cannot be the cause of loss of nutrients?
- I & II
 - II and IV
 - III and IV
 - Only IV
20. A teacher gave some clues about four different food groups W, X, Y & Z
- | Food Group | Clues |
|------------|--|
| W | Helps to maintain strong eyesight and healthy skin |
| X | Required for the growth of bones and teeth in children |
| Y | Essential for proper functioning of muscles and nerves |
| Z | Essential for blood clotting on wounds |
- Identify W, X, Y & Z and choose the correct statement regarding those food groups.
- Food groups W, X & Z are vitamins while Y is a mineral.
 - X is produced when our skin is exposed to sunlight.
 - Deficiency of Y causes poor digestion, anxiety and sleeplessness.
 - All are correct.

SECTION - C : BRAINBOX

21. Observe the given diagrams



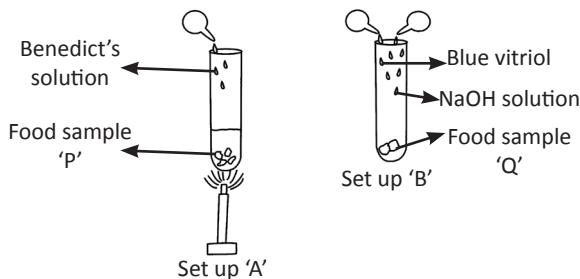
A student stated the following statements about them.

- I. P & Q can be cured, if adequate amounts of pulses, eggs and almonds are added in the meals.
- II. S is an iodine deficiency disease.
- III. R is an iron deficiency disease.
- IV. Q and R can never be cured.

Choose the correct statements:

- a. I and II
- b. II and III
- c. I, II and III
- d. II and IV

22. Aman and Anvi tested the presence of nutrient in two different food samples P & Q. They observed the experiment as shown here:



Which of the given observation and conclusion are correct?

	Observation	Conclusion
a.	Food sample 'P' turned purple while no change is observed in sample 'Q'	Sample 'P' consists of protein while sample 'Q' consists of calcium.
b.	Food sample 'P' turned brick red in colour while sample 'Q' turned purple	Sample 'P' consists of sugar while 'Q' consists of protein.
c.	Food sample 'P' turned brick red in colour while sample 'Q' turned purple	Sample 'P' consists of protein while 'Q' consists of sugar.
d.	Sample 'P' and 'Q', both turned black	Both samples 'P' & 'Q' consist of sugar.

23. Study the given table

Food Sources	Food Components
A	Meat, Fish, Egg, Pulses
B	Butter, Ghee, Oil
C	Chapatis, Potato, Rice
D	Tomato, Lemon, Orange

Which of the given statements are incorrect regarding A, B, C & D?

- a. Food source 'B' produces more energy than the food source 'D'.
- b. Deficiency of 'D' leads to a disease in which gums swell up and bleed.
- c. Deficiency of 'A' causes marasmus in children whereas deficiency of 'B' causes kwashiorkor in adults.
- d. Food source 'C' is an energy giving food group. Excess of 'C' gets stored in body cells and is used for the production of energy whenever required.

24. Identify the pictures of given food items:



Beetroot



Onion Bulb



Mustard pods

Which of the following statements are correct about them?

- 'X' is a modified taproot which stores food
- Edible part of 'Y' is same as the edible part of garlic.
- Edible part of 'Z' is used as spices and to produce oil.
- All are correct.

25. Aditi studied about given food item and inferred the following about it.



- It is considered as 'almost complete food'.
- It contains carbohydrates, proteins, fats, vitamins, minerals and water.
- It does not contain iron and vitamin C.
- It contains all the essential nutrients.

Choose the correct answer.

- Only I and II
- II, III and IV
- III and IV
- I, II and III

Darken your choice with HB pencil -

1. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d	8. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d	15. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d	22. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d
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7. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d	14. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d	21. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d	

- ⇒ Fabrics are made from yarn and yarns are made from fibres.
- Fibres are of two types-Natural fibres, which are obtained from plants and animals and synthetic fibres, which are made from chemical substances.
 - Cotton, jute, silk, etc. are natural fibres, whereas polyester, nylon, etc. are synthetic fibres.
 - Cotton and jute are made from the seeds and the stem of the plant, respectively
- ⇒ The process of making yarn from fibres is called spinning.
- The methods used for making fabric from yarn are weaving and knitting.
 - In knitting, a single yarn is used to make a piece of fabric, whereas in weaving two sets of yarn are arranged together to make a fabric.

SECTION - A : SCIENTIFIC REASONING

1. Coir is prepared from the husk of coconut plant. What is the usage of coir?
 - Making clothes
 - Making mats
 - Making carpet
 - Making bags
2. 'X' is a fibre which is soft and wavy. It is mainly obtained from animal.
X is _____.
 - Wool
 - Silk
 - Polyester
 - Cotton
3. The process by which fleece from sheep is washed and dried is called _____.
 - Shearing
 - Scouring
 - Sorting
 - Dyeing
4. Following table shows the process by which wool is obtained from sheep.

Sorting	Drawing	Combing
Spinning	Shearing	Scouring

Choose the option showing the correct sequence of the process.

 - Shearing → Drawing → Combing → Scouring → Sorting → Spinning
 - Shearing → Drawing → Combing → Scouring → Spinning → Sorting
 - Shearing → Scouring → Sorting → Drawing → Combing → Spinning
 - None of the above

5. Which of the following is not a correct difference between weaving and knitting?
- Weaving uses two sets of yarn while knitting involves only one yarn.
 - Elasticity in weaving is very less or negligible while knitting shows elasticity due to loop structure.
 - The woven fabric absorbs more moisture than a knitted fabric due to its loose construction.
 - Woven fabrics require ironing while knitted fabrics do not require ironing.

6. What is correct about the instrument shown in the given figure?



- It is used for unwinding the silk fibre from cocoons.
- It is used for shearing.
- It is used for processing of animal's skin.
- All of these

7. Which one of these will give similar smell on burning?

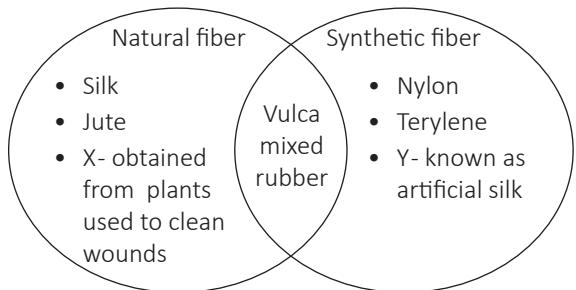
I. Silk II. Wool III. Cotton

- Silk and Cotton
 - Cotton and Wool
 - Silk and Wool
 - None of these
8. Spinning is done to prepare yarn from fibres by drawing out and twisting a mass of fibres. Which one of these is not used for this process?

- Loom
- Hand spindle

- Spinning machine
- Spinning wheel

9. A student used Venn diagram to show some information about fibres. But he forgot to mention the names of the fibres.



Identify 'X' and 'Y'

- X – Cotton, Y – Polyester
- X – Hemp, Y – Polyester
- X – Wool, Y – Terylene
- X – Cotton, Y – Rayon

10. Variety of silk depends upon which one of the following factors?

- Temperature at which eggs are stored.
- Types of silk processing in the factory.
- Types of silkworm.

- Only I
- I and II both
- I, II and III
- None of the above

11. Which of the following materials did people use in ancient times for making clothes?

- Tree leaves
- Newspaper
- Metal foils
- Animal skins and furs

Choose the correct option –

- I & II
- I & III
- II & III
- I & IV

12. Why are fibres such as polyester and cotton often blended together when

spinning a yarn? Choose as many options as you think are correct.

- I. It combines the good performance characteristics of the fibres and reduces the effect of the less desirable ones.
 - II. The cost of the fibre could be less than using just one fibre.
 - III. To make them easier to be made into a fabric.
 - IV. To help them stick together better.
 - a. I and III
 - b. II and IV
 - c. I and II
 - d. I, II and III
13. X and Y are two countries with the following features:

X – It is credited with the discovery of silk.
Y – It ranks first in jute processing industry.

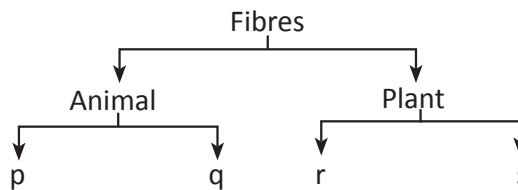
Identify X and Y.

- a. X – China Y – Bangladesh
- b. X – Thailand Y – China
- c. X – India Y – USA
- d. X – England Y – China

14. Which of the following incorrectly shows the difference between natural fibre and man-made fibre?

	Natural fibre	Man-made fibre
a.	Obtained from plants or animals	Prepared by man using chemicals.
b.	Burns with odour like burning paper	Burns with odour like burning hair
c.	It includes cotton, silk, etc.	It includes nylon, polyester etc.
d.	None of the above	

15. Fill the following classification chart.



- a. p – silk, q – wool, r – cotton, s – jute
- b. p – wool, q – coir, r – silk, s – jute
- c. p – wool, q – jute, r – rayon, s – nylon
- d. p – silk, q – nylon, r – cellulose, s – jute

SECTION - B : EVERYDAY SCIENCE

16. Gopal is a farmer who describes best conditions for growth of cotton plants. Which of the following is the correct statement made by Gopal?

- I. Cotton grows well in warm weather and loamy soil.
- II. Cotton grows well in warm climate and black soil.
- III. Cotton grows well in cold climate and black soil.

- a. Only I
- b. Only II
- c. Both I and II
- d. Only III

17. Nidhi was asked to tell the features of her handkerchief. She told that it absorbs water, it catches fire easily and burns with yellow flame. On burning, it smells like a burning paper. Which fibre is used to make the cloth of Nidhi's handkerchief?

- a. Cotton
- b. Wool
- c. Silk
- d. Rayon

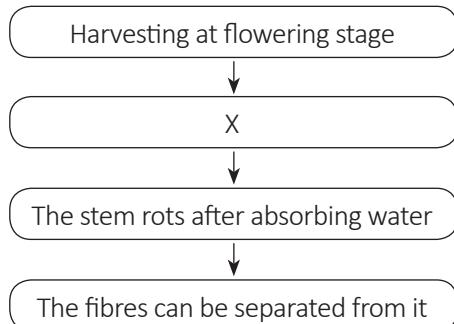
18. A group of students are going to Hyderabad in the months of May-June on a school trip. Which type of clothes should they wear?

- a. Dark coloured, cotton clothes
- b. Light coloured, cotton clothes

- c. Light coloured, silk clothes
d. Any colour, silk clothes
19. Aman compared the quality of a jute bag and a stylish school bag. He tabulated the differences between them as given here. Which one of these qualities is possibly not correct?
- | | |
|------------------|-----------------|
| Jute Bag | School Bag |
| a. Hydrophilic | Hydrophobic |
| b. Natural fibre | Synthetic fibre |
| c. Less strength | More strength |
| d. Durable | Not durable |
20. Laboratory clothes are made of cotton, and not of any synthetic fibre. It is because synthetic fibres –
- Make you feel cold and so students may get a frost when working with fire.
 - Are lustrous and so they shine under flame.
 - Melt on heating and stick to the body when they catch fire.
 - All of these

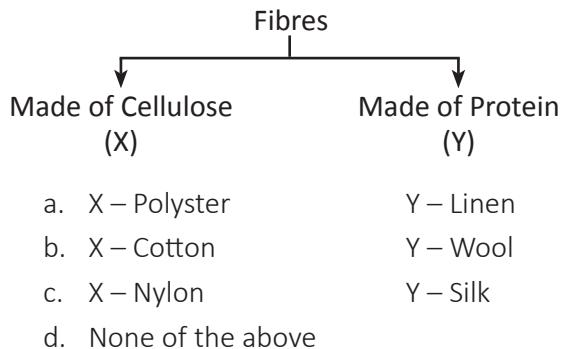
SECTION - C : BRAINBOX

21. Following flowchart shows the process of getting jute fibres from its stem.



Choose suitable option for 'X'.

- The stems of jute fibres are immersed in water.
 - The stems of the harvested plants are immersed in water.
 - The stems rot and are immersed in water
 - The stems of harvested plants are dried under the sun.
22. Read the classification chart and choose the correct option for X and Y.

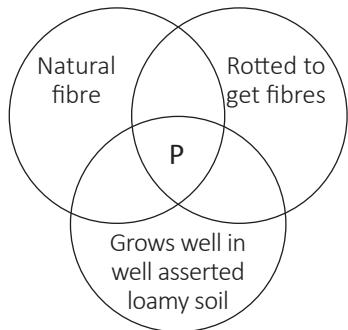


23. A student of grade 6 made two columns A and B to show a few terminologies involved to get fabric from fibres and their explanations.

Which one of the following is not matched correctly?

	Column A (Terminology)	Column B (Explanation)
a.	Ginning	Separating fibres from seeds.
b.	Seed pods	Straightening fibres.
c.	Lint	Cotton fibres after being separated from seeds.
d.	Carding	Cleaning and disentangling the fibres

24. Study the given Venn diagram and identify 'P'.



- a. Cotton b. Wool
c. Hemp d. Both a and c

25. The different steps of processing wool into yarn are given below:

- I. Scouring II. Fleecing III. Carding
IV. Spinning V. sorting VI. Washing fleece

Arrange them in a sequence from step 1 to step 6.

- a. III, V, I, VI, II, IV
b. II, VI, I, V III, IV
c. VI, V, III, II, IV, I
d. I, II, III, VI, V, IV

Darken your choice with HB pencil -

1. a b c d
2. a b c d
3. a b c d
4. a b c d
5. a b c d
6. a b c d
7. a b c d

8. a b c d
9. a b c d
10. a b c d
11. a b c d
12. a b c d
13. a b c d
14. a b c d

15. a b c d
16. a b c d
17. a b c d
18. a b c d
19. a b c d
20. a b c d
21. a b c d

22. a b c d
23. a b c d
24. a b c d
25. a b c d

Sorting and Separation of Materials into Groups

- ⇒ Different materials have different properties, such as some are hard or soft, some are smooth or rough, some are shiny or non-shiny, etc.
 - Grouping of materials on the basis of their similarities and differences makes it easy to study their properties.
 - Some materials are soluble in water such as salt while some are insoluble in water such as sand and oil.
- ⇒ Some of the methods to separate substances from their mixture are hand-picking, winnowing, sieving, sedimentation, decantation and filtration.
 - The process used to separate grains from stalks is threshing.
 - Winnowing is used to separate heavier and lighter components of a mixture by wind or by blowing air.
 - By sieving and filtration, particles of different size are separated.
 - When the heavier component of a mixture settles after water is added to it, the process is called sedimentation. When water is removed, the process is called decantation.
 - When no more solute (e.g. Salt) can be dissolved in the amount of solvent (e.g. Water) taken, the solution is said to be saturated solution. By heating water, more solute can be added to it before it gets saturated.

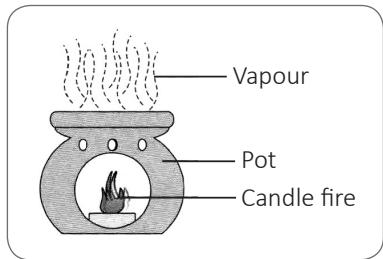
SECTION - A : SCIENTIFIC REASONING

1. Why do we need to classify materials into groups?
 - a. It enables us to see similarities and differences among different materials
 - b. It makes it easier for us to choose materials suitable for making certain things.
 - c. It helps us to study the properties of different materials easily.
 - d. All of these
2. Which of the following are the properties of the cloth for making an umbrella?
 - I. Light weight
 - II. Flexible
 - III. Water proof

The correct options are –

 - a. Only II
 - b. I and III
 - c. II and III
 - d. I, II and III

3. Which of the following method will you use for separating butter from curd?
- Churning
 - Filtration
 - Winnowing
 - Hand-picking
4. The following diagram shows a pot used for heating perfumery oil.

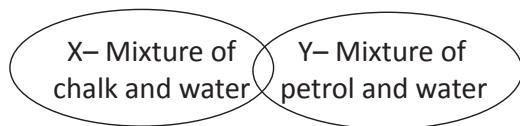


- Which of the following physical property is the most desirable for making the pot?
- Vibrant colour
 - High density
 - Good insulator of heat
 - High melting point

5. What is the reason behind the formation of drops as shown on the surface of the leaf in the morning?



- Condensation of water vapour
 - Evaporation of water vapour
 - Photosynthesis
 - Respiration
6. Identify the correct method of separation of two mixtures (X and Y).

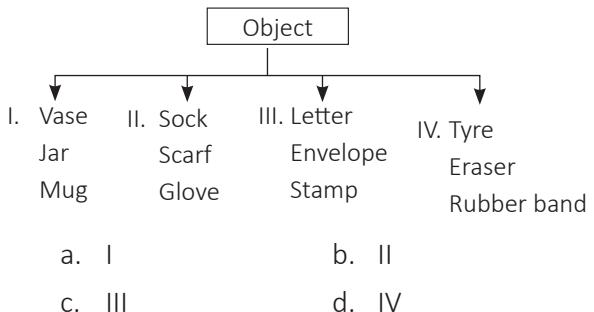


- X – Filtration, Y – Separating Funnel
- X – Decantation, Y – Separating Funnel

- X – Condensation, Y – Churning
- X – Filtration, Y – Evaporation

7. Which of the following reasons best explains why tungsten is used in light bulbs?
- It has high melting point.
 - It is resistant to corrosion.
 - It is cheap.
 - It is a good conductor of electricity.

8. In which of the following groups would you place a porcelain soup spoon?



9. A solid, 'Q' is heated until the temperature of 80°C is reached. At that temperature, solid 'Q' starts to melt. The temperature is constant throughout the melting of solid Q. Which of the following statements is correct about the solid, 'Q'?
- It has a boiling point of 80°C .
 - It is a pure substance.
 - It has a high density.
 - It does not conduct electricity.

10. Which of the following physical properties can be used to differentiate metals from glass, ceramics, plastics and fibres?
- High melting point.
 - High density.
 - Good conductor of electricity.
 - Can be molded into shape.

11. Shalu found that there is too much ghee in a particular curry. To remove excess of ghee, she should:
- Put the curry in a fridge to cool.
 - Remove ghee from the top with the help of a ladle.
 - Put the curry in the fridge to cool and then remove ghee from top with the help of a ladle.
 - None of these.
12. What can be done to drink tea if there is too much sugar in it?
- Sugar should be removed with a strainer.
 - This tea should be taken as such or thrown away as nothing can be done about the sugar content.
 - Tea without sugar will have to be prepared and then mixed with this tea if we need to drink this tea.
 - Not possible to analyse the correct answer from the given options.
13. There is a lot of air pollution and there is an increase in the particulate matter in the air. Every day we see a layer of dust on the furniture. This is because:
- Dusting is not a priority with us.
 - Dust gets removed from air.
 - Air is not circulating properly.
 - Particulate matter like dust is heavier and tends to settle down due to gravity.
14. An apparatus is set up to distil a liquid from a mixture as shown below. At which position, A, B, C or D, should the bulb of a thermometer be placed?
-
- The diagram shows a round-bottom flask containing a mixture being heated from below. A thermometer is inserted into the mixture. A condenser tube is attached to the top of the flask and leads to an Erlenmeyer flask at the bottom.
- A
 - B
 - C
 - D
15. Grade 6 students classified Cobalt, Iron, Copper and Tin into 2 categories as given below:
- ```

graph TD
 Materials[Materials] --> CobaltIron[Cobalt & Iron]
 Materials --> CopperTin[Copper & Tin]
 CobaltIron --> Magnetic[Magnetic]
 CopperTin --> NonMagnetic[Non-magnetic]

```
- Which of the following information you can get from this?

- All the metals are not magnetic.
- Iron and Tin have different magnetic properties.
- All the given materials are metals.
- Copper and Tin can be used to make needles of a magnetic compass.

Choose the correct option –

- I and II
- II and IV
- I, II and III
- II, III and IV

16.

| P          | Q       | R        | S          |
|------------|---------|----------|------------|
| Pen        | T-shirt | Notebook | Fruit      |
| Mug        | Vest    | Magazine | Vegetables |
| Toy car    | Pant    | T        | Medicines  |
| Television | Saree   | Book     | Rubber     |

Study the table and choose the correct option.

- In the above table, we can replace R and T by
- Paper and pen, respectively.
  - Paper and carton, respectively.
  - Leather and magazine, respectively.
  - Paper and cotton respectively.

17. Which of the following statements is correct?

The hand-picking method is used to separate the components of mixture when:

- I. The size of the unwanted substance is same as that of useful ones.
- II. The shape of the unwanted substance is same as that of useful ones.
- III. The colour of the unwanted substance is same as that of useful ones.
- IV. The unwanted material is present in small quantity.

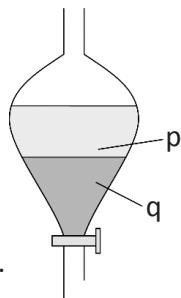
- a. Only I                  b. Only IV  
c. Both I and III            d. Both III and IV

18. Kavya wants to measure the amount of milk using a measuring jug.

She should \_\_\_\_\_.

- a. use an iron jug as it is unbreakable.
- b. use a glass jug as glass is transparent.
- c. not use glass as glass is breakable.
- d. Both a. and b.

19. Rajat accidentally mixed water into mustard oil. Now he wants to separate both liquids. He used separating funnel to separate these two liquids.



Study the given figure and choose the correct statement:

- a. Two distinct layers are formed; layer 'P' is mustard oil and layer 'Q' is water.
- b. Two distinct layers are formed; layer 'P' is water and layer 'Q' is mustard oil.
- c. No distinct layer is formed as both the liquids are miscible.
- d. Mustard oil is first collected in the beaker.

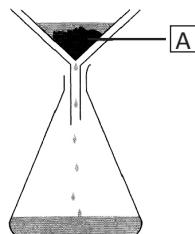
20. Some household items are classified as given here:

| Household items            | Made of | Reason to use                     |
|----------------------------|---------|-----------------------------------|
| 1. Cooking utensil         | Metal   | Metals are good conductor of heat |
| 2. Milk storage container  | Metal   | Metals act as germicide           |
| 3. Water storage container | Silver  | Silver acts as disinfectant       |
| 4. Bucket                  | Plastic | Rust proof                        |
| 5. Kettle handle           | Steel   | Rust proof                        |

Which of them are correctly classified?

- a. 1 and 3
- b. 2, 3 & 5
- c. 1, 3 and 4
- d. 4 and 5

21. A mixture of sodium chloride, potassium chloride, ammonium chloride and silver chloride is added to a beaker containing water. Only silver chloride remains insoluble in water. The solution is filtered as shown here.



Which of the following is most likely to be A?

- a. The residue of silver chloride.
- b. The distillate of silver chloride.
- c. The residue of potassium chloride, sodium chloride and ammonium chloride.
- d. The filtrate of silver chloride.

22. There are various separating techniques used to separate variety of components based on their characteristics.

Rahul's science teacher asked him to separate the components of a mixture containing Iron filings, salt, sand, sulphur and camphor. The steps to separate all the components of this mixture are –

1. Magnetic separation
2. Chemical as a solvent to dissolve sulphur
3. Filtration
4. Sublimation
5. Evaporation

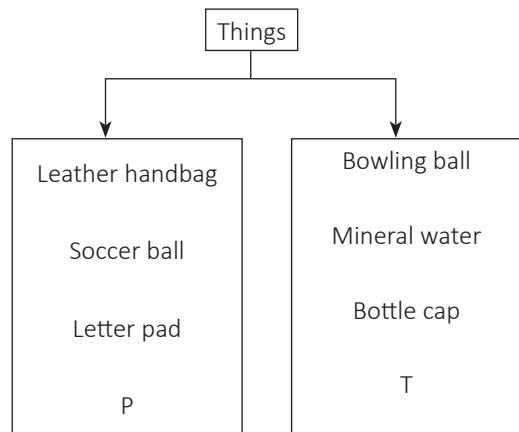
Arrange these steps of separation in a sequence from 1 to 5.

- a.  $4 \rightarrow 1 \rightarrow 3 \rightarrow 5 \rightarrow 2$       b.  $4 \rightarrow 1 \rightarrow 3 \rightarrow 2 \rightarrow 5$   
c.  $1 \rightarrow 2 \rightarrow 3 \rightarrow 5 \rightarrow 4$       d.  $1 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 2$

23. Study the given table about three different substances A, B, and C

| A                      | B                                     | C                                            |
|------------------------|---------------------------------------|----------------------------------------------|
| 1. Transparent         | Yellow in colour                      | Varied colour and man-made                   |
| 2. Smooth to touch     | Lustrous                              | Used to make handles and electrical switches |
| 3. Very poor conductor | Both thermal and electrical conductor | Both thermal and electrical insulator        |

24. The following objects are classified according to whether they are made from materials that come from living or non-living things.



What could be the materials A, B and C?

- a. A – Water, B – Iodine, C – Iron  
b. A – Plastic, B – Iron, C – Glass  
c. A – Glass, B – Gold, C – Bakelite  
d. A – Glass, B – Copper, C – Plastic

What can object P and T be?

- | <u>Object P</u>  | <u>Object T</u> |
|------------------|-----------------|
| a. Rubber boots  | Silk scarf      |
| b. Porcelain mug | Eraser          |
| c. Woolen glove  | Aluminum pot    |
| d. Battery       | Iron grill      |

25. Molly found two objects (X and Y). She did some tests to find out what material they were made of. Here are her results.

|                   | X   | Y   |
|-------------------|-----|-----|
| Waterproof        | Yes | Yes |
| Conductor of heat | No  | No  |
| Brittle           | Yes | yes |

What could the materials 'X' and 'Y' be?

|    | X       | Y       |
|----|---------|---------|
| a. | Wood    | Rubber  |
| b. | Plastic | Paper   |
| c. | Metal   | Plastic |
| d. | Glass   | Ceramic |

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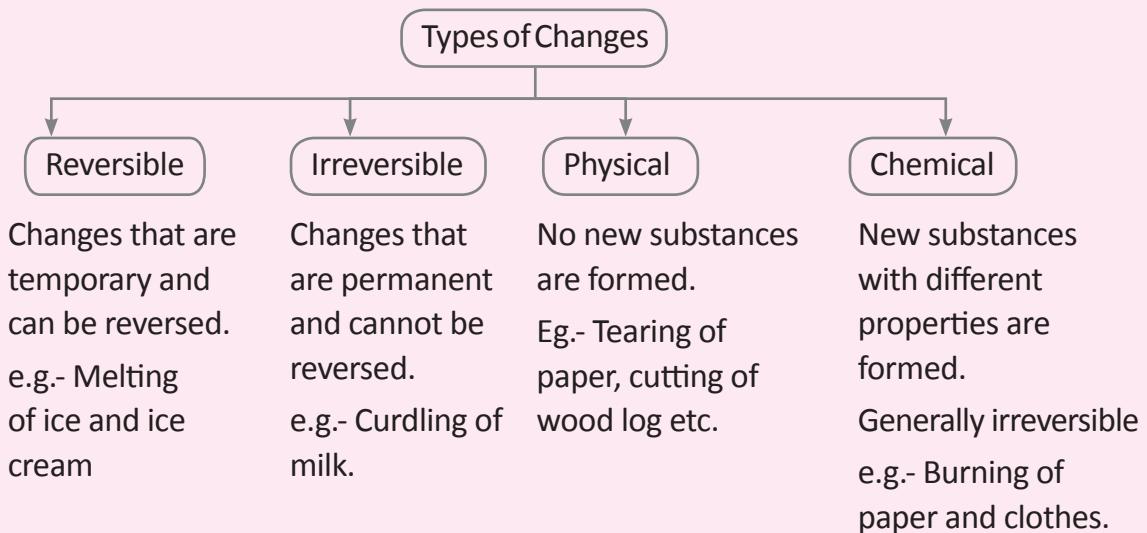
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1.  a  b  c  d      8.  a  b  c  d      15.  a  b  c  d      22.  a  b  c  d  
2.  a  b  c  d      9.  a  b  c  d      16.  a  b  c  d      23.  a  b  c  d  
3.  a  b  c  d      10.  a  b  c  d      17.  a  b  c  d      24.  a  b  c  d  
4.  a  b 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

# Changes Around Us

We observe variety of changes everyday in our surroundings. Some changes are temporary while other are permanent.



Lighting a candle shows both physical and chemical changes. It involves melting of wax is a physical change and burning of wick and wax, a chemical change.

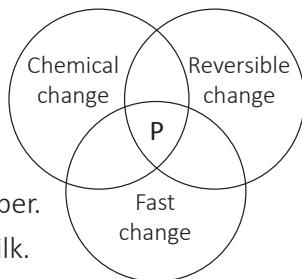
## SECTION - A : SCIENTIFIC REASONING

1. Which of the following is incorrect about a permanent change?
  - a. Energy is either absorbed or evolved.
  - b. Energy is neither absorbed nor evolved.
  - c. A new product is formed.
  - d. All of these are correct.
2. Every substance has its own characteristic which distinguishes it from other substances. Which of the following is an example of a physical change of a substance?
  - a. Burning of a piece of paper.
  - b. Boiling an egg.
  - c. Heating wax.
  - d. Leaving cut fruits in open for half an hour.
3. Rusting of an iron is an example of –
  - a. Physical change.
  - b. Chemical change.
  - c. Biological change.
  - d. Mechanical change.

4. Which of the following is true about characteristics of incomplete combustion?
- Insufficient oxygen is used to oxidize the carbon.
  - Insufficient heat is supplied to burn the coal.
  - Only one final product,  $\text{CO}_2$  is obtained
  - All of these

5. Study the Venn diagram.

What does 'P' represent?



- Burning of paper.
- Curdling of milk.
- Heating of ammonium chloride in a closed container.
- Rusting of iron.

6. Read the given statements and choose the incorrect one about decomposition of calcium carbonate.

- It is a chemical change caused by the effect of heat.
- New products are formed after decomposition.
- Total mass of the products after decomposition is less than that of the reactants.
- The products are formed by the arrangement of the atoms of the reactants.

7. Which of the following statements is correct about a physical change?

- Atoms of the reacting materials rearrange.
- The change can be reversed easily.
- Physical state of a substance changes in a physical change.
- Both b & C

8. Synthesis of chemicals is an example of chemical changes involving change in the temperature. Which of the following synthesis is not an example of chemical changes involving heat?

- Iron sulphide from iron and sulphur.
- Sugar in plants from  $\text{CO}_2$  and  $\text{H}_2\text{O}$ .
- $\text{CO}_2$  when a candle is lit.
- Black carbon when sugar is decomposed.

9. Kavya categorised the given phenomena into periodic and non-periodic changes.

Which one is not categorised correctly?

|    | Periodic changes   | Non-periodic changes              |
|----|--------------------|-----------------------------------|
| a. | Low and high tides | Forest fire                       |
| b. | Hands of a clock   | Tsunami                           |
| c. | Earthquakes        | Opening of a morning glory flower |
| d. | Day and Night      | Occurrence of a rainbow           |

10. Observe the given changes and find what is common in them.

- I. Swinging of a swing.
- II. Rotation of the planets.
- III. Blinking of traffic Lights.

All of these are –

- Chemical changes.
- Periodic changes.
- Non-periodic changes.
- Undesirable changes.

11. Which of the following involve(s) both physical and chemical changes?
- Lighting a candle.
  - Heating ammonium chloride crystals.
  - Cutting a tree.
  - All of these
12. Which of the following does not lead to a chemical change?
- Adding  $H_2SO_4$  solution into  $NaOH$  solution.
  - Placing a piece of Mg in  $HNO_3$  solution.
  - Adding Nace into  $H_2O$ .
  - Adding  $CaCO_3$  into HCl.
13. Choose the odd one out among the following with regard to types of changes.
- Occurrence of solar eclipse.
  - Arrival of comets.
  - Catching of common cold.
  - Revolution of the planets around the Sun

14. The changes in which heat is evolved are:

- Burning of wood.
- Evaporation of spirit.
- Dissolving glucose into water.
- All of these

15. Read the given statements

- Changes involve interaction.
- Changes in state, shape and size are physical changes.
- All changes do not involve energy.
- Dissolving sol-ammonic in water is an exothermic change.

Choose the correct statement.

- I & II
- III & IV
- I, II & III
- I & IV

## SECTION - B : EVERYDAY SCIENCE

16. When petrol is burnt in the presence of excess  $O_2$  gas, large amount of heat is given off to power the engine of a car.  $CO_2$  and steam are also formed during this process. Which of the following statements is not correct?
- The reactant for this chemical reaction are petrol and  $O_2$  gas.
  - The atoms of petrol and  $O_2$  gas rearrange to form  $CO_2$  &  $H_2O$ .
  - Petrol is a non-renewable fuel because its combustion is irreversible.
  - Petrol undergoes thermal decomposition to release  $CO_2$  and  $H_2O$ .

17. Acid rain often causes damage to buildings and monuments. It affects our lives,

indirectly in many ways. Which of the following is correct about acid rain?

- The clouds become acidic, a chemical change occurs and results into acid rain.
- Rainwater gets mixed with acidic non-metal oxides. This chemical change causes acid rain.
- Rainwater gets mixed with acidic metal oxides. This chemical change causes acid rain.
- Both a and c

18. Two processes of everyday life are given below

|               |               |
|---------------|---------------|
| Dew formation | Snow on hills |
| Process 'P'   | Process 'Q'   |

Which of the following is incorrect about these processes?

- a. Both the processes involve change in molecular arrangement of water.
  - b. Both the processes occur due to change in temperature.
  - c. Both the processes occur at or below 0°C.
  - d. Dew point is called frost point when temperature is below the freezing point.
19. Observe your surroundings. Some changes and information about them are listed below.

|    | Actions                                     | Observation                   | Conclusion                                    |
|----|---------------------------------------------|-------------------------------|-----------------------------------------------|
| 1. | Spreading wet clothes under the sun         | Clothes dry up in a few hours | Evaporation, a physical change took place.    |
| 2  | Baking of mixture of cake.                  | Cake is baked to eat.         | Evolution of a gas, a chemical change occurs. |
| 3  | Making Idli batter using rice and urad dal. | Amount of mixture increased.  | 'X', and 'Y' changes occur.                   |

What are X and Y?

- a. X – Condensation, Y – Physical change
- b. X – Fermentation, Y – Chemical change
- c. X – Fermentation, Y – Physical change
- d. X – Precipitation, Y – Physical change

20. Anvi was cooking some food. The two main ingredients of that food were vinegar and baking soda. Accidentally, she used vinegar in place of water and poured it into the container containing baking soda. She observed some changes.

What do you infer from the incident happened in kitchen?

- a. It is a physical and reversible change as baking soda can be separated by filtration method.
- b. It is a chemical but reversible change and baking soda can be separated by filtration method.
- c. It is a chemical but irreversible change as gas bubbles are evolved.
- d. It is a physical but irreversible change as no change is observed.

## SECTION - C : BRAINBOX

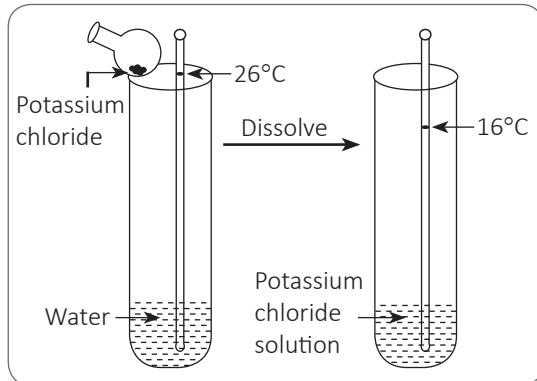
21. A student is carrying out an experiment by putting an algae in water under sunlight. After some time, the student observes the formation of water bubbles. Which gas is contained in these bubbles?
- a. CO<sub>2</sub>
  - b. O<sub>2</sub>
  - c. N<sub>2</sub>
  - d. H<sub>2</sub>O

22. "The flesh of some fruits, such as apples, turns brown after their waxy skin is cut." A student wrote a few of the reasons and conclusions behind this as shown here.

Choose the correct one.

- a. Waxy skin prevents exposure of CO<sub>2</sub> to the flesh of fruit and so prevents a chemical change.
- b. Waxy skin prevents exposure of NO<sub>2</sub> to the flesh of fruit and so prevents a chemical change.
- c. Waxy skin prevents exposure of O<sub>2</sub> to the flesh of fruit and so prevents a chemical change.
- d. Both a and b.

23. In an experiment, potassium chloride crystals are dissolved in water as shown here.

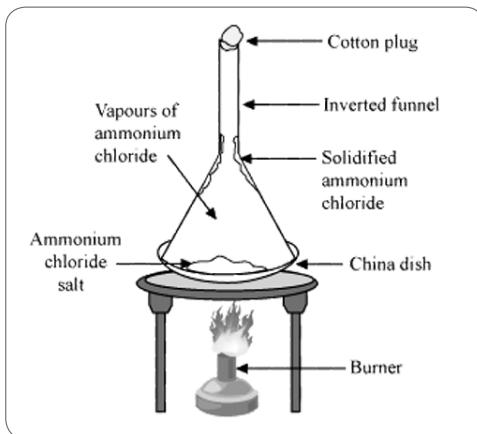


Study the given diagrams and choose the most appropriate conclusion drawn from this observation.

- a. Dissolving a salt always leads to a chemical change.
- b. Dissolving potassium chloride is an endothermic change.
- c. Dissolving potassium chloride is an exothermic change.
- d. A chemical change always leads to a change in temperature.

24. Observe the given experimental set-up.

A student draws some conclusions based on his observation.



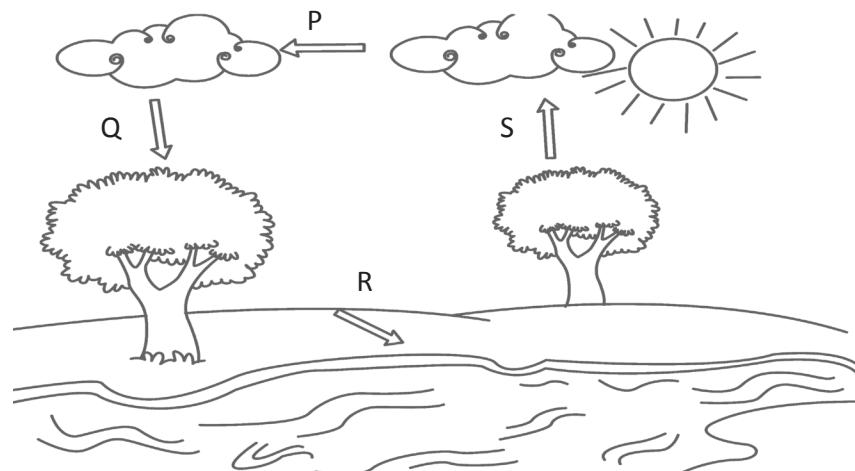
- I. It is a physical change
- II. It involves a chemical change as ammonium chloride decomposed into new substances.
- III. This technique can be used to separate a mixture common salt and ammonium chloride.

Which of the following options is correct?

- a. Only I
- b. I and II
- c. II and III
- d. I, II and III

25. Observe the given diagram of water cycle.

Read the given statements about P, Q, R, S and choose the correct one.



|    | P                    | Q                    | R                    | S                    |
|----|----------------------|----------------------|----------------------|----------------------|
| a. | Heat energy absorbed | Heat energy evolved  | Heat energy absorbed | Heat energy evolved  |
| b. | Heat energy evolved  | Heat energy evolved  | Heat energy absorbed | Heat energy absorbed |
| c. | Heat energy evolved  | Heat energy absorbed | Heat energy absorbed | Heat energy evolved  |
| d. | Heat energy absorbed | Heat energy absorbed | Heat energy evolved  | Heat energy evolved  |

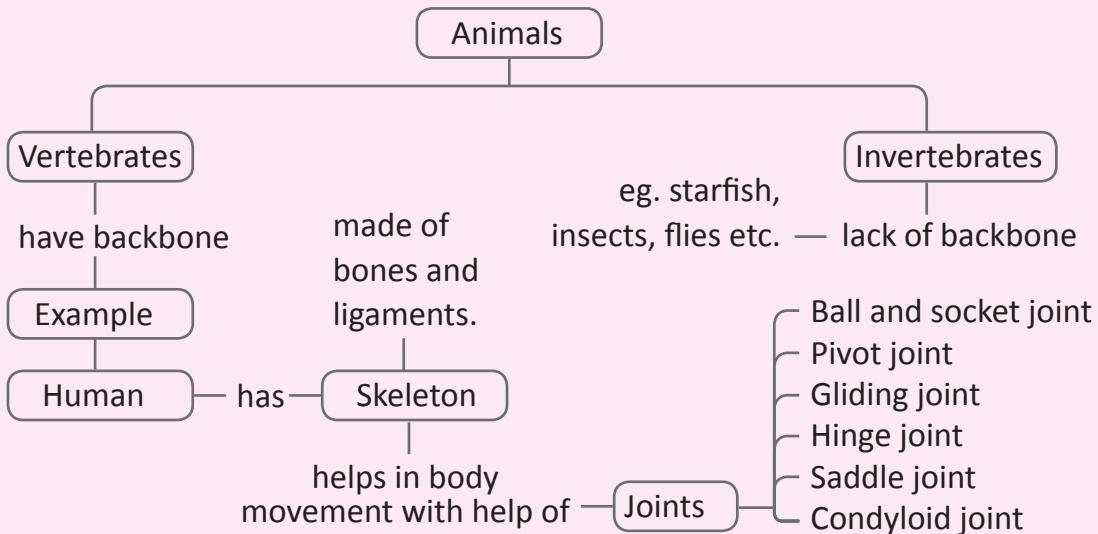
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- |                                                                                                    |                                                                                                     |                                                                                                     |                                                                                                     |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 8. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 15. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 22. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 2. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 9. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 16. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 23. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 3. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 10. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 17. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 24. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 4. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 11. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 18. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 25. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 5. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 12. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 19. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |                                                                                                     |
| 6. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 13. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 20. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |                                                                                                     |
| 7. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 14. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 21. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |                                                                                                     |

# Plants and Animals

## Plants

- Water comes out of the leaves in the form of vapour. This is called transpiration.
- Roots absorb water and minerals from the soil. Roots are of two types - tap roots and fibrous roots.
- Plants having reticulate venation have tap roots, while plants having leaves with parallel venation have fibrous roots.
- Parts of a flower are sepals, petals, stamens and pistil. Pistil has stigma, style and ovary. Parts of stamen are anther and filament.
- A transport system is needed in a plant to ensure that every plant part receives the important substances like food, water and minerals. Plants need water and minerals to carry out the process of photosynthesis.
- Plants have two systems for transportation. They are Xylem and phloem
- Xylem transports water and solutes from the roots to the and other plant parts.
- Phloem transports food from the leaves to the rest of the plant.



## SECTION - A : SCIENTIFIC REASONING

1. Sam tied a polythene bag around a leaf of a plant. He observed the leaf after some time and found that the water droplets have appeared on it. This is because of \_\_\_\_\_.
- Perspiration
  - Transpiration
  - Evaporation
  - Condensation
2. Which of the following leaves have reticulated venation?
- Tulsi and wheat.
  - Maize and grass.
  - Wheat and china rose.
  - Tulsi and china rose.
3. Match the following and choose the correct answer from the options given below:
- | Column I          | Column II                                    |
|-------------------|----------------------------------------------|
| i. Sepals         | A. Loss of water in the form of water vapour |
| ii. Transpiration | B. Part of a flower                          |
| iii. Grass        | C. Flattened part of the leaf                |
| iv. Lamina        | D. Parallel venation                         |
- i – A; ii – B; iii – D; iv – C
  - i – C; ii – A; iii – D; iv – B
  - i – B; ii – A; iii – D; iv – C
  - i – A; ii – D; iii – B; iv – C
4. Which of the following statements about the tiny tubes in a stem is false?
- They carry water and mineral salts from the roots to the leaves.
  - They carry food from the leaves to the other parts of the plants.
  - There are two different sets of tubes.
  - They store excess food for the plants.
5. Why are animals important to humans?
- They provide humans with food.
  - They help humans do work.
  - They provide humans with materials.
  - They cannot harm humans.
- Choose the correct option.
- I & II
  - I & III
  - I, II & III
  - All of these
6. There are rotting leaves, plant eaters & animal eaters in a leaf litter. If all the animal eaters are removed, which one of the graphs would better represent the situation?
- amount of rotting leaves
- 
- a. Plant eaters population
- b. Plant eaters population
- c. Plant eaters population
- d. Plant eaters population
7. Compare the features of a praying mantis and a termite.
- 

praying mantis

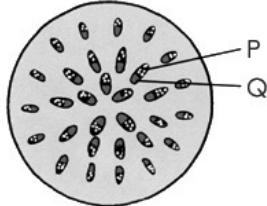


termite

In what way(s), they are similar?

- a. They feed on the same type of food.
- b. They have the same number of legs.
- c. They move in the same way.
- d. All of these

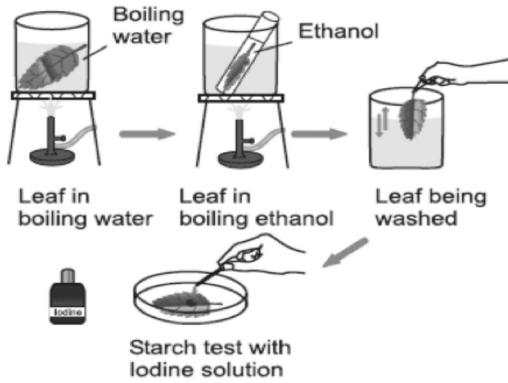
8. The diagram here shows the cross-section of a stem under the microscope.



Which of the following is correct about the function of P and Q?

- a. P and Q are tiny tubes.
- b. These help to transport water and mineral salt from the roots.
- c. These help to transport food from the leaves to the other parts of plants.
- d. All of these

9. Observe the experiment shown here with a leaf of a plant and choose the correct option.



The above test demonstrates that:

- a. Leaves get the starch from chlorophyll.
- b. Starch is essential for the presence of chlorophyll.
- c. Iodine reacts with the leaf and forms blue black colour.
- d. Leaves make their food as starch.

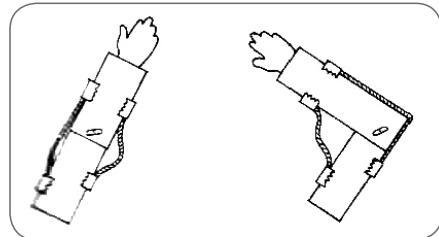
10. Vaisalli took some gram seeds for the purpose of germinating them. She put the seeds on a wet cotton wool. After two days the seeds germinated but she was not able to pull out the seeds from the cotton wool. This is because –

- a. Seeds need warmth from the cotton wool bed.
- b. By now, the seeds are used to the cotton wool.
- c. The new roots have tiny root hairs which cling to the cotton wool.
- d. Seeds get their nutrition from the cotton wool.

11. Some radioactive waste leaked out from a landfill and contaminated a river. The river water was used to water plants in a nearby farm. If we examine the stems of those plants where would you expect to find radioactive substances?

- a. Phloem tubes in the stem.
- b. Xylem tubes in the stem.
- c. In both xylem and phloem tubes in the stem.
- d. None of them.

12. Look at the models of an arm that Ravi made.

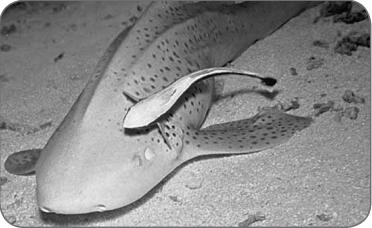


What does his model demonstrate?

- A. Muscles in the arm work in pairs.
- B. The arm is only made of bones and muscles.
- C. The arm can bend and straighten.

- a. A and B only      b. B and C only  
 c. A and C only      d. A, B and C
13. Lizard and snakes in deserts like to stay in the shades of plants or rock to \_\_\_\_\_.  
 a. Attract the females.  
 b. Avoid too much heat from the direct sunlight.  
 c. Reduce heat loss to their surroundings.  
 d. Hibernate.
14. The diagram shown below shows a process taking place in a green plant. Identify the arrow which is wrongly labelled?
- 
- What happens when an animal adapts 'X' during winters?  
 a. It becomes less active.  
 b. Its heart rate slows down.  
 c. It survives through the cold winter without eating.  
 d. All of these

## SECTION - B : EVERYDAY SCIENCE

16. Farmers use ladybirds to control aphids that damage plants by spreading plant diseases. Why can lady birds be used to control aphids biologically?  
 a. Aphids are food consumers.  
 b. Ladybirds are food consumers.  
 c. Ladybirds are the predators of aphids.  
 d. Aphids are the predators of ladybirds.
17. 
- Read the given paragraph.  
 "A remora fish attaches itself under a shark to obtain free transportation. It feeds on the food scraps left behind by the shark. The shark is neither benefited nor harmed from this relationship."
- What type of relationship is this?  
 a. Mutualism      b. Commensalism  
 c. Parasitism      d. Predator-prey
18. Yesha is doing an experiment. She put a leaf in a glass of red coloured water for two days. After two days, she observes that the red colour has moved through the leaf. It followed the pattern of the leaf veins and has spread throughout the leaf. What do you conclude from Yesha's experiment?
- I. The leaf contains tubes that transport water.  
 II. The red colour water from the glass moves through these tubes to all parts of the leaf.

- a. Only I                  b. Only II  
 c. Both I and II            d. None of these
- 19.** A farmer planted some vegetables in a plot of land. This land had certain minerals in the soil which made the groundwater taste bitter. How will this affect the taste of the vegetables?
- It will not affect the taste of the vegetables because the roots only take in water from the soil.
  - Only the roots of the vegetables will taste bitter because they grow in the soil.
  - Only the roots and stems of the vegetables will taste bitter because they contain tiny tubes which transport water and mineral salts.
  - The entire vegetable will taste bitter because the tiny tubes in the stem transport the bitter water from the roots to all the parts of the plant.

**20.** Desmond had his knees and elbows wrapped around with stiff corrugated cardboard.



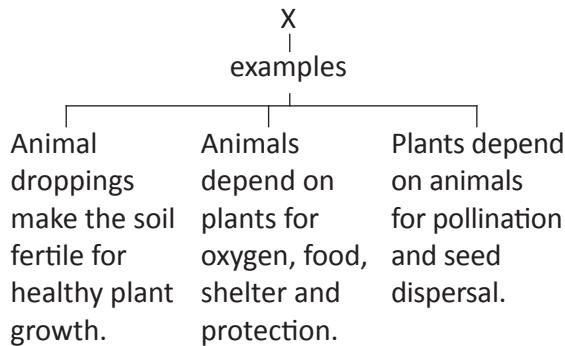
He was asked to move around the room. However, he found great difficulty in doing so.

**What was the purpose of this activity?**

- To show that muscles are needed for movement.
- To show that joints are essential for our body to move.
- To show that the framework of our body consists of many bones.
- To show that the hard structure in our body gives it shape.

### SECTION - C : BRAINBOX

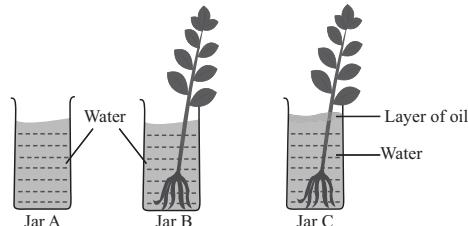
- 21.** Study the given chart.



What could 'X' be?

- Factors that affect population size.
- Factors that affect survival of an organism.
- Interdependence of living organisms.
- Living situation/conditions in a habitat.

- 22.** Tom filled three jars of the same size with the same amount of water. He put two small plants of similar size in jar B and jar C. He poured a layer of oil on the water surface of jar C. Then he placed all the jars near an open window.



The result of his experiment are recorded in the given table.

|                                  | Jar A  | Jar B  | Jar C  |
|----------------------------------|--------|--------|--------|
| Volume of water at the beginning | 225 ml | 225 ml | 225 ml |
| Volume of water after 2 days     | 200 ml | 165 ml | 190 ml |

Which jar shows that roots take in water?

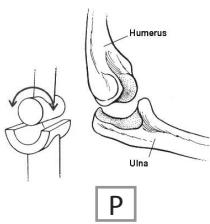
- a. Jar A
  - b. Jar B
  - c. Jar C
  - d. All of these
23. During a thunderstorm, a strong wind caused a young plant to break as shown in the figure. Which of the following



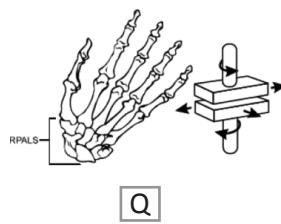
statement(s) is/are correct about this plant?

- I. The plant will die after one week because the tiny tubes transporting water and minerals from the roots have been broken.
  - II. Its leaves cannot carry out photosynthesis.
  - III. If new leaves do not grow, the bottom half of the plants will also die.
  - IV. The plant will not die because it contains tiny tubes transporting food from the leaves.
- a. I and II
  - b. II and III
  - c. III and IV
  - d. I, II and III

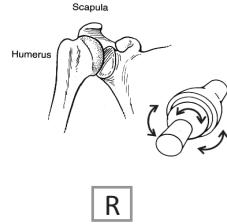
24. Observe the given diagrams



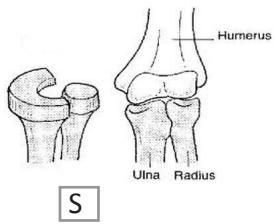
P



Q



R

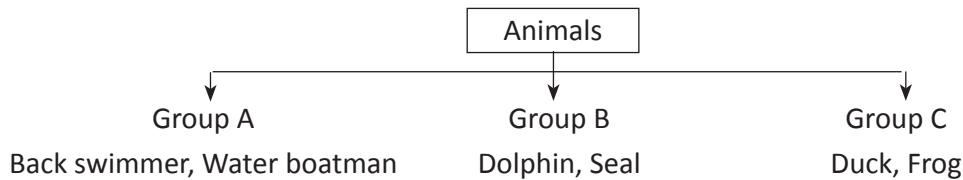


S

Identify P, Q, R, S. Where are they found in human body?

|    | P                                | Q                                                 | R                                               | S                                                 |
|----|----------------------------------|---------------------------------------------------|-------------------------------------------------|---------------------------------------------------|
| a. | Pivot joint- Found in neck       | Hinge joint- Found in wrist                       | Gliding joint- Found in hip joints              | Synovial joint- Found in neck                     |
| b. | Ball & socket- Found in shoulder | Hinge joint- Found in wrist                       | Gliding joint- Found in hip joints              | Synovial joint- Found in neck                     |
| c. | Hinge joint- Found in elbow/knee | Ball and socket- Found in hip and shoulder joints | Pivot joint- Found in neck                      | Gliding joint- Found in carpal wrists             |
| d. | Hinge joint- Found in elbow/knee | Gliding joint- Found in carpal wrists             | Ball & socket- Found in shoulder and hip joints | Pivot joint- Found in between the radius and ulna |

25. Study the classification chart shown below.



Identify the possible headings for A, B and C.

| Group A               | Group B            | Group C            |
|-----------------------|--------------------|--------------------|
| a. Flippers           | Oar-like hind legs | Webbed feet        |
| b. Flippers           | Webbed feet        | Oar-like hind legs |
| c. Oar-like hind legs | Flippers           | Webbed feet        |
| d. Oar-like hind legs | Webbed feet        | Flippers           |

Darken your choice with HB pencil -

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

# Motion and Measurement

## Motion

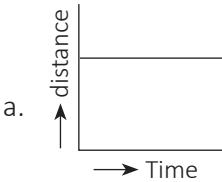
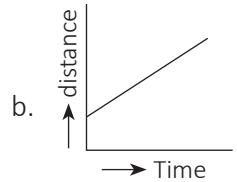
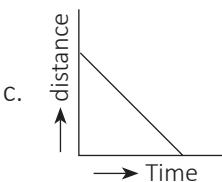
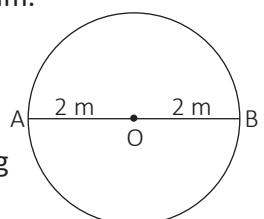
- Movement of an object from one place to another place with respect to a stationary object is called motion.
- We observe different types of motion in our surroundings.
  - a) Rectilinear Motion → Motion in a straight line
  - b) Circular Motion → Motion in a circular path
  - c) Periodic Motion → Motion that repeats itself at fixed time interval

## Measurement

- In ancient times, people used their body parts such as length of foot and width of finger to measure distance. But this method of measurement was not accurate.
- Now we use SI units (International system of units).
- SI units of distance (length, width, height) is metre (m), that of time is second (s) and that of temperature is degree Celsius ( $^{\circ}\text{C}$ ).
- Vernier calipers, screw gauge and measuring tapes are used to measure distance or lengths.
- We can measure the speed of a vehicle by knowing the distance travelled by the vehicle in per unit time.
- Speed(s) =  $\frac{\text{distance (d)}}{\text{time (t)}}$
- Velocity(v) =  $\frac{\text{displacement}}{\text{time (t)}}$
- Displacement is the shortest distance covered between two points.
- Change in velocity per unit time is called acceleration.

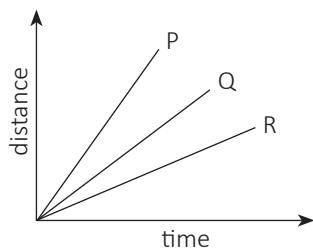
## SECTION - A : SCIENTIFIC REASONING

1. Which one of the following does not express a time interval?
- A day.
  - A second.
  - A school period.
  - Time of the 1st bell in the school.
2. A cyclist was moving on a circular track. Which one of the following is correct about the motion of the cyclist?
- The direction of motion does not change.
  - The velocity of the bicycle on the track remains constant.
  - The acceleration of the bicycle on the track remains constant.
  - The direction of motion changes continuously.
3. A teacher asked students to find the density of a wooden block. The apparatus which the students would need for this purpose are:
- Balance and ruler.
  - Balance and stopwatch.
  - Measuring cylinder and ruler.
  - Measuring cylinder and stopwatch.
4. A pendulum completes 20 oscillations in 30 seconds. How much time it will take to complete one swing?
- 0.5 s
  - 0.55 s
  - 1.5 s
  - 0.667 s
5. Which of the following defines acceleration?
- $\frac{\text{Change in velocity}}{\text{Time taken}}$
  - $\frac{\text{Change in speed}}{\text{Time taken}}$
  - $\frac{\text{Change in distance}}{\text{Time taken}}$
  - $\frac{\text{Change in displacement}}{\text{Time taken}}$
6. A ball falls freely, with no air resistance, near the Earth's surface. Which of the following physical quantities remains constant?
- Velocity
  - Speed
  - Per unit distance
  - Acceleration
7. The given diagram shows a part of Vernier scale (a scale to measure length) on a pair of calipers.
- 
- Which of the following readings is correct?
- 2.74 cm
  - 3.74 cm
  - 4.10 cm
  - 4.64 cm
8. Which type of motion of an object moves at a fixed distance from a fixed point?
- Periodic motion.
  - Rectilinear motion.
  - Circular motion.
  - Both a and b
9. Choose the incorrect statement stated about the types of motion.
- Motion of soldiers on march past is a rectilinear motion.
  - Every oscillatory motion is a periodic motion.
  - A football player running after a ball is a random motion.
  - Motion of a train along a curved track on hills is a circular motion.

10. 2 centimetres on a centimetre scale is divided into 20 equal divisions. What will be the least count of this scale?
- 0.5 mm
  - 10 mm
  - 1 mm
  - 20 mm
11. Choose the correct statement.
- Dust particles in the air show random motion.
  - A span was considered to be half a cubit.
  - Motion of a wheel on axle is an example of rotatory motion.
  - All of these
12. A boy drops a ball from the window of the 2nd story of a house. Which of the following graphs best describes the motion of the ball?
- a. 
- b. 
- c. 
- d. 
13. Which one of the following instruments is used to measure the thickness of a coin?
- Vernier calipers.
  - screw gauge.
  - Measuring tape.
  - All of these
14. What causes a moving body to resist a change in its state of motion?
- Speed of the moving body.
  - Weight of the moving body.
  - acceleration of the moving body.
  - Inertia of the moving body.
15. Study the given diagram.
- An object moves on this track and the starting point is 'A'. Which of the following statements is inferred incorrectly?
- 
- a. If the object completes one circle from A to A, the displacement becomes zero.  
b. If the object completes one circle from A to A, the distance covered is  $12.56\text{ m}$ .  
c. The direction of the moving body changes at every point.  
d. The distance and displacement covered on this track can be calculated using the mathematical expression  $2\pi r^2$ .

## SECTION - B : EVERYDAY SCIENCE

16. Three students P, Q and R were running on the same track. A student presented their speed on a graph as shown here. Who among them was running at the minimum speed?
- P
  - Q
  - R
  - All three are moving at the same speed



17. Anita was playing with a guitar. She observed the types of motion while playing strings of a guitar.

Which of the following types of motion did she observe?

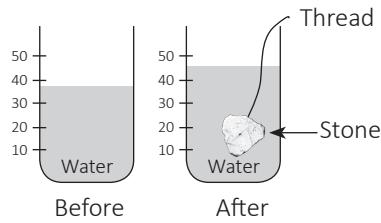
- Oscillatory and vibratory.
- Oscillatory and random.
- Vibratory and random.
- Vibratory and rotational.

18. Deepu, while riding a horse, falls back when suddenly the horse starts running.

Why does he fall back?

- The horse pushes him back.
- It happens because of Inertia of rest.
- The horse pushes him forward.
- It happens because of Inertia of motion.

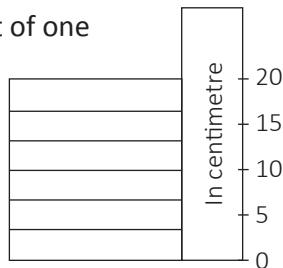
19. A student wanted to find the volume of a stone. He used the water displacement method for this purpose.



21. A centimetre ruler is used to measure the height of a pile of similar blocks as shown here.

What is the height of one of these blocks?

- 5 cm
- 6.23 cm
- 3.33 cm
- 3.7 cm



He tabulated data as given below.

| Situations                              | Volume (cm <sup>3</sup> ) |
|-----------------------------------------|---------------------------|
| Volume of water without the stone       | 38                        |
| Volume of water after dipping the stone | X                         |
| Volume of water displaced by the stone  | 8                         |
| Volume of the stone                     | Y                         |

Find out the value of 'X' and 'Y'

- $X = 42 \text{ cm}^3$  &  $Y = 4 \text{ cm}^3$
- $X = 50 \text{ cm}^3$  &  $Y = 8 \text{ cm}^3$
- $X = 46 \text{ cm}^3$  &  $Y = 8 \text{ cm}^3$
- $X = 48 \text{ cm}^3$  &  $Y = 10 \text{ cm}^3$

20. Match Column A with Column B.

| Column A             | Column B      |
|----------------------|---------------|
| I. Aeroplane         | p. Quintal    |
| II. Packet of Salt   | q. Kilogram   |
| III. Sack of Rice    | r. Grams      |
| IV. Huge bag of soil | s. Milligrams |
| V. Antibiotic tablet | t. Metric ton |

Choose the correct option:

- I-q, II-p, III-s, IV-t, V-r
- I-t, II-r, III-q, IV-p, V-s
- I-q, II-p, III-t, IV-s, V-r
- I-t, II-r, III-p, IV-q, V-s

### SECTION - C : BRAINBOX

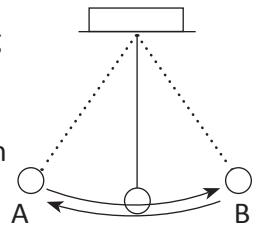
21. A centimetre ruler is used to measure the height of a pile of similar blocks as shown here.

What is the height of one of these blocks?

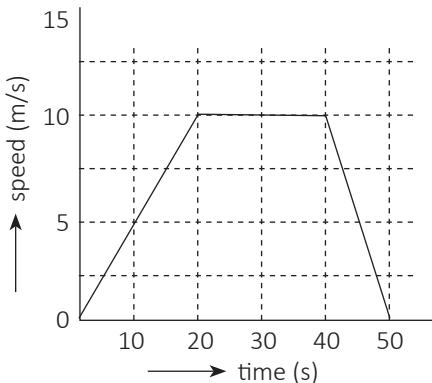
- 5 cm
- 6.23 cm
- 3.33 cm
- 3.7 cm

22. One oscillation of a swinging pendulum occurs when the bob moves from point 'A' to 'B' and back to 'A' again.

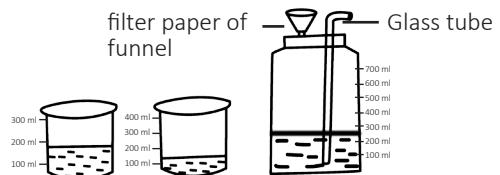
Which of the following is the most accurate way to measure the time for one oscillation of the pendulum?



- a. Measure the time of 20 oscillations and multiply it by 20.
- b. Measure the time of 20 oscillations and divide it by 20.
- c. Measure the time of 1 oscillation.
- d. Measure the motion from point 'A' to 'B', and double it.
23. The given graph shows the movement of a vehicle over a period of 50 seconds. Calculate the distance travelled by the vehicle during the time when it was moving at a steady speed?

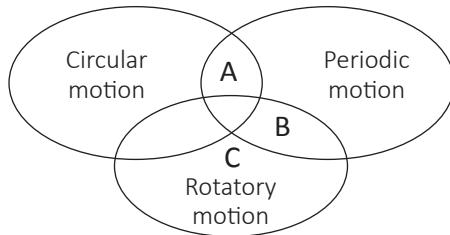


- a. 10 m      b. 100 m  
c. 200 m      d. 400m
24. If liquids of containers A and B are poured in the container 'C' What would be the approximate resultant volume of the liquid in container 'C'?



- a. 2.5 litre      b. 500 ml  
c. 520 ml      d. 700 ml

25. Study the given Venn diagram. What could be A, B and C?



|    | A                                   | B                                        | C                                       |
|----|-------------------------------------|------------------------------------------|-----------------------------------------|
| a. | Motion of the earth around the Sun  | Hands of a clock                         | Motion of the earth around its own axis |
| b. | Motion of the moon around the earth | Kids playing in a playground             | A flying bird                           |
| c. | Hands of a clock                    | Revolution of the planets around the Sun | Rotation of the planets                 |
| d. | Rotation of the steering of the car | Hands of a clock                         | A train running on a track              |

Darken your choice with HB pencil –

1.  a  b  c  d      8.  a  b  c  d      15.  a  b  c  d      22.  a  b  c  d
2.  a  b  c  d      9.  a  b  c  d      16.  a  b  c  d      23.  a  b  c  d
3.  a  b  c  d      10.  a  b  c  d      17.  a  b  c  d      24.  a  b  c  d
4.  a  b  c  d      11.  a  b  c  d      18.  a  b  c  d      25.  a  b  c  d
5.  a  b  c  d      12.  a  b  c  d      19.  a  b  c  d      26.  a  b  c  d
6.  a  b  c  d      13.  a  b  c  d      20.  a  b  c  d      27.  a  b  c  d
7.  a  b  c  d      14.  a  b  c  d      21.  a  b  c  d

# Electrical System

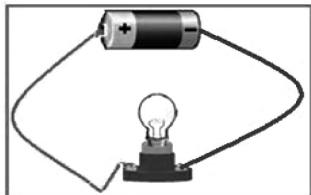
- ⇒ Arrangement that provides a complete path for electricity to pass (current to flow) is known as an electric circuit.

A simple electric circuit can be made by a bulb, a wire and an electric cell. It has two ends; a positive terminal and a negative terminal. A wire is connected from the positive terminal to the negative terminal of the cell and the bulb is connected to the wire so that the current can flow through the bulb.

- ⇒ An electric cell is a device that converts chemical energy into electrical energy. It has two metal plates indicating two terminals, negative and positive. It has chemical inside it. When the two terminals of the bulb are connected with that of electric cell by wires, a current passes through the filament of the bulb and it makes the bulb glow.
- ⇒ A dry cell is a cylindrical device in which a number of chemicals are stored. It contains a metal cap on one side, called positive terminal and a metal sheet at the other side, called negative terminal. It produces electric current from the chemicals stored inside it.
- ⇒ An electric bulb is a device which produces light using electrical energy. The filament of an electric bulb gets heated when electric current passes through it to an extent that it starts glowing

## SECTION - A : SCIENTIFIC REASONING

1. Which of the following statements is correct about the circuit shown in the figure?



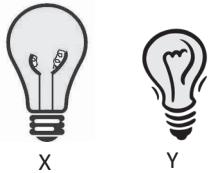
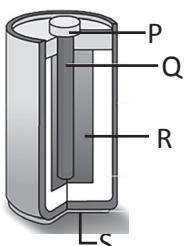
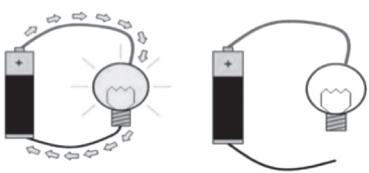
- a. The filament of the bulb is broken.

- b. There is a break in the path of the current.

- c. It will not glow as no current passes through its filament.

- d. All of these

2. One of the two thicker wires, which provides support to the filament, is connected directly to \_\_\_\_\_.

- a. The metal case at the base of the bulb and the other to the metal tip at the centre of the base.
- b. The positive terminal of the electric cell and the other to the negative terminal of the electric cell.
- c. The positive terminal of the electric portable generator and the other to the negative terminal
- d. Both the positive and negative terminals of the electric sockets
3. Identify which of the two bulbs will not glow and why?
- 
- X                   Y
- a. Y will not glow because its filament is joined.
- b. X will not glow because its filament is broken.
- c. Y will not glow because its filament is broken.
- d. X will not glow because its filament is joined.
4. Look at the diagram and identify the parts labelled as A, B and C.
- a. A- Filament, B- Metal tip, C- Metal casing.
- b. A- Copper wire, B- Metal tip, C- Metal casing.
- c. A- Filament, B- Metal casing, C- Metal tip.
- d. A- Copper wire, B- Metal casing, C- Metal tip.
5. Which letter, P, Q, R or S represents the negative end of the battery?
- 
- a. P                   b. Q
- c. R                   d. S
6. Which of the following is incorrect about an electric circuit shown here?
- 
- I. In 'ON' position, the switch allows the current to flow through the circuit.
- II. The first figure is that of a closed circuit.
- III. In 'OFF' position, the switch does not allow current to flow through the circuit.
- IV. The second figure is that of an open circuit.
- a. I and II              b. II and III
- c. I, II, III and IV      d. Only IV
7. Which of the following statements is correct about a switch?
- I. Because of it only, we are able to turn on or off any electrical appliance.
- II. When the switch is in 'on' mode, the circuit gets completed and thus, electric current flows through the circuit.
- III. When it is in 'off' mode, the circuit breaks and thus, electric current does not flow through the circuit.
- a. I, II and III          b. II and III
- c. Only I                d. None of the above

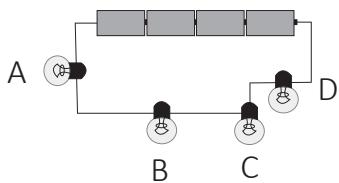
8. What will happen, if the metal case at the base and the metal tip at the centre of the base of the bulb are connected to the positive terminal of a cell?

- a. The bulb will glow.
- b. The bulb will not glow.
- c. The circuit is complete.
- d. Current will get a complete path to flow.

9. The brightness of a bulb depends on \_\_\_\_\_.

- I. How the batteries are arranged.
- II. The number of batteries used.
- III. How the other bulbs in the circuit are arranged.
- a. Only I
- b. I and II
- c. II and III
- d. I, II and III

10. Dona sets up the circuit as shown below. Identify which of the bulbs will light up?



- a. A and B
- b. B and D
- c. C and D
- d. All of these

11. There are two substances namely A and B. A allows electricity to pass through it while B does not. Which of the following statements is true about A and B?

- a. A is a conductor while B is an insulator
- b. A and B are conductors.
- c. A and B are insulators.
- d. B is a conductor while A is an insulator.

12. Which of the following shows correct classification of the items shown in the table?

|               |                  |                   |
|---------------|------------------|-------------------|
| Rubber shoe   | Copper Jug       | Wet cotton gloves |
| Plastic plate | Wooden table     | Glass tray        |
| Steel cable   | Aluminium stripe | Leather jacket    |

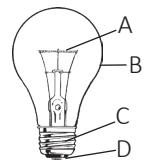
| Conductors of electricity | Non-conductors of electricity |
|---------------------------|-------------------------------|
| Plastic plate             | Wooden table                  |
| Steel cable               | Plastic spoon                 |
| Wet cotton                | glove Glass tray              |
| Rubber shoe               | Aluminium strip               |

13. A bird is sitting on a current-flowing electrical wire, getting ready to fly. Why does it NOT get electrocuted?

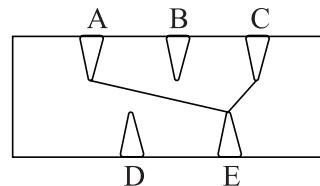
- a. The bird does not have any resistance.
- b. The bird is too small to get electrocuted.
- c. The bird will get electrocuted once it flies.
- d. The bird's two feet have the same potential.

14. Look at the labelled diagram of an electric bulb. Identify the parts made of metal.

- a. A & B
- b. C & D
- c. A, C & D
- d. A & D



15. The diagram shows the back of a circuit card. The line drawn shows how paper clips are connected by the wires. John uses a battery, a bulb, and some wires to test each pair of clips.



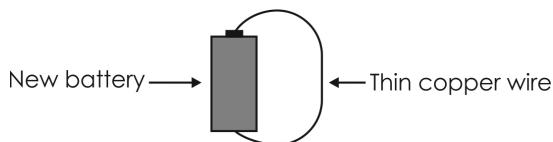
Which of the following pair will light up the bulb?

- a. A and D
- b. A and C
- c. A and E
- d. B and D

## SECTION - B : EVERYDAY SCIENCE

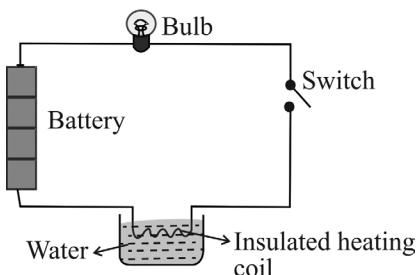
16. Naisha sets up the following experiment to test whether electricity can pass through various materials.

How does the thin copper wire and the rubber wire feel after sometimes?



- a. Copper wire- cold, rubber wire- no change in temperature.
  - b. Copper wire- hot, rubber wire- no change in temperature.
  - c. Copper wire- no change in temperature, rubber wire- no change in temperature.
  - d. Copper wire- hot, rubber wire- hot.
17. Tiya connected four electrical appliances to an electrical socket. Identify the dangers of this arrangement.

- I. This may cause the socket to over heat.
  - II. This may cause the socket to start a fire.
  - III. This cannot harm any of the electrical devices and the socket.
- a. I and II
  - b. II and III
  - c. I, II and III
  - d. I and III
18. Study the diagram shown below and answer the following question.



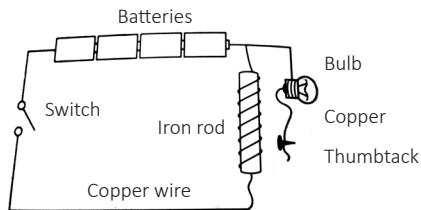
What will happen when the electric circuit will be switched on?

- a. The water will heat up.
- b. The bulb will fuse.
- c. Both a and b.
- d. None of these

19. Alloys are usually used in electrical heating devices because:

- a. Resistivity of an alloy is generally higher than that of the constituent elements.
- b. Alloys oxidize readily at high temperature.
- c. Alloys are bad conductors of heat.
- d. Alloys do not have free electrons.

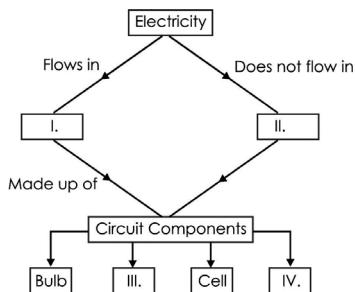
20. Jayant sets up the electric circuit as shown below. What will happen when the switch is turned on?



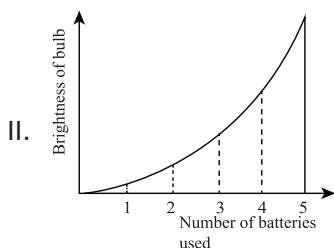
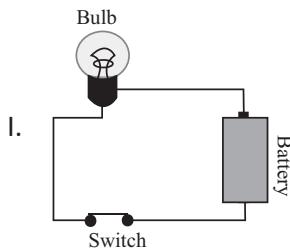
- a. The iron rod becomes a strong and a permanent magnet
- b. Nothing will happen as the circuit shown is an open circuit
- c. The thumbtack moves towards the iron rod and touches it before the bulb lights up.
- d. The bulb lights up before the thumbtack moves towards the iron rod and touches it.

## SECTION - C : BRAINBOX

21. Complete the following graphic organiser by choosing the appropriate option from the ones shown below.



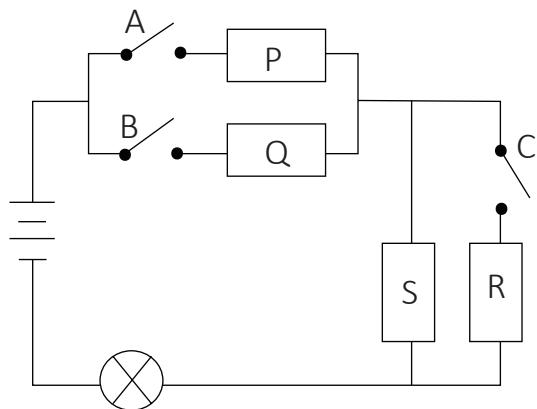
- a. I- Closed,  
II- Open, III- Switches, IV- Wires  
b. I- Open, II- Closed, III- Switches,  
IV- Wires  
c. I- Closed, II- Open, III- Wires,  
IV- Switches  
d. I- Closed, II- Wires, III- Switches,  
IV- Battery
22. Jiya sets up an experiment as shown below. She repeats the experiment with different number of batteries. The results of this experiment are represented by the graph shown below



What happens to the bulb when the fifth battery was added to the circuit?

- a. It reaches its limit and fused.
- b. It continues to glow.
- c. It blasts with explosive sound.
- d. None of them.

23. P, Q, R and S are objects placed in the circuit shown below. A, B and C are switches. The table shows what would happen when the switches are closed.

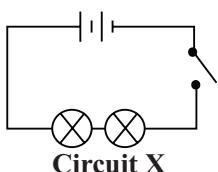


| Switch(es) closed | Bulb is lit |
|-------------------|-------------|
| A                 | Yes         |
| B                 | No          |
| C                 | No          |
| A and C           | Yes         |

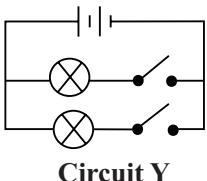
Choose the correct option for P, Q, R and S.

- a. Object P – conductor
- b. Object Q – Insulator
- c. Object R – cannot tell
- d. All of these

24. Study the following circuits.



Circuit X

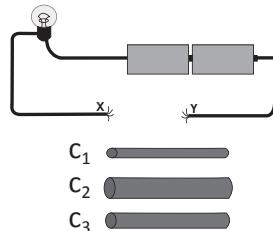


Circuit Y

What are the advantages of connecting two bulbs as shown in circuit Y as compared to circuit X?

- In circuit Y, the two bulbs can be switched on and off separately.
- If one of the bulb fuses, the other bulb will still light up when circuit Y is closed.
- The bulb in circuit Y will shine more brightly than the bulbs in circuit X
- All of the above

25. The given diagram shows a circuit set up by Mr. Verma using two batteries and a bulb. He connects a copper rod, C1 to the circuit ends, X and Y and observes the brightness of the bulb. He then repeats the experiment with the remaining copper rods, C2 and C3.



In this experiment, what is the variable that is changed?

- The thickness of the copper rod.
- The hardness of the copper rod.
- The filament of bulb.
- The brightness of the bulb.

- 
- Darker your choice with HB pencil
- |                                                                                                    |                                                                                                     |                                                                                                     |                                                                                                     |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 8. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 15. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 22. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 2. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 9. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 16. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 23. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 3. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 10. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 17. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 24. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 4. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 11. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 18. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 25. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 5. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 12. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 19. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |                                                                                                     |
| 6. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 13. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 20. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |                                                                                                     |
| 7. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 14. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 21. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |                                                                                                     |

# Fun with Magnets

- ⇒ The substance having the property of attracting iron is known as magnet. Magnetite is a natural magnet.
- The materials which get attracted towards a magnet are magnetic materials. For example, iron, cobalt, etc.
  - Materials which are not attracted towards a magnet are non-magnetic materials. For example, plastic, glass, etc.
  - A magnet has two poles, north pole and south pole. Same poles of two magnets repel each other. Opposite poles of two magnets attract each other.
  - Magnetic compass is a small box with glass cover. It consists of a magnetised needle, which rotates freely and indicates north and south directions, when it comes to rest.
  - Magnets lose their property if they are heated, hammered, dropped from some height or not stored properly.

## SECTION - A : SCIENTIFIC REASONING

1. Fill in the blanks and mark the correct option.

Magnets can exert a force of \_\_\_\_\_ or attraction on other magnets, and magnets have \_\_\_\_\_ poles, \_\_\_\_\_ and south. Unlike poles \_\_\_\_\_ each other while \_\_\_\_\_ poles repel each other.

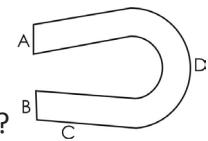
- Repulsion, three, north, attract, like
- Repulsion, two, north, attract, like
- Repulsion, two, east, attract, like
- Repulsion, four, west, attract, like

2. Two magnets are placed next to each other and they repel each other. What is

one possible explanation for this?

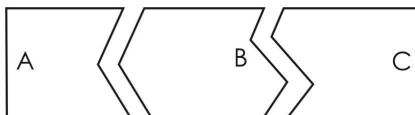
- The north poles of both the magnets are facing each other.
- One of the magnet is made of gold.
- The north pole of one of the magnet is facing the south pole of the other magnet.
- None of these.

3. Which parts of the horse-shoe magnet have the strongest pull on some pins?



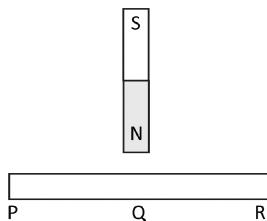
- A and B
- C and D
- A, B and C
- A, B and D

4. A magnet is broken into three pieces.



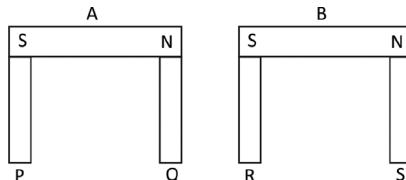
If B is the N-pole, which one of the following correctly shows the poles at A and C?

- | A         | C      |
|-----------|--------|
| a. N-pole | S-pole |
| b. S-pole | N-pole |
| c. N-pole | N-pole |
| d. S-pole | S-pole |
5. Which of the following is correct when a copper ring is moved towards the north pole of a bar magnet?
- The ring will not move.
  - The ring will tend to get warm.
  - The ring will tend to get cold.
  - None of these.
6. In the given diagram, a magnet is being used to pick up a steel bar. The North-pole of the magnet is close to the center Q of the steel bar as shown. What are the poles induced in the steel bar at P, Q and R?

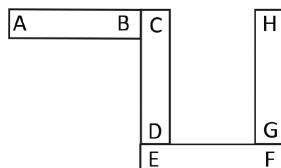


- | At-P     | At-Q  | At-R  |
|----------|-------|-------|
| a. North | North | North |
| b. North | South | North |
| c. South | North | South |
| d. South | South | South |
7. Two magnets, A and B attract four soft iron bars, P, Q, R and S at their poles, as shown in the given figure. When the two magnets move towards each other, and

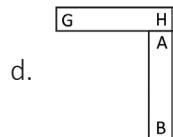
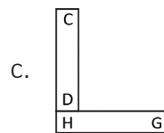
attract each other, what will happen to the iron bars?



- a. Nothing will happen.
- b. Q and R will drop off.
- c. Q and R will repel each other.
- d. P and S will attract Q and R.
8. Four pieces of bar magnets are put together and their ends are marked as shown in the diagram. When two magnets are brought close together, then which of the following diagram shows the correct interaction?



- a.
- b.



9. A light steel bar and a light iron bar are attracted to a magnet as shown in the figure below. What will happen when the magnet is removed?

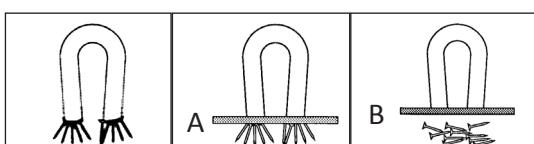
|      |       |   |   |
|------|-------|---|---|
| Iron | Steel | N | S |
|------|-------|---|---|

- a. The steel and the iron bars repel each other.
- b. Both the steel and the iron bars lose their magnetism.
- c. The steel bar retains its magnetism while the iron bar loses its magnetism.
- d. The iron bar retains its magnetism while the steel bar loses its magnetism.
10. Lines of magnetic force:
- P. Never cross over.
- Q. Always go from north to south.
- R. Are closer together when the magnetic field is weak.
- a. P, Q and R are true.
- b. P and Q are true.
- c. P and R are true.
- d. Only P is true.

11. The needle of the compass is made of magnet because:
- I. It gets deflected when a magnet is brought near it.
- II. It attracts metals.
- III. It comes to rest in east-west direction.
- IV. It comes to rest in north-south direction .

Which of the following is correct?

- a. (I) only      b. (II) and (III)
- c. (I) and (IV)    d. All (I), (II), (III) and (IV)
12. Study the diagram below carefully.



- Nails are attracted to the horse-shoe magnet
- Nails are attracted to the magnet even though they are separated by A.
- Nails are not attracted to the magnet when they are separated by B, which is attracted to the magnet.

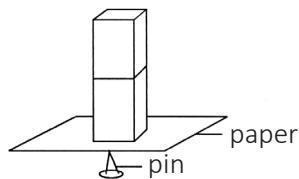
What do the diagrams depict?

- a. Object A is a magnetic object but object B is not.
- b. Object B has exerted a pushing force on the nails.
- c. Magnetic forces can pass through object A but cannot pass through object B.
- d. The magnet loses its magnetic strength when object B is attracted to it.

13. Gary places a sheet of paper between a pin and a magnet.

The pin is attracted to the magnet.

Then Gary places more and more sheets of similar paper between the pin and the magnet until the pin can no longer be attracted to the magnet.



What is the aim of Gary's experiment? He wants to find out:

- a. If paper is magnetic.
- b. If the pin is magnetic.
- c. The part of the magnet that has the strongest magnetic attraction.
- d. The strength of the magnet.

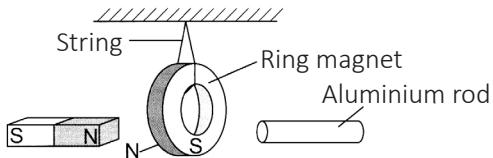
14. Shubing had four fridge magnets of similar size and shape. She tested them to see how many identical pieces of paper each could hold to the refrigerator before the magnet dropped off. Her results are recorded in the table below:

| Magnet | Number of pieces of paper |
|--------|---------------------------|
| P      | 3                         |
| Q      | 2                         |
| R      | 8                         |
| S      | 5                         |

Which of the given magnets is the weakest in strength?

- a. P
- b. Q
- c. R
- d. S

15. Study the diagram below carefully.



A bar magnet and an aluminium rod are placed near a suspended ring magnet. Which one of the following is most likely to happen?

- a. The ring magnet remains where it is.
- b. The ring magnet is attracted to the bar magnet.
- c. The ring magnet attracts the aluminium rod.
- d. The ring magnet does not attract the aluminium rod.

## SECTION - B : EVERYDAY SCIENCE

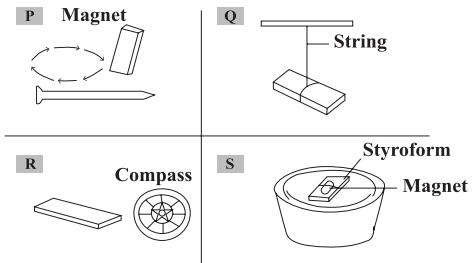
16. Tina wants to check that cooking utensils made from which material are easily attracted by a magnet. Help her in finding the correct answer.

- a. Tin
- b. Copper
- c. Steel
- d. Aluminum

17. Which of the following does not contain a magnet?

- a. Direction compass
- b. A metro card
- c. A credit card
- d. None of these

18. Ravi has a bar magnet but he does not know which end is the north pole. Identify the ways through which he can find that out.



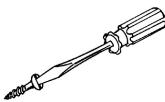
- a. P, Q and S only
- b. P, R and S only
- c. Q, R and S only
- d. P, Q, R and S

19. Rita wants to find out whether a nail is magnetized or not. She takes the nail near a magnet, a compass and a paper clip. She records her observations as shown below.

- I. Nail repels one end of the magnet.
- II. Nail attracts one end of the magnet.
- III. Nail attract paper clip.
- IV. Nail causes the compass needle to move.

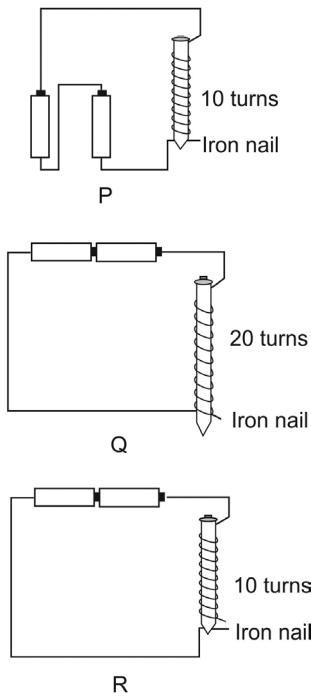
Which of the following observation(s) is/are correct?

- a. Only (I)
  - b. Only (I) and (III)
  - c. Only (II) and (IV)
  - d. All (I), (II), (III) and (IV)
20. The picture shows a screw sticking on to the screwdriver. Which of the following statements are true?



- I. The screw is probably made of iron
  - II. The screwdriver has been magnetized
  - III. The screwdriver has been dropped repeatedly
- a. I and II
  - b. I and III
  - c. II and III
  - d. I, II and III

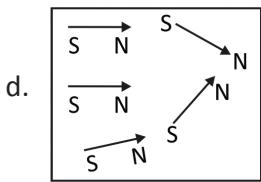
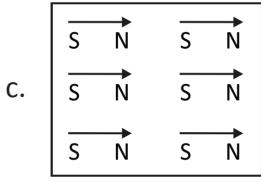
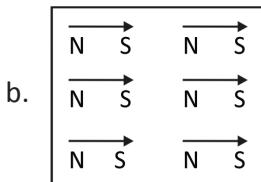
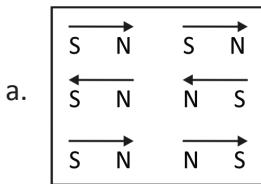
21. Look at the diagram shown below.



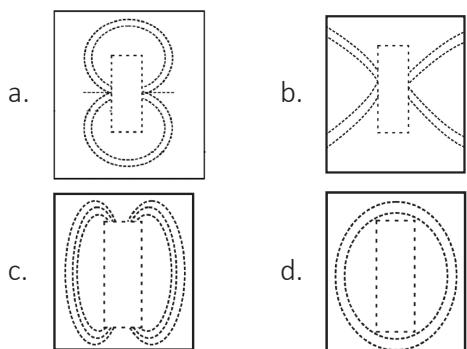
Which of the electromagnets will attract the same number of paper clips?

- a. P and Q only
- b. P and R only
- c. Q and R only
- d. P, Q and R

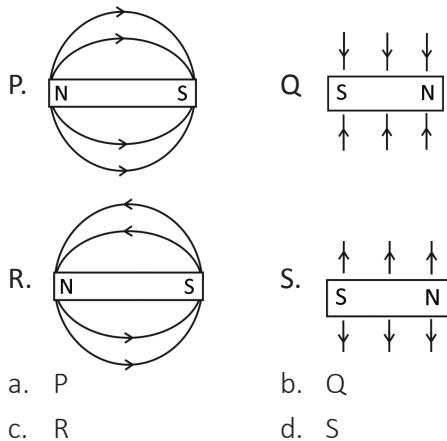
22. Which of the following arrangements is correct for a magnetized substance?



23. A piece of paper is placed over a bar magnet and some iron filings are sprinkled on the paper. Which of the following patterns is made by the iron filings ?

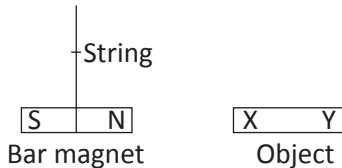


24. The following diagrams shows the magnetic field lines around a bar magnet. Which one is the correct representation of magnetic lines?



- a. P      b. Q  
c. R      d. S

25. Rohan suspended a bar magnet on a string as shown in the diagram below. He brought 3 bar-shaped objects A, B and C towards the bar magnet. He placed the ends of each object, X and Y, near the North pole of the bar magnet and recorded his observations in the table below.



| Object | X brought near to N pole   | Y brought near to N pole   |
|--------|----------------------------|----------------------------|
| A      | N pole repelled.           | N pole attracted.          |
| B      | N pole was attracted.      | N pole was attracted.      |
| C      | N pole remains stationary. | N pole remains stationary. |

- a. A only  
b. B only  
c. C only  
d. A and B only

Darken your choice with HB pencil -

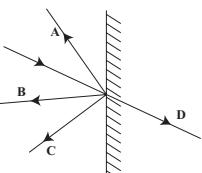
- |                            |                         |                         |                         |                             |                         |                         |                         |                             |                         |                         |                         |                             |                         |                         |                         |
|----------------------------|-------------------------|-------------------------|-------------------------|-----------------------------|-------------------------|-------------------------|-------------------------|-----------------------------|-------------------------|-------------------------|-------------------------|-----------------------------|-------------------------|-------------------------|-------------------------|
| 1. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 8. <input type="radio"/> a  | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 15. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 22. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d |
| 2. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 9. <input type="radio"/> a  | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 16. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 23. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d |
| 3. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 10. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 17. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 24. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d |
| 4. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 11. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 18. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 25. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d |
| 5. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 12. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 19. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d |                             |                         |                         |                         |
| 6. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 13. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 20. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d |                             |                         |                         |                         |
| 7. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 14. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | 21. <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d |                             |                         |                         |                         |

# Light Shadow and Reflection

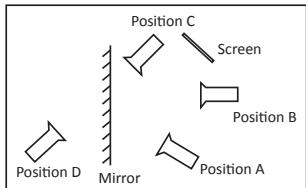
⇒ Visible light is the light that can be seen by humans

- The speed of light in vacuum is 299,792,458 metres per second
- Light travels in a straight line.
- If we are able to see clearly through an object, it is said to be a transparent object. Example-glass and water.
- There are some objects through which we can see but not clearly. Such objects are known as translucent objects. Example- tracing paper
- If we cannot see through an object at all, it is an opaque object. Example -wood, plastic box, etc.
- When an opaque object is placed in the path of light, a dark portion is formed on the opposite side of the object. This dark portion is called shadow.
- A pinhole camera can be made with simple materials like cardboard, tracing paper, etc. It can be used to capture the sun and brightly lit objects
- Light rays reflected from parts of our body fall on mirror and are reflected back. When these reflected rays reach our eyes (reflected on our retina), we can see the image in the mirror.

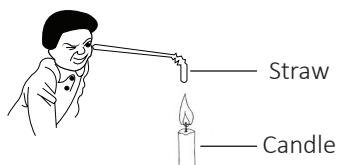
## SECTION - A : SCIENTIFIC REASONING

1. Which of the following gives out light?
  - I. Diamond
  - II. Moon
  - III. Star
  - IV. Lightning
  - a. I and II
  - b. III and IV
  - c. I, II and III
  - d. II, III and IV
  
2. Which of the following absorbs the most light?
  - a. Green crayon
  - b. White crayon
  - c. Red crayon
  - d. Black crayon
  
3. The diagram shows a ray of light striking on a mirror. Which ray correctly represents the ray that is reflected from the mirror?
 
  - a. A
  - b.
  - c. C
  - d. D

4. Rosy wants to reflect a ray of light into a screen. In which position should she place the torch?

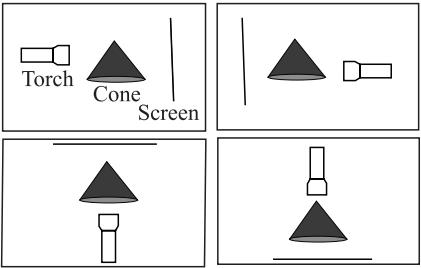
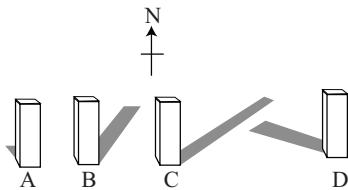
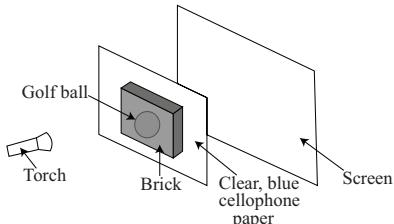
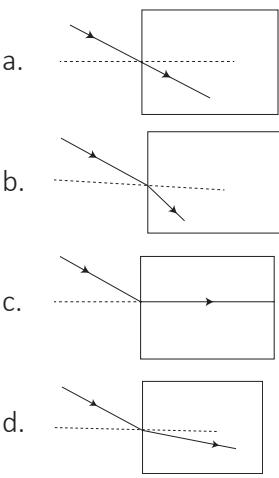


5. Position A
  - b. Position B
  - c. Position C
  - d. Position D
5. Joseph used a bent straw to look at the candle flame. Which one of the observations and conclusions is correct?



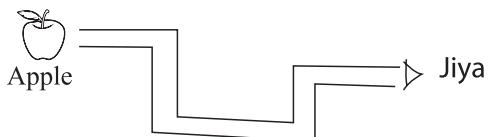
| Observation                           | Conclusion                      |
|---------------------------------------|---------------------------------|
| a. The candle flame could be seen     | Light travels in all directions |
| b. The candle flame could be seen     | Light can travel round          |
| c. The candle flame could not be seen | Light cannot pass through       |
| d. The candle flame could not be seen | Light travels in straight lines |

6. What is the emerging light colour when white light passes, first through a red filter and then through a blue filter?
  - a. Red
  - b. Blue
  - c. Purple
  - d. No light will emerge
  
7. Which of the following surfaces will produce a diffused reflection?
  - a. A pane of glass.
  - b. A perfectly reflecting mirror.
  - c. A horizontal wall.
  - d. A concave mirror.
  
8. Which of the following is correct about umbra and penumbra?
  - a. Umbra is darker than penumbra.
  - b. Umbra and penumbra refer to the same region.
  - c. Umbra can become penumbra depending on the amount of light.
  - d. Umbra and penumbra are affected by the Earth's rotation.
  
9. Which of the following is/are the properties of a real image?
  - a. A real image can be focused on a screen.
  - b. A real image is always upright.
  - c. A real image is always inverted.
  - d. All of these

10. Shadows are formed because light \_\_\_\_\_.  
 I. Travels in a straight line.  
 II. Can reflect from shiny surfaces.  
 III. Can be absorbed by objects.  
 IV. Cannot pass through opaque objects.  
 a. I only                  b. I and IV  
 c. II and III              d. III and IV
11. A torch was used to shine at an opaque cone from four different directions as shown in the diagrams below.
- 
- How many different kinds of shadow were formed on the screen in the situations shown above? (Ignore the difference in size)  
 a. 1                          b. 2  
 c. 3                          d. 4
12. The diagram below shows the positions of the shadow cast by a stick at four different times during a day. Match the shadow to the correct time.
- 
- |                           |         |        |        |
|---------------------------|---------|--------|--------|
| 9 a.m.                    | 12 noon | 2 p.m. | 5 p.m. |
| a. C      B      A      D |         |        |        |
| b. A      D      B      C |         |        |        |
| c. D      A      B      C |         |        |        |
| d. A      D      C      B |         |        |        |
13. Sunil lined up three objects in front of a light source as shown below.
- 
- Which shadow is most likely to be seen on the screen when the torch is switched on?  
 a.                   b.   
 c.                           d. 
- 14.
- | X             | Y             | Z     |
|---------------|---------------|-------|
| Glass         | Tracing paper | Wood  |
| Clear plastic | White cloth   | Metal |
- Which of the following belongs to group Y?  
 a. Frosted glass  
 b. Black construction paper  
 c. Ceramics  
 d. Pure water
15. Which of the following is the correct diagram when light passes through a piece of glass?
- 

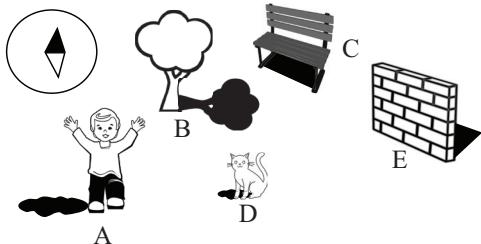
## SECTION - B : EVERYDAY SCIENCE

16. Look at the diagram shown here carefully. What is the least number of mirrors Jiya needs to see the apple?



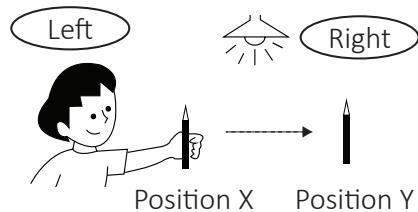
- a. 1
- b. 2
- c. 3
- d. 4

17. Which of the following shadows are cast in the correct direction in the morning sun ?



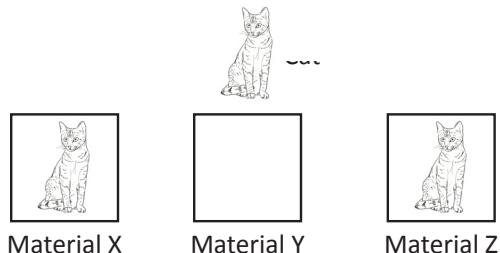
- a. A and C
- b. A and D
- c. B and E
- d. B, C and E

18. Dev moved his pencil from position X to position Y. Which one of the following correctly describes the shadow casted by the pencil at each position?



|    | Position X     | Position Y     |
|----|----------------|----------------|
| a. | On the left    | Directly under |
| b. | On the right   | On the left    |
| c. | On the left    | On the right   |
| d. | Directly under | On the right   |

19. Mike looked at the cat through three different materials X, Y and Z. He drew what he could see as shown below. Which of the following correctly describes the materials?



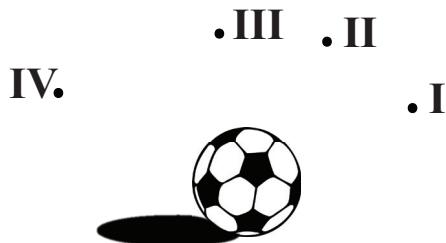
Material X

Material Y

Material Z

| Materials |             |             |             |
|-----------|-------------|-------------|-------------|
|           | X           | Y           | Z           |
| a.        | Opaque      | Translucent | Transparent |
| b.        | Transparent | Opaque      | Translucent |
| c.        | Translucent | Transparent | Opaque      |
| d.        | Transparent | Translucent | Opaque      |

20. A soccer ball is placed in an open field on a sunny day. The shadow of the ball is cast on the ground as shown below.

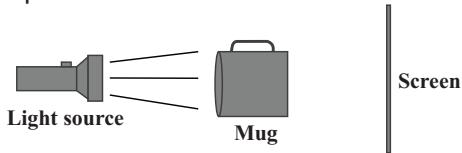


Which position is the sun most likely to be?

- a. Only I
- b. Only II
- c. Only III
- d. Only IV

## SECTION - C : BRAINBOX

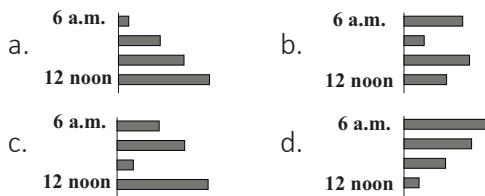
21. The given picture shows the set up of an experiment.



Which one of the following is the shadow formed on the screen?

- a. 
- b. 
- c. 
- d. 

22. Which of the following graphs correctly shows the length of a shadow formed from at 6 a.m. to 12 noon?



23. Which of the following will happen when light travels from air to a piece of glass, as shown in the picture, with an angle of incidence of  $0^\circ$ ?



- I. The angle of refraction will be  $0^\circ$ .
- II. Light will go straight without bending.

- III. Light will travel with the same speed inside and outside the glass.

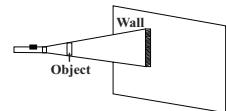
- IV. None of the above

- a. Only I
- b. I and II
- c. I, II and III
- d. Only IV

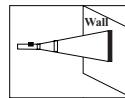
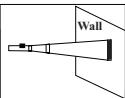
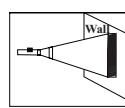
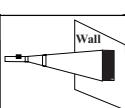
24. Nancy and Nisha were sitting around a round table. They noticed that they could see their own and each other's images onto the table top. Then table top is made of

- a. Unpolished wood, covered with white cloth.
- b. Polished glass of red colour.
- c. Glass covered with cellaphane paper.
- d. Smoked glass covered with green colour cloth.

25. Joei conducted the following experiment. She moved the torch closer to the object.



Which of the following is the shadow seen by Joei?

- a. 
- b. 
- c. 
- d. 

*Darken your choice with HB pencil –*

- |                                                                                                    |                                                                                                     |                                                                                                     |                                                                                                     |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 8. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 15. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 22. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 2. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 9. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 16. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 23. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 3. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 10. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 17. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 24. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 4. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 11. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 18. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 25. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 5. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 12. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 19. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |                                                                                                     |
| 6. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 13. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 20. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |                                                                                                     |
| 7. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 14. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 21. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |                                                                                                     |

# Our Environment

⇒ An ecosystem is a community in a given area where living organisms interact with each other and their immediate surroundings, including non-living things.

- The environment, which is created by nature comprising land, water, air, plants and animals is known as natural environment.
- Three components of the environment are natural environment, human environment and man-made environment.

- Plants and animals are the two major components of biotic environment.
- Biosphere is a narrow zone of the earth where land, water and air interact with each other to support life. It consists of both the plant and animal kingdom together.

⇒ Plants and animals depend on each other for their sustainability. Animals consume plants as they are the only producers and also take oxygen from them. Plants are dependent on animals as animals give out carbon dioxide which is important for photosynthesis. Also, dead remains of animals provide nutrients to the plants.

⇒ An environment can become unfavourable by natural causes like floods, droughts and fires. It can also become unfavourable by human activities like air and water pollution and clearing of the forests.

## SECTION - A : SCIENTIFIC REASONING

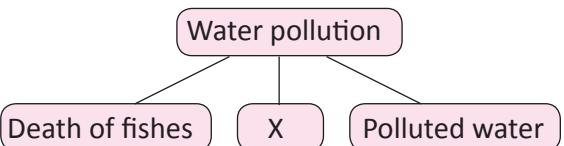
1. Which of the following statements is incorrect?
  - a. Corals and urchins are found at the bottom of sea.
  - b. Abiotic components are also known as physical factors.
  - c. Algae and sea weeds are desert plants.
  - d. Yak and polar bear are the animals of cold habitat.
  
2. Identify the adaptation feature present in the animal shown here.
  - I. It has strong back legs.
  - II. It has webbed feet.
  - III. It cannot move on land.
  - IV. It has a very short neck.



  - a. I and II
  - b. II and III
  - c. II and IV
  - d. I and IV
  
3. Match the following:
 

| Column I           | Column II                                           |
|--------------------|-----------------------------------------------------|
| I. Fish            | A. Loss of water in the form of vapours from leaves |
| II. Stem of cactus | B. Streamlined shape                                |
| III. Camel         | C. Has a waxy layer                                 |
| IV. Transpiration  | D. Does not sweat                                   |

a I-C, II-D, III-B, IV-A  
 b I-B, II-C, III-D, IV-A  
 c I-C, II-A, III-B, IV-D  
 d I-A, II-B, III-D, IV-C
  
4. Sloping branches and needle-like leaves are adaptations shown by trees in:
  - a. Grasslands
  - b. Coastal mountain ranges.
  - c. Forests
  - d. High altitude mountain ranges.
  
5. Decomposers are the organisms that play an important role in keeping our environment clean. Which one of the following cannot be decomposed by the decomposers easily?
  - a. Bamboo fiber
  - b. Plastic bottle
  - c. Dead body
  - d. Insects in the soil
  
6. The following chart shows water pollution and its effects.
 



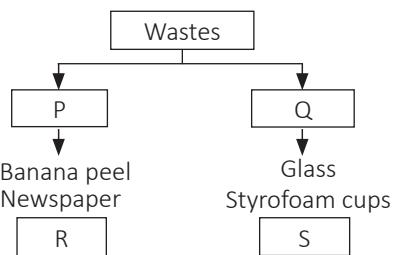
```

graph TD
 A[Water pollution] --> B[Death of fishes]
 A --> C[X]
 A --> D[Polluted water]

```

Complete the chart by choosing correct option representing X.

  - a. Jaundice
  - b. Typhoid
  - c. Diarrhea
  - d. All of these
  
7. What adaptation does a grasshopper has which helps it to avoid being caught by its predator?
  - I. Its taste bud.
  - II. It can hop away quickly.
  - III. It can camouflage itself in the grass.
  - IV. It has poisonous sting.
  - a. I and II
  - b. II and III
  - c. I and IV
  - d. I, II, III and IV
  
8. Fill in the boxes P, Q, R and S correctly.
 



```

graph TD
 A[Wastes] --> B[P]
 A --> C[Q]
 B --> D[Banana peel]
 B --> E[Newspaper]
 C --> F[Glass]
 C --> G[Styrofoam cups]

```

P      Q      R      S

|    | P                 | Q                 | R             | S             |
|----|-------------------|-------------------|---------------|---------------|
| a. | Recyclable        | Non-recyclable    | Waste food    | Leather       |
| b. | Biodegradable     | Non-biodegradable | Paper bag     | Plastic plate |
| c. | Non-recyclable    | Recyclable        | Plastic plate | Tin           |
| d. | Non-biodegradable | Non-biodegradable | Food tin      | Paper cup     |

9. The table shows the bacterial count, water temperature and the number of green plants and animals in the river near each town. Which town is most likely to be situated near an unpolluted river?

| Town | Bacterial count | Water temperature | No. of green plants | No. of animals |
|------|-----------------|-------------------|---------------------|----------------|
| a.   | Low             | 36°C              | Few                 | Few            |
| b.   | High            | 60°C              | Few                 | Few            |
| c.   | High            | 30°C              | Many                | Few            |
| d.   | Low             | 30°C              | Many                | Many           |



These animals have a common characteristic. Which one of the following correctly describes them?

- a. They have the same adaptation for breathing.
- b. They have the same adaptation for moving in the water.
- c. They have the same adaptation for catching their prey.
- d. They have the same body covering.

11. 'X' is a gas produced from the decomposition of biodegradable wastes.

For what all work, can 'X' be used?

- a. Heating
- b. Lighting
- c. Cooking
- d. All of the above

12. Which of the following statements is incorrect about D.D.T.?

- a. It has been widely used as a chemical pesticide for farming.
- b. It degrades very slowly and gets accumulated from one tropic level to another.
- c. Its high concentration causes adverse effect on living systems
- d. None of the above

13. What condition is required for the survival of the organism shown in the given figure, in a vermi-composting pit?



- a. The presence of moisture.
- b. The surrounding should not be very hot or very cold.
- c. The pit waste should not contain salt, oil, pickles, vinegar, etc.
- d. All of these

14. What happens to the useful components of garbage?

- a. Some of the useful components are converted into compost.
- b. Aluminum wrappers can be reused as metal.
- c. Iron nails, etc. are removed using cranes with magnets and reused.
- d. All of these

15. Which of the following is/are incorrect about the rectangular panel shown here?

- I. It is a device used to trap solar energy.
  - II. It reduces the use of electricity generated by fossil fuels.
  - III. It produces a lot of sound.
- a. I and II
  - b. II and III
  - c. Only III
  - d. Only II



## SECTION - B : EVERYDAY SCIENCE

16. The plastic products shown in the given figure are now posing a big problem for us. This is because:



- I. We are using plastics excessively and irresponsibly.
  - II. We are ignorant about its proper waste disposal.
  - III. Plastics are non-biodegradable and cannot be converted into compost.
- a. I and II
  - b. I, II and III
  - c. I and III
  - d. Only II

17. "Farmers burn dried leaves and crop wastes to clear their fields". Which of these statement(s) is/are true for the above statement?

- a. Burning of these can produce harmful smoke.
- b. In winters, this burning can lead to the formation of smog and respiratory problems even in far off places.
- c. This waste is biodegradable and can be converted into manure instead of burning.
- d. All of these

18.



X



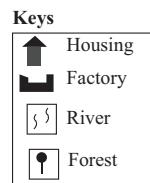
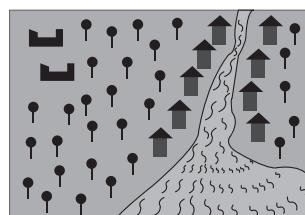
Y

What all you can throw in X and Y?

- a. X – Vegetable peels, Y – Waste food
- b. X – Plastic bottle, Y – Newspaper
- c. X – Metal can, Y – Glass window pane
- d. X – Cloths, Y – Animal waste

19. Study the map shown below.

Prevailing wind



The residents in the housing area noticed that the trees in the area and much of the aquatic animal life were dying. What could be the possible cause of this?

- I. Air pollutants coming from the factories dissolved in the rain water to produce acid rain.
  - II. Acid rain killed the trees and the aquatic life.
  - III. Soil erosion
- a. I and II
  - b. III only
  - c. I, II and III
  - d. II only

20. Jaya lives in plains. Once she visited a high mountain. She faced difficulty in breathing on high mountain for few days. But after few days her body got used to the changed surrounding. What do we call this?
- Adjustment
  - Adaptation
  - Acclimatization
  - Inspiration

### SECTION - C : BRAINBOX

21. Waste in a city was collected and disposed of by incineration, burying or dumping.

| Year | Waste collected (tonnes) | Waste disposed (tonnes) |
|------|--------------------------|-------------------------|
| 2012 | 5600                     | 4600                    |
| 2015 | 6500                     | 4000                    |

According to the table shown above, more waste was collected in 2015, yet less of it was disposed of. What is a possible reason for the reduced waste disposed in that year?

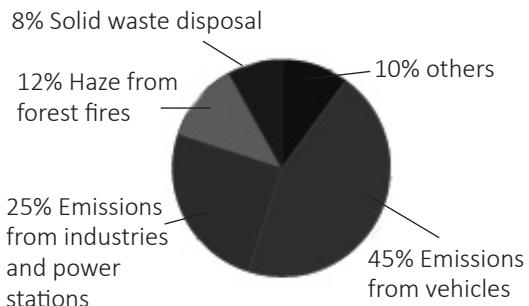
- More waste was recycled.
  - Less waste was recycled.
  - Waste was left untouched.
  - None of the above
22. Four materials M, N, O and P were buried in soil for one month. The table below shows the mass of each item before and after one month they were buried.

| Item | Before | After |
|------|--------|-------|
| M    | 18 g   | 8 g   |
| N    | 50 g   | 45 g  |
| O    | 10 g   | 2 g   |
| P    | 25 g   | 25 g  |

Here the least and the most biodegradable materials are \_\_\_\_\_ and \_\_\_\_\_ respectively.

- M and P
- P and O
- N and O
- M and N

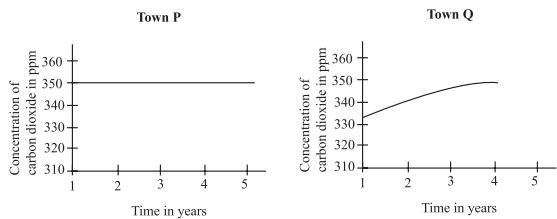
23. The pie chart below shows the sources of air pollution in a particular country.



Based on the pie chart, what action will reduce the most amount of air pollution in this country?

- Cut down more trees.
  - Allocate more land for dumping rubbish.
  - Use energy-saving appliances.
  - Use public transport more often.
- I and II
  - II and III
  - III and IV
  - I, II and IV

24. Study the two graphs shown below. They show the variation of concentration of carbon dioxide in the air in two small towns P and Q over a period of five years.

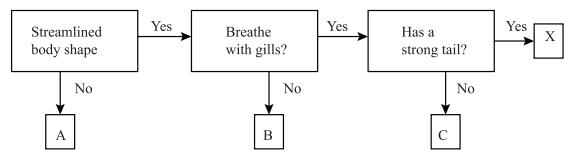


From the information given in the graph it is possible that \_\_\_\_\_.

- I. Town P has maintained its greenery.
  - II. Town Q has cut down a considerable number of trees over the five year period.
  - III. The air in Town Q has become as polluted as the air in Town P by the fifth year
  - IV Industrial activity in Town Q has significantly increased over the five years.
- a. I only
  - b. IV only
  - c. II and III only
  - d. I, II, III and IV

25. Study the chart shown below carefully.

Give a suitable option for X.



- a. Whale
- b. Shark
- c. Dolphin
- d. Walrus

— Darken your choice with HB pencil —

1. (a) (b) (c) (d)
2. (a) (b) (c) (d)
3. (a) (b) (c) (d)
4. (a) (b) (c) (d)
5. (a) (b) (c) (d)
6. (a) (b) (c) (d)
7. (a) (b) (c) (d)

8. (a) (b) (c) (d)
9. (a) (b) (c) (d)
10. (a) (b) (c) (d)
11. (a) (b) (c) (d)
12. (a) (b) (c) (d)
13. (a) (b) (c) (d)
14. (a) (b) (c) (d)

15. (a) (b) (c) (d)
16. (a) (b) (c) (d)
17. (a) (b) (c) (d)
18. (a) (b) (c) (d)
19. (a) (b) (c) (d)
20. (a) (b) (c) (d)
21. (a) (b) (c) (d)

22. (a) (b) (c) (d)
23. (a) (b) (c) (d)
24. (a) (b) (c) (d)
25. (a) (b) (c) (d)

**Chapter  
11**

# Logical Reasoning

**Direction for Q. No. 1 and Q. No. 2 :** In the given sentences, a four letter word is hidden between two words. Identify the pair of the words that contain the hidden word.

1. The dutiful librarian searched for a book
- a. 3, 4                          b. 2, 3  
c. 5, 6                          d. 6, 7
2. The church in the lane was lit by a bright  
    <sup>11</sup>  
light
- a. 2, 3                          b. 5, 6  
c. 3, 4                          d. 8, 9

**Direction for Q. No. 3 and 4:** Unscramble the jumbled words given in the options with the help of the clues given.

3. Clue – Sharp cutting edge
- a. VTIEOL                      b. LEDAB  
c. DIAA                        d. ENCIDSTA
4. Clue – Leap over
- a. GITLGHN  
b. MRIAECAC  
c. UPJM  
d. LKMI
5. Replace the question mark with a suitable number.

(90) (76) (63) (51) (40) (?)

- a. 20                            b. 22  
c. 25                            d. 30

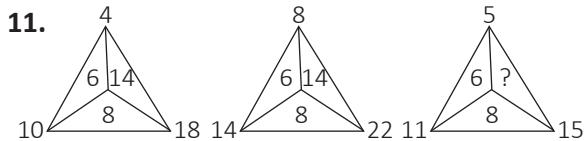
**Direction for Q. No. 6 and 7:** Read the given information.

Six friends, Ravi, Shweta, Shubham, Jyoti, Bhawna and Pratima have different skills. Shweta and Bhawna like football but others like tennis. Only Pratima, Ravi and Shweta like going abroad for their holidays. All but Bhawna and Shubham go for piano classes.

6. Who likes football but does not go for piano classes?
- a. Bhawna                      b. Pratima  
c. Ravi                         d. Shubham
7. How many children like tennis and also go for piano classes?
- a. 4                              b. 2  
c. 1                              d. Zero
8. In the English alphabet, which letter is exactly midway between the 5th letter from the left and 7th letter from the right?
- a. J                              b. K  
c. L                              d. M

**Direction for Q. No. 9, 10 & 11:** Replace question mark with suitable number.

- 9.
- 
- a. 112  
b. 115  
c. 120  
d. 122
- 10.
- |     |    |     |
|-----|----|-----|
| 3C  | 2B | 4A  |
| 27A | ?  | 64B |
| 9C  | 4A | 14B |
- a. 8C  
b. 12B  
c. 16C  
d. 18C

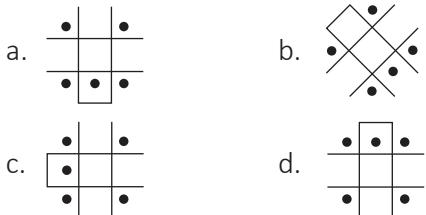


- a. 6      b. 8  
c. 10     d. 12

**12.** In a certain code language, 'col tip mot' means 'singing is appreciable', 'mot baj min' means 'dancing is good' and 'tip mop baj' means 'singing and dancing'. Which of the following means 'good' in that code language?

- a. mot      b. min  
c. baj      d. col

**13.** Choose the odd one out.

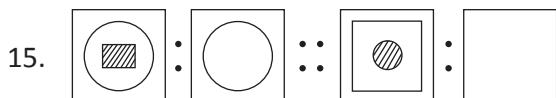


**14.** Introducing a lady, a man said, "Her mother is the only daughter of my mother-in-law."

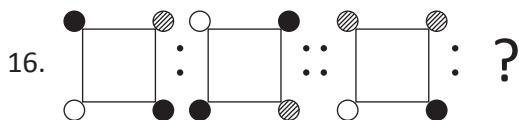
How is the man related to the lady?

- a. Father      b. Uncle  
c. Son          d. Husband

**Direction for Q. 15 and 16 : Which shape of figure on the right completes the second pair in a similar way as in the first pair?**

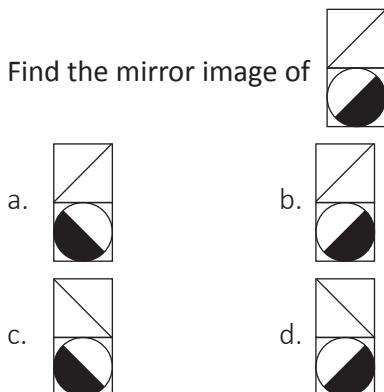


- a.      b.   
c.      d.



- a.      b.   
c.      d.

**17.** Find the mirror image of



**18.** The mirror image of QUANTITY is \_\_\_\_\_

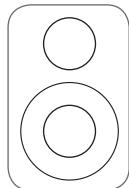
- a. QUANTITY  
b. YTITNAUQ  
c. ΛΤΙΤΝΑΟQ  
d. YTITNAUQ

**19.** Find the water image of OLYMPIAD

- a. DAI9MYJ0  
b. DAIPWYLO  
c. DAI9MYJ0  
d. DAI9MYL0

**20.** Which one of the following best represents the given Venn diagram.

- a. Body, Hand, Eatables  
b. Mammal, Nurse, Woman  
c. Star, Moon, Mars  
d. Swimmer, Carpenter, Singer

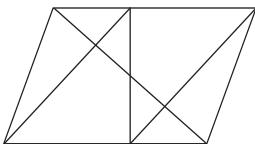


21. Choose the correct set of symbols, which will fit in the blank space of  $5 \underline{\quad} 0 \underline{\quad} 3 \underline{\quad} 5 = 20$ ?

- a.  $+, -, \times$       b.  $\times, +, \times$   
c.  $-, +, \times$       d.  $\times, \div, \times$

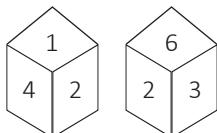
22. The minimum number of straight lines required to make the given figure are:

- a. 20  
b. 19  
c. 18  
d. 16

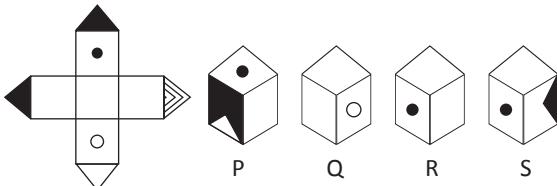


23. The two positions of a dice are given below. What number will be at the bottom, if 5 is at the top?

- a. 1  
b. 2  
c. 3  
d. 6



24. Choose the boxes that can be formed from the given sheet of paper.



- a. P and Q      b. Q and R  
c. P and R      d. P, Q, R & S

25. If you write down all the numbers from 1 to 100, then how many times do you write 3?

- a. 11      b. 18  
c. 20      d. 21

26. Today is Poonam's birthday. One year from today she will be twice as old as she was 12 years ago. How old is Poonam today?

- a. 20 years      b. 22 years  
c. 25 years      d. 27 years

27. The sum of three consecutive multiples of 3 is 72. What is the second largest number?

- a. 21      b. 24  
c. 27      d. 42

28. What is the difference between the local values of 3 in the number 43403?

- a. Zero      b. 3030  
c. 3003      d. 2997

29. Pointing to a girl in the photograph, Amit said, "Her mother's brother is the only son of my mother's father." How is the girl's mother related to Amit?

- a. Mother      b. Sister  
c. Grandmother      d. Aunt

30. From a point 'P' on a level ground, the angle of elevation of the top of the tower is  $30^\circ$ . If the tower is 100 m high, the distance of point 'P' from the foot of the tower is \_\_\_\_\_.

- a. 173 m      b. 180 m  
c. 183 m      d. 200 m

31. The angle of elevation of the sun, when the length of the shadow of a tree  $\sqrt{3}$  times the height the tree is \_\_\_\_\_.  
\_\_\_\_\_.

- a.  $90^\circ$       b.  $60^\circ$   
c.  $45^\circ$       d.  $30^\circ$

32. A train passes a station platform in 42 seconds and a man standing on the platform in 30 seconds. If the speed of the train is 72 km/h, what is the length of the platform?

- a. 120 m      b. 240 m  
c. 300 m      d. 350 m

33. What annual instalment will discharge a debt of ₹10.92 due in 3 years at rate of 12% simple interest?

- a. ₹325      b. ₹425  
c. ₹560      d. ₹550

34. Riya took a loan of ₹1200 in simple interest for as many years as the rate of interest. If she paid ₹432 as interest at the end of the loan period, what was the rate of interest?
- a. 3.5%      b. 3.8%  
c. 6%      d. 18%

**Direction for Q. No. 35 and 36: Fill in the blanks using suitable words given in the options**

35. The speech \_\_\_\_\_ with subtle threats has resulted in \_\_\_\_\_ tension.

- a. Replete, increased  
b. Full, escalating  
c. Followed, continuous  
d. Started, reduced

36. The counter clerk was very busy and \_\_\_\_\_ not pay any \_\_\_\_\_ to the customer's request.

- a. can, help  
b. could, respect  
c. had, cash  
d. did, attention

**Direction for Q. No. 37 and 38: In the given questions, choose the word which best expresses the meaning of the given word.**

37. Ponder

- a. Increase      b. Think  
c. Anticipate      d. Evaluate

38. Wary

- a. Vigilant      b. Sad  
c. Tired      d. Distorted

39. If PALE in coded as 2134, EARTH is coded as 41590, how can PEARL be coded in that language?

- a. 29520      b. 29530  
c. 24153      d. 24513

40. A man starts from his house and travels 4 km in East direction, then he turns left and moves 4 km. Finally he turns left and moves 4 km again. At what distance does he finally stand from his original position?

- a. North, 4 km      b. North-East, 4 km  
c. South, 12 km      d. West, 4 km

— Darken your choice with HB pencil —

- |                                                                                                     |                                                                                                     |                                                                                                     |                                                                                                     |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 11. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 21. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 31. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 2. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 12. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 22. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 32. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 3. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 13. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 23. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 33. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 4. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 14. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 24. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 34. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 5. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 15. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 25. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 35. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 6. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 16. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 26. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 36. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 7. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 17. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 27. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 37. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 8. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 18. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 28. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 38. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 9. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d  | 19. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 29. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 39. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |
| 10. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 20. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 30. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d | 40. <input type="radio"/> a <input type="radio"/> b <input type="radio"/> c <input type="radio"/> d |

# Answers

## Chapter 1: Food and Its Components

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

## Chapter 2: Fiber to Fabric

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

## Chapter 3: Sorting and Separation of Materials into Groups

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

## Chapter 4: Change Around Us

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

## Chapter 5: Plants and Animals

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

## Chapter 6: Motion and Measurement

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

## Chapter 7: Electrical System

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

## Chapter 8: Fun with Magnets

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

## Chapter 9: Light, Shadow and Reflection

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

## Chapter 10: Our Environment

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

## Chapter 11: Logical Reasoning

|     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |   |
|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|
| 1.  | b | 2.  | a | 3.  | b | 4.  | c | 5.  | d | 6.  | a | 7.  | b | 8.  | c | 9.  | d | 10. | a |
| 11. | c | 12. | b | 13. | b | 14  | a | 15. | b | 16. | b | 17. | c | 18. | d | 19. | a | 20. | a |
| 21. | c | 22. | d | 23. | b | 24. | b | 25. | c | 26. | c | 27. | b | 28. | d | 29. | d | 30. | a |
| 31. | d | 32. | b | 33. | a | 34  | c | 35. | a | 36. | d | 37. | b | 38. | a | 39. | c | 40. | a |