SURA'S

Science

VI Standard

FULL YEAR GUIDE

TERM - I + TERM - II + TERM - III

Salient Features :

- Term-wise Guide for I, II and III, as per the latest Textbooks for the year 2023-24.
- Complete Solutions to Textbook Exercises.
- Exhaustive Additional Questions in all Units.
- Unit-wise Unit Tests with Answers.
- 1st, 2nd and 3rd Term Comman Summative Assessment questions are marked with the symbol ⊗ at the appropriate places in each unit.
- 1st Term Common Summative Assessment 2022, 2nd Term Common Summative Assessment 2019 and 3rd Term Common Summative Assessment 2022 Question Papers are given with Answers.

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Chennai

NOTE FROM PUBLISHER

It gives me great pride and pleasure in bringing to you **Sura's Science Full year Guide** for **I, II and III** Terms for **6th Standard**. It is prepared as per the latest Textbooks.

- This guide encompasses all the requirements of the students to comprehend the text and the evaluation of the textbook.
- Additional questions have been provided exhaustively for clear understanding of the units under study.
- Chapter-wise Unit Tests with Answers.

In order to learn effectively, I advise students to learn the subject section-wise and practice the exercises given. It will be a teaching companion to teachers and a learning companion to students.

Though these salient features are available in this Guide, I cannot negate the indispensable role of the teachers in assisting the student to understand the subject thoroughly.

I sincerely believe this guide satisfies the needs of the students and bolsters the teaching methodologies of the teachers.

I pray the almighty to bless the students for consummate success in their examinations.

Mr. Subash Raj, B.E., M.S.
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Science

6th Standard

Term - I

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01

MEASUREMENTS

LEARNING OBJECTIVES

- To understand the need for measurement in our life.
- To define length, mass, time and volume.
- To evaluate the values of some physical quantities in terms of their units and sub units.
- To identify zero error and parallax error.
- To measure the volume of solids and liquids.
- To construct their own measuring tools (models)

Evaluation

I. Choose the correct answer.

1. The height of a tree can be measured by

(a) metre scale (b) metre rod
(c) plastic ruler (d) measuring tape **[Ans : (d) measuring tape]**

2. Conversion of 7 m into cm gives _____

(a) 70 cm (b) 7 cm
(c) 700 cm (d) 7000 cm **[Ans : (c) 700 cm]**

3. Quantity that can be measured is called _____

(a) physical quantity (b) measurement
(c) unit (d) motion **[Ans : (a) physical quantity]**

4. Choose the correct one

(a) km > mm > cm > m (b) km > mm > m > cm
(c) km > m > cm > mm (d) km > cm > m > mm
[Ans : (c) km > m > cm > mm]

5. While measuring the length of an object using a ruler, the position of your eye should be

(a) left side of the point.
(b) vertically above the point where the measurement is to be taken.
(c) right side of the point
(d) any where according to one's convenience. **[Ans : (b) vertically above the point where the measurement is to be taken.]**

II. Fill in the blanks.

1. SI Unit of length is _____. **[Ans : m]**
2. 500 gm = _____ kilogram **[Ans : 0.5]**
3. The distance between Delhi and Chennai can be measured in _____. **[Ans : Kilometre]**
4. 1 m = _____ cm. **[Ans : 100]**
5. 5 km = _____ m. **[Ans : 5000]**

III. State True or False. If false, correct the statement.

1. We can say that mass of an object is 126 kg. **[Ans : True]**
2. Length of one's chest can be measured by using metre scale. **[Ans : False]**
3. Ten millimetres makes one centimetre. **[Ans : True]**
4. A hand span is a reliable measure of length. **[Ans : False]**
5. The SI system of units is accepted everywhere in the world. **[Ans : True]**

IV. Complete the analogy :

1. **Sugar : Beam balance :: Lime juice: _____?**

Ans : Measuring Jar.

2. **Height of a person : cm :: Length of your sharpened pencil lead: _____?**

Ans : mm (milli metre)

3. **Milk : volume :: vegetables: _____?**

Ans : mass

V. Match the following :

1. Length of the fore arm	a. Metre
2. SI unit of length	b. Second
3. Nano	c. 10^3
4. SI Unit of time	d. 10^{-9}
5. Kilo	e. Cubit

Ans :

1. Length of the fore arm	e. Cubit
2. SI unit of length	a. Metre
3. Nano	d. 10^{-9}
4. SI Unit of time	b. Second
5. Kilo	c. 10^3

VII. Arrange the following in the increasing order of unit.

1 Metre, 1 centimetre, 1 kilometre, and 1 millimetre.

Ans : 1 millimetre < 1 centimetre < 1 Metre < 1 kilometre.

VII. Answer in a word or two.

1. What is the full form of SI system?

Ans : International System of Units.

2. Name any one instrument used for measuring mass.

Ans : Beam balance.

3. Find the odd one out : kilogram, millimetre, centimetre, nanometre

Ans : Kilogram.

4. What is the SI Unit of mass?

Ans : Kilogram.

5. What are the two parts present in a measurement?

Ans : A number and the units.

VIII. Find the answer for the following questions within the grid.

A		P		L[7]								R		K
C		O		E								O		S
M		K		N								R		I
P		R[1]		G								R		T[9]
R	H	E	S	T	E	D	L	L[10]	I	T	R	E[3]	D	A
L		T		H						D		H		P
O		E		O					N			K		E
A[6]		M[5]	A	S	S			O				R		V
V		I		E			C					T		O
E		L		K		E						S		S
R		L		I	S[2]				T[4]			K		H
A		I		T				I				V		P
G		M		X			M					N		U
E		Z		D		E	S	K	P	G	I	W	M	F
Z	T	D	K	H			O[8]	D	O	M	E	T	E	R

1. 10^{-3} is one _____. **[Ans : Millimetre]**
2. SI Unit of time is _____. **[Ans : second]**
3. Cross view of reading a measurement leads to _____. **[Ans : error]**
4. _____ is the one what a clock reads. **[Ans : Time]**
5. _____ is the amount of substance present in an object **[Ans : Mass]**
6. _____ can be taken to get the final reading of the recordings of different of students for a single measurement. **[Ans : Average]**
7. _____ is a fundamental quantity. **[Ans : Length]**
8. _____ shows the distance covered by an automobile. **[Ans : Odometer]**

9. A tailor uses _____ to take measurements to stitch a cloth. **[Ans : Tape]**

10. Liquids are measured with this physical quantity. **[Ans : Litre]**

IX. Answer briefly.

1. Define measurement.

Ans : The comparison of an unknown quantity with some known quantity is known as measurement.

2. Define mass.

Ans : Mass is the measure of the amount of matter in an object.

3. The distance between two places is 43.65 km. Convert it into metre and cm.

Ans :

(a) Convert km into metre

1 km = 1000m

∴ 43.65 km = 43.65 × 1000 = 43650.00 = 43650

= 43650 m.

(b) Convert km into cm.

1 km = 1000 m

1 m = 100 cm

1 km = 1000 × 100 cm

1 km = 100000 cm

∴ 43.65 km = 43.65 × 100000 = 4365000.00

= 4365000 cm.

4. What are the rules to be followed to make accurate measurement with scale?

Ans : (i) Take care to write the correct submultiple.

(ii) Always keep the object in parallel to the scale.

(iii) Start the measurement from '0' of the scale.

X. Solve the following.

1. The distance between your school and your house is 2250 m. Express this distance in kilometre.

Ans : Distance between school and house is 2250 m.

1000 m = 1 km

∴ 2250 m = 2250 ÷ 1000 = 2.25 km.

2. While measuring the length of a sharpened pencil, reading of the scale at one end is 2.0 cm and at the other end is 12.1 cm. What is the length of the pencil?

Ans : Sharpened pencil Reading at one end = 2.0 cm.

Sharpened pencil Reading at the other end = 12.1 cm.

Length of the pencil = Difference between two ends.

= 12.1 cm. – 2.0 cm.

= 10.1 cm.

XI. Answer in detail.

1. Explain two methods that you can use to measure the length of a curved line.

Ans : Measuring the length of a curved line, by two methods.

First method - using a string.

(i) Draw a curved line AB on the paper.
(ii) Place a string along the curved line.
(iii) Make sure that the string covers every bit of the curved line.
(iv) Mark the points where the curved line begins and ends on the string.
(v) Now stretch the string along the length of a meter scale.
(vi) Measure the distance between two markings of the string.
(vii) This will give the length of a curved line.

Second method - using a divider.

(i) Draw a curved line AB on a paper.
(ii) Separate the legs of the divider by 0.5 cm or 1 cm using a ruler.
(iii) Place it on the curved line starting from one end. Mark the position of the other end.
(iv) Move it along the line again and again cutting the line into number of segments of equal lengths.
(v) The remaining parts of the line can be measured using a scale.
(vi) Count the number of segments.
(vii) Length of the line = (No. of segments × length of each segment) + length of the left over part.

2. Fill in the following chart.

Property	Definition	Basic Unit	Instrument used for measuring
Length			
Mass			
Volume			
Time			

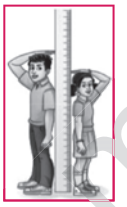
Ans :

Property	Definition	Basic Unit	Instrument used for measuring
Length	The distance between one end and the other desired end.	Metre	Meter scale, Measuring tape.
Mass	Mass is the measure of the amount of matter in an object.	Kilogram	Beam balance
Volume	Volume is the Space occupied by an object.	Solid - Metre Liquid - Litre	Measuring Scale Graduated cylinder
Time	It is period between two events.	Second	Clock

Intext Activities

➙ ACTIVITY - 1

Form a group of 5 members. Select one person and let others measure her/his height individually using your hand span and cubit. Compare your answers with others. Do you find any differences? Why? Now you all stand in front of a wall and mark your height on the wall. Measure your height with a scale. What differences do you infer?



Ans : Activity to be done by the students themselves

➙ ACTIVITY :

In the given activity, measure the quantities using suitable measuring units and express them with suitable multiple and submultiples.

Picture	Activity	Measuring Unit m/kg/s	Multiple / Submultiple
	Length of tip of pencil.	metre	millimetre (Sub multiple)
	Length of the pen	metre	centimetre
	Distance between two cities	kilometre	metre
	Mass of dry fruits in table	kilogram	milligram (Sub multiple)
	Mass of ornaments	kilogram	milligram (Sub multiple)
	Time taken to finish 100 m race	Seconds	Seconds (Sub multiple)

➙ ACTIVITY - 2

Aim: To find the length of a curved line using a string.

Materials needed: A meter scale, a measuring tape, a string and a sketch pen.

Method:

- Draw a curved line AB on a piece of paper.
- Place a string along the curved line. Make sure that the string covers every bit of the curved line.
- Mark the points where the curved line begins and ends on the string.

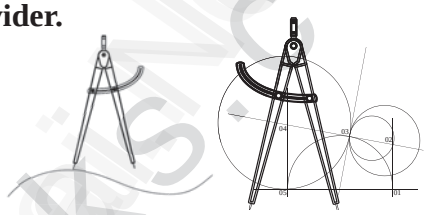
- Now, stretch the string along the length of a meter scale and measure the distance between the two markings of the string and note it.
- This will give you the length of a curved line.

Find the length of a banana.

Ans : (i) Place a string along the curved surface of the banana.
(ii) Mark the initial point and the final point on the string.
(iii) The difference between the two points is the length of the banana.

➙ ACTIVITY - 3

Measuring the length of a curved line using a divider.



(i) Draw a curved line AB on a piece of paper.

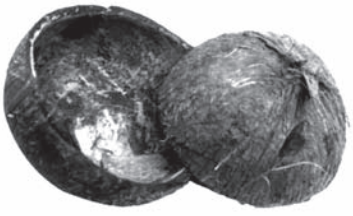
(ii) Separate the legs of the divider by 0.5 cm or 1 cm using a ruler.

(iii) Place it on the curved line starting from one end. Mark the position of the other end. Move it along the line again and again cutting the line into number of segments of equal lengths. The remaining parts of the line can be measured using a scale. Count the number of segments.

(iv) Therefore, the length of the line = (Number of segments × Length of each segment) + Length of the left over part.

➙ ACTIVITY - 4

Construct your own beam balance using two scrapped coconut shells, strings or twines thick cardboard as frame and a little sharpened pencil as index needle.



What can you achieve?

1. **Find which object is heavier.**
2. **Find approximate weight of lighter things like leaves, piece of papers etc.**

Ans : Activity to be done by the students themselves

➙ ACTIVITY - 5

Ask four or five of your friends to run a race from one end of the school to the other end. Mark the starting point and the ending point. Using your pulse (or counting by counting 1,2,3,....) count the time taken by each of them to complete the race. Check who is faster?

Ans : Activity to be done by the students themselves

UNIT TEST

Time : 60 min. **Marks : 25**

I. Choose the correct answer. (4 × 1 = 4)

1. **The height of a tree can be measured by _____.**
   (a) metre scale (b) metre rod
   (c) plastic ruler (d) measuring tape
2. **The distance between one end and the other end is called _____.**
   (a) mass (b) length
   (c) time (d) 200 mm
3. **Twenty decimetre is equal to _____.**
   (a) 2 km (b) 20 cm
   (c) 2 metre (d) None
4. **_____ is used to measure mass.**
   (a) Stop clock (b) Beam balance
   (c) Sundial (d) Graduated cylinder

II. Fill in the blanks. (3 × 1 = 3)

5. SI Unit of length is symbolically represented as _____.
6. 1 m = _____ cm.
7. _____ shows the distance covered by an automobile.

III. Find whether the following sentences are true or false. If false Correct the statement. (3 × 1 = 3)

8. We can say that mass of an object is 126 kg.
9. The SI system of units is accepted everywhere in the world.
10. On moon, the gravitational force is greater than earth.

IV. Answer any five only. (5 × 2 = 10)

11. **Match the following.**

1.	Length of the fore arm	(i)	metre
2.	SI unit of length	(ii)	second
3.	Nano	(iii)	cubit
4.	SI unit of time	(iv)	10^{-9}

12. What is meant by parallax?
13. What are the clocks used to measure a smaller duration of time?
14. Define mass.
15. Where are the electronic balances used?

16. The distance between your school and your house is 2250 m. Express this distance in kilometre.

17. What is the full form of SI system?

V. Write in detail. (1 × 5 = 5)

18. Explain anyone method to measure the length of a curved line.

(OR)

Fill in the following chart.

Property	Definition	Basic Unit	Instrument used for measuring
Length			
Mass			
Volume			
Time			

★★★

Answer Key

I. 1. (d) measuring tape, 2. (b) length, 3. (c) 2 metre, 4. (b) Beam balance

II. 5) m, 6) 100 7) Odometer

III. 8) True

9) True

10) False. On moon, the gravitational force is **lesser** than earth.

IV. 11) 1- (iii), 2-(i), 3- (iv), 4 - (ii)

12) Refer Sura's Guide Page No.10, Q.No. VI - 4.

13) Refer Sura's Guide Page No.10, Q.No. IV - 5.

14) Refer Sura's Guide Page No. 4, Q.No. X - 2.

15) Refer Sura's Guide Page No.10, Q.No. VI - 6.

16) Refer Sura's Guide Page No.4, Q.No. XI - 1.

17) Refer Sura's Guide Page No.4, Q.No. IX - 1.

V. 18) Refer Sura's Guide Page No.5, Q.No. XII - 1.

(or)

Refer Sura's Guide Page No.5, Q.No. XII - 2.

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02

FORCE AND MOTION

LEARNING OUTCOMES

- To Identify push or pull or both is involved when there is a motion.
- To understand that some forces act on contact and some are non-contact forces.
- When a force is applied, it can make things move, change direction or change its shape and size.
- To distinguish rest and motion and understand that they are relative.
- To infer motion is caused by application of force.
- To classify the different types of motion.
- To deduce the definition of average speed.
- To use and understand the unit of speed.
- To distinguish uniform and non-uniform motion.
- To compute time, distance and speed.

Evaluation

I. Choose the correct answer

1. Unit of speed is

(a) m (b) s (c) kg (d) m/s **[Ans : (d) m/s]**

2. Which among the following is an oscillatory motion?

(a) Rotation of the earth about its axis
(b) Revolution of the moon about the earth
(c) To and fro movement of a vibrating string
(d) All of these **[Ans : (c) To and fro movement of a vibrating string]**

3. The correct relation among the following is

(a) Speed = Distance × Time. (b) Speed = Distance / Time
(c) Speed = Time / Distance (d) Speed = 1 / (Distance × Time)

[Ans : (b) speed = distance / time]

4. Gita travels with her father in a bike to her uncle's house which is 40 km away from her home. She takes 40 minutes to reach there.
Statement 1 : She travels at a speed of 1 km / minute.
Statement 2 : She travels at a speed of 1 km/hour

(a) Statement 1 alone is correct.
(b) Statement 2 alone is correct.
(c) Both Statement are correct.
(d) Neither statement 1 nor statement 2 is correct.

[Ans : (a) Statement 1 alone is correct]

II. Fill in the blanks.

1. A bike moving on a straight road is an example of _____ motion. **[Ans : Linear]**
2. Gravitational force is a _____ force. **[Ans : Non Contact Force]**
3. Motion of a potter's wheel is an example of _____ motion. **[Ans : rotatory]**
4. When an object covers equal distances in equal interval of time, it is said to be in _____ motion. **[Ans: uniform]**

III. State True or False. If false, correct the statement.

1. **To and fro motion is called oscillatory motion.**

Ans : True.

2. **Vibratory motion and rotatory motion are periodic motions.**

Ans : False. Vibratory motion and **oscillatory** motion are periodic motions.

3. **Vehicles moving with varying speeds are said to be in uniform motion.**

Ans : False. Vehicles moving with varying speeds are said to be in **non-uniform** motion.

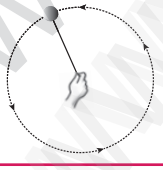
(OR)

Vehicles moving with **uniform speeds** are said to be in **uniform** motion.

4. **Robots will replace human in future.**

Ans : False. Robots **will not** replace human in future.

IV. Match the following :

1.		a.	Circular motion
2.		b.	Oscillatory motion
3.		c.	Linear motion
4.		d.	Rotatory motion
5.		e.	Linear and rotatory motion

[Ans : 1-c, 2-d, 3-b, 4-a, 5-e]

V. Given below is the distance-travelled by an elephant across a forest with uniform speed. Complete the data of the table given below with the idea of uniform speed.

Distance (m)	0	4		12		20
Time (s)	0	2	4		8	10

Ans :

Distance (m)	0	4	**8**	12	**16**	20
Time (s)	0	2	4	**6**	8	10

(i) Distance / Time = $\frac{4}{2} \times 4 = \frac{16}{2}$ = 8

(ii) Distance / Time = $\frac{4}{2} \times 8 = \frac{32}{2}$ = 16

(iii) Time / Distance = $\frac{10}{20} \times 12 = \frac{12}{2}$ = 6

VI. Complete the analogy :

1. Kicking a ball : Contact force :: Falling of leaf : _____?

Ans : Non contact force.

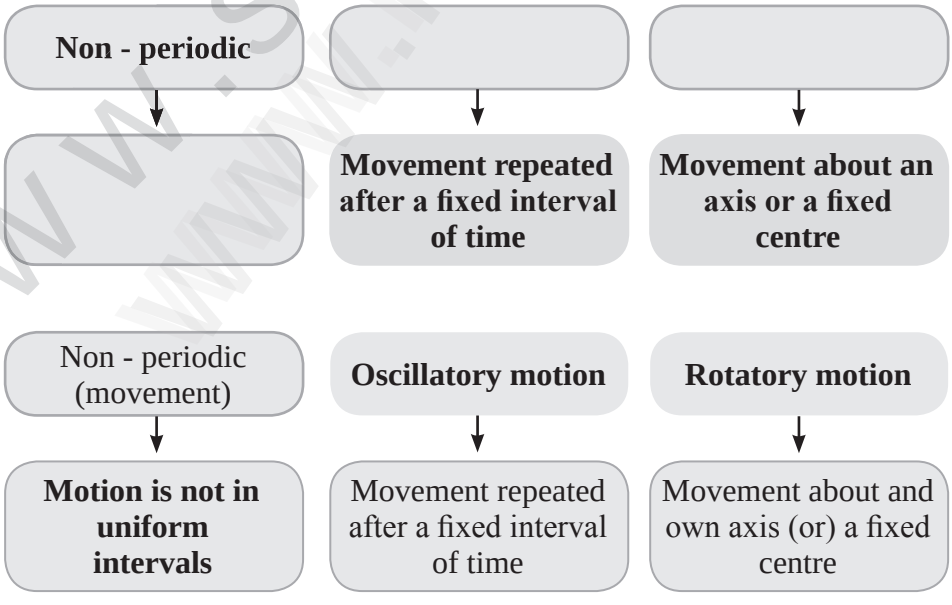
2. Distance : metre :: Speed : _____?

Ans : metre/second.

3. Circulatory motion :: A spinning top :: Oscillatory motion : _____?

Ans : Swinging of a pendulum.

VII. Complete the web chart.



Ans :

VIII. Answer in a word or two :

1. **The force which acts on an object without Physical contact. _____**

Ans : Non contact force.

2. **A change in the position of an object with time. _____**

Ans : Motion.

3. **The motion which repeats itself after a fixed interval of time. _____**

Ans : Oscillatory motion.

4. **The motion of an object which covers equal distances in equal intervals of time. _____**

Ans : Uniform motion.

5. **A machine capable of carrying out a complex series of actions automatically. _____**

Ans : Robots.

IX. Answer briefly :

1. **Define force.**

Ans : Forces are push or pull by an animate or inanimate agency.

2. **Name different types of motion based on the path.**

Ans : (i) Linear motion. (ii) Curvilinear motion.
(iii) Circular motion. (iv) Rotatory motion.
(v) Oscillatory motion. (vi) Zigzag (irregular) motion.

3. **If you are sitting in a moving car, will you be at rest or motion with respect your friend sitting next to you?**

Ans : I am in **rest** with respect to my friend, sitting inside the car.

4. **Rotation of the earth is a periodic motion. Justify.**

Ans : Motion repeated in equal intervals of time is called as periodic motion. The earth rotates on its axis once in 24 hours. The duration of time is fixed as 24 hours. Therefore the rotation of earth is a periodic motion.

5. **Differentiate between rotational and curvilinear motion.** ⊗

Ans :

S. No	Rotational motion	Curvilinear motion
1.	A body moves along a circular path.	A body moves along a curved path.
2.	Without changing its position, about its own (fixed) axis.	Changes its position with motion.
3.	Eg. Rotation of a spinning top.	Eg. Throwing paper airplanes or paper darts.

X. Answer in detail.

1. **What is motion? Classify different types of motion with examples.** ⊗

Ans : Motion :

Change of position of an object with respect to time is known as motion.

1. Based on Path :

(i) Linear motion : Motion in a straight line. Eg. A Person walking on straight path

(ii) Curvilinear motion : Motion of a body moving ahead but changing direction. Eg. Motion of a ball thrown.

(iii) Circular motion : Motion in a circle. Eg. Swirling stone tied to the rope.

(iv) Rotatory motion : Motion of a body about its own axis. Eg. Rotating top.

(v) Oscillatory motion : A body coming back to the same position after a fixed time interval. Eg. A pendulum.

(vi) Zigzag (irregular) motion : The motion of a body in different direction Eg. people walking in a crowded street.

2. Based on Duration :

(i) Periodic motion : Motion repeated in equal Intervals of time is called as periodic motion. Eg. Motion of a bob of simple Pendulum.

(ii) Non periodic motion : Motion is not in uniform Interval such motions are called non-periodic motion. Eg. Swaying of the branches of a tree.

3. Based on Speed :

(i) Uniform motion : The motion of an object travels equal distances in equal intervals of time. Eg. Hour hand of a clock.

(ii) Non - uniform motion : The motion of an object travels unequal distances in equal intervals of time. Eg. Motion of a train, as it leaves a station.

XI. Problems :

1. A vehicle covers a distance of 400 km in 5 hour. Calculate its speed.

Ans : Distance covered by the vehicle = 400 km

Time taken = 5 hour

Average speed $= \frac{\text{distance covered}}{\text{time taken}} = \frac{400\,\text{km}}{5\,\text{hour}} = 80$ km/hr.

XII. Give examples :

Linear motion	
Curvilinear motion	
Self rotatory motion	Motion of wheel in a cart
Circular motion	
Oscillatory motion	
Irregular motion	

Ans :

Linear motion	**Free fall objects**
Curvilinear motion	**Throwing ball**
Self rotatory motion	Motion of wheel in a cart
Circular motion	**Athlete running around a track**
Oscillatory motion	**Flapping of elephants ear**
Irregular motion	**Playing Foot ball**

06

HEALTH AND HYGIENE

LEARNING OBJECTIVES

- To Classify the different components of Food.
- To Evaluate the importance of nutrients present in our food.
- To Enrich the knowledge about Balanced diet.
- To List out the deficiency diseases.
- To Describe about personal hygiene.
- To Differentiate the diseases caused by Bacteria and Virus.

Evaluation

I. Choose the appropriate answer

1. Our body needs _____ for muscle building.

(a) carbohydrate (b) fat
(c) protein (d) water **[Ans : (c) protein]**

2. Scurvy is caused due to the deficiency of _____ .

(a) Vitamin A (b) Vitamin B
(c) Vitamin C (d) Vitamin D **[Ans : (c) Vitamin C]**

3. Calcium is an example for _____.

(a) carbohydrate (b) fat
(c) protein (d) minerals **[Ans : (d) minerals]**

4. Bacteria are very small _____ microorganism.

(a) prokaryotic (b) eukaryotic
(c) protozoa (d) acellular **[Ans : (a) prokaryotic]**

5. We should include fruits and vegetables in our diet, because _____.

(a) they are the best source of carbohydrates
(b) they are the best source of proteins
(c) they are rich in minerals and vitamins
(d) they have high water content **[Ans : (c) they are rich in minerals and vitamins]**

II. State True or False. If false, write the correct statement :

1. There are three main nutrients present in food.

Ans : False. There are **six** main nutrients present in food.

2. Fats are stored as energy by our body.

Ans : True.

3. All bacteria have flagella.

Ans : False. **Not** all bacteria have flagella only, **some** bacteria have flagella.

4. Iron helps in the formation of haemoglobin.

Ans :: True

5. Virus can grow and multiply outside host.

Ans : False. Virus can grow and multiply **inside** host.

III. Fill in the blanks :

1. Malnutrition leads to _____. **[Ans : deficiency disease]**
2. Iodine deficiency leads to _____ in adults. **[Ans : goitre]**
3. Vitamin D deficiency causes _____. **[Ans: Rickets]**
4. Typhoid is transmitted due to contamination of _____ and water. **[Ans: food]**
5. Influenza is a _____ disease. **[Ans: viral (virus)]**

IV. Complete the analogy :

1. Rice : Carbohydrate :: Pulses :_____.

Ans : Protein.

2. Vitamin D : Rickets :: Vitamin C: _____.

Ans : Scurvy.

3. Iodine: Goitre :: Iron:_____.

Ans : Anaemia.

4. Cholera: Bacteria :: Smallpox: _____ .

Ans : Virus.

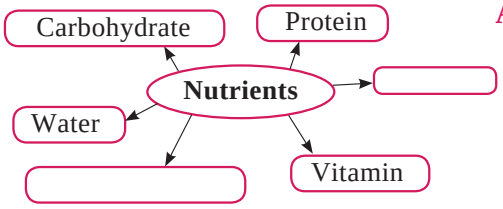
V. Match the following :

1.	**Vitamin A**	-	**a. Rickets**
2.	**Vitamin B**	-	**b. Night blindness**
3.	**Vitamin C**	-	**c. Sterility**
4.	**Vitamin D**	-	**d. Beri beri**
5.	**Vitamin E**	-	**e. Scurvy**

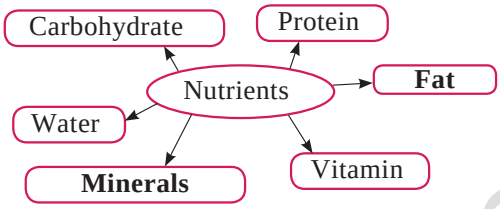
Ans :

1. Vitamin A - Night blindness
2. Vitamin B - Beri beri
3. Vitamin C - Scurvy
4. Vitamin D - Rickets
5. Vitamin E - Sterility

VI. Complete the diagram.



Ans :



VII. Answer very briefly :

1. Write two examples for each of the following .

a) Food items rich in fat.

b) Vitamin deficiency diseases.

Ans : a) Food items rich in fat: Meat, fish, egg yolk, milk.

b) Vitamin deficiency diseases: Night blindness, Beri beri, Scurvy, Rickets.

2. Differentiate between carbohydrate and protein.

Ans :

S. No.	Carbohydrate	Protein
1.	Energy giving component of the food.	It is body building foods.
2.	The sources of carbohydrate are nuts, fruits, rice and maize.	The sources of proteins are pulses, soyabean, nuts, egg, and fish.

3. Define balanced diet.

Ans : A diet which contains sufficient amount of various nutrients to ensure good health is called as Balanced diet.

4. Why should fruits and vegetables not be washed after cutting?

Ans : We should not wash the fruits and vegetables after cutting, because the minerals and protein in the fruits and vegetables will also be washed away.

5. Mention any two viral diseases.

Ans : Common cold, small pox, polio are the viral diseases.

6. What is the main feature of a microorganism?

Ans : Microorganism will be seen with the help of microscope. They are very small in size.

VIII. Answer in details :

1. Tabulate the vitamins and their corresponding deficiency diseases.

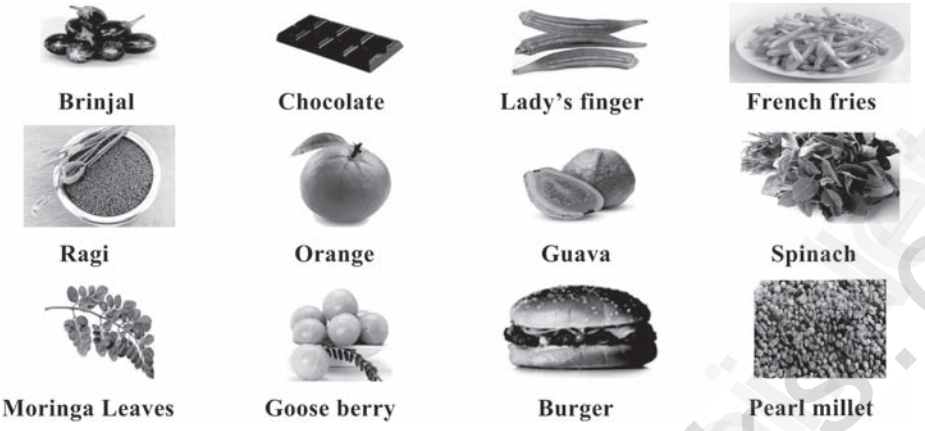
Ans :

S. No.	Property	deficiency disease
1.	Vitamin A	Night blindness
2.	Vitamin B	Beri beri
3.	Vitamin C	Scurvy
4.	Vitamin D	Rickets
5.	Vitamin E	Sterility
6.	Vitamin K	Weakness of bones and teeth

Intext Activities

Activity 1

Identify the following food items and complete the table given below.



Ans :

S. No.	Food which I like to eat	Food which I don't like to eat	Food which I have never seen before
1.	Chocolate	Brinjal	Burger
2.	French fries	Lady's finger	Pearl millet
3.	Orange	Grains	
4.	Guava	Moringa Leaves	
5.	Goose berry	Spinach	

1. Do your favorite foods make you healthy?

Ans : Some of my favorite foods make me healthy.

2. Do you choose your food by taste or by its nutritive value?

Ans : I choose my food by taste and also by its nutritive value.

Activity 2

Collect as many food items as you can and classify them according to the major nutrient content in them.

Ans :

S. No.	Food items	Major nutrients
1.	Egg	Vitamins and Protein
2.	Banana	Vitamins and Minerals
3.	Fish	Fat and Minerals
4.	Apple	Vitamins and Carbohydrate
5.	Orange	Vitamins and Minerals
6.	Cooked Grains	Vitamins and Fat
7.	Meat	Vitamins and Fat
8.	Fruit Juice	Vitamins and Water
9.	Potato	Vitamins and Carbohydrate
10.	Sugar	Carbohydrate

UNIT TEST

Time : 40 min. **Marks : 25**

I. Choose the correct answer. (3 × 1 = 3)

1. Scurvy is caused due to the deficiency of _____.
   (a) vitamin A (b) vitamin B (c) vitamin C (d) vitamin D
2. 80% of the world production of Moringa leaves is in _____.
   (a) China (b) Germany (c) India (d) Canada
3. _____ is highly rich source of protein.
   (a) Nut (b) Gram (c) Chicken (d) Soya beaan

II. Fill in the blanks. (3 × 1 = 3)

4. _____ is a disease, due to the deficiencies of vitamin E.
5. Typhoid is transmitted due to contamination of _____ and water.
6. Skinny appearance and slow body growth are the symptoms of _____ disease.

III. True or False. (3 × 1 = 3)

7. Minerals are required for carrying out various bio-chemical reactions in our body.
8. All bacteria have flagella.
9. Iron helps in the formation of haemoglobin.

IV. Complete the given Analogy (2 × 1 = 2)

10. Vitamin D : Rickets : : Vitamin C : _____?
11. Polio : Virus : : Tetanus : _____?

V. Match the following. (3 × 1 = 3)

12.	Scurvey	(a)	Even a small cut bleeds profusely
13.	Clotting of blood	(b)	Nervous weakness
14.	Beri Beri	(c)	Bleeding gums

VI. Short Answer (Any two only) (3 × 2 = 6)

15. Define the term 'Balanced diet'.
16. Why should the fruits and vegetables not to be washed after cutting?
17. Sun screen lotion is not good for our health. Justify.

VII. Long Answer. (1 × 5 = 5)

18. Tabulate the vitamins and their corresponding deficiency diseases.

(OR)

Fill in the table :

S. No.	Nutrients	Sources	Functions
1.	Carbohydrates		
2.	Proteins		
3.	Minerals		
4.	Fats		
5.	Vitamins		

★★★

Answer Key

I. 1. (c) vitamin C, 2. (c) India 3. (d) soya bean

II. 4) Nervous Weakness 5) food 6) Marasmus

III. 7) False. Vitamins are required for carrying out various biochemical reactions in our body.

8) False. Some bacteria have flagella.

9) True.

IV. 10) Scurvy.

11) Bacteria

V. 12) Scurvy - Bleeding gums

13) Clotting of blood - Even a small cut bleeds profusely

14) Beri Beri - Nervous weakness

VI. 15) Refer Sura's Guide Page No. 71 , Q.No. VII - 3

16) Refer Sura's Guide Page No. 71, Q.No. VII - 4

17) Refer Sura's Guide Page No .79, Q.No. VII - 4

VII. 18) Refer Sura's Guide Page No. 71, Q.No. VIII - 1.

(OR)

Refer Sura's Guide Page No. 80, Q.No. VIII - 1.

★★★

Science

6th Standard

Term - II

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Unit

HEAT

01

LEARNING OBJECTIVES

- To list out the sources of heat
- To define heat
- To distinguish hot and cold objects
- To define temperature
- To differentiate heat and temperature
- To understand the conditions for thermal equilibrium
- To understand why thermal expansion take place in solids
- To list out the practical applications of thermal expansion in day - to - day life

Evaluation

I. Choose the appropriate answer:

1. When an object is heated, the molecules that make up the object

(a) begin to move faster (b) lose energy
(c) become heavier (d) become lighter

[Ans : (a) begin to move faster]

2. The unit of heat is

(a) newton (b) joule
(c) volt (d) celsius **[Ans : (b) joule]**

3. One litre of water at 30°C is mixed with one litre of water at 50°C. The temperature of the mixture will be

(a) 80°C (b) More than 50°C but less than 80°C
(c) 20°C (d) around 40°C **[Ans : (d) around 40°C]**

4. An iron ball at 50°C is dropped in a mug containing water at 50°C. The heat will

(a) flow from iron ball to water.
(b) not flow from iron ball to water or from water to iron ball.
(c) flow from water to iron ball.
(d) increase the temperature of both.

[Ans : (b) not flow from iron ball to water or from water to iron ball.]

II. Fill up the blanks:

1. Heat flows from a _____ body to a _____ body.
[Ans : higher temperature, lower temperature]
2. The hotness of the object is determined by its _____ **[Ans : temperature]**
3. The SI unit of temperature is _____. **[Ans : kelvin]**
4. Solids _____ on heating and _____ on cooling. **[Ans : expand, contract]**
5. Two bodies are said to be in the state of thermal _____ if there is no transfer of heat taking place. **[Ans : equilibrium]**

III. True or False. If False, give the correct statement:

1. Heat is a kind of energy that flows from a hot body to a cold body.

Ans : True

2. Steam is formed when heat is released from water.

Ans : True

3. Thermal expansion is always a nuisance.

Ans : False. Thermal expansion is always **beneficial**.

4. Borosilicate glass do not expand much on being heated.

Ans : True

5. The unit of heat and temperature are the same.

Ans : False. The unit of heat and temperature are **different**.

IV. Give reasons for the following:

1. **An ordinary glass bottle cracks when boiling water is poured into it, but a borosilicate glass bottle does not.**

Ans : The borosilicate glass is phrex glass. They do not expand much on being heated and therefore they do not crack.

2. **The electric wire which sag in summer become straight in winter.**

Ans : In summer the electric wire is expanded by high temperature. So it sags in summer. In winter the electric wire is contracted by low temperature. Hence it becomes straight in winter.

3. **Rivet is heated before fixing in hole to join two metal plates.**

Ans : In order to make the other end of the rivet to form a new "rivet-head" by hammering, the rivet is heated. It becomes malleable when the rivet is in red-hot condition.

V. Match the following:

1. Heat	0ºC
2. Temperature	100ºC
3. Thermal Equilibrium	kelvin
4. Ice cube	No heat flow
5. Boiling water	joule

Ans :

1. Heat	joule
2. Temperature	kelvin
3. Thermal Equilibrium	No heat flow
4. Ice cube	0ºC
5. Boiling water	100ºC

VI. Analogy:

1. **Heat : Joule :: Temperature :_____**

Ans : kelvin

2. **Ice cube : 0ºC :: Boiling water :_____**

Ans : 100ºC

3. **Total Kinetic Energy of molecules: Heat :: Average Kinetic Energy : _____**

Ans : Temperature

VII. Give very short answer:

1. **Make a list of electrical equipments at home which we get heat from.**

Ans : Water heater, Iron box, Electric kettle, Micro oven.

2. What is temperature?

Ans : The measurement of warmness or coldness of a substance is known as its temperature.

3. What is thermal expansion?

Ans : The expansion of a substance on heating is called the thermal expansion.

4. What do you understand by thermal equilibrium?

Ans : When two objects in thermal contact, no longer affect each other's temperature, there exists Thermal equilibrium.

VIII. Give short answer:

1. What difference do you think heating the solid will make in their molecules?

Ans : Heat expands solids. The molecules in the solid move faster, spread apart and occupy more space.

2. Distinguish between heat and temperature.

Ans :

S.No.	Heat	Temperature
1.	Heat not only depends on the temperature of the substance but also depends on how many molecules are there in the object.	Temperature is related to how fast the atoms or molecules move or vibrate within the substance
2.	Heat measures the total Kinetic Energy of the molecules in the substance.	Temperature measures the average kinetic energy of molecules.
3.	**SI Unit :** Joule	**SI Unit :** Kelvin
4.	**Unit:** Joules, Calories	**Unit:** Fahrenheit, Celsius, Kelvin
5.	It has the ability to do work	It can be used to measure the degree of heat

IX. Answer in detail:

1. Explain thermal expansion with suitable examples.

Ans : Thermal expansion:

The expansion of a substance on heating is called, the thermal expansion of that substance.

Fitting the iron rim on the wooden wheel

i. The diameter of the iron ring is slightly less than that of the wooden wheel.
ii. So, it cannot be easily slipped on from the rim of wooden wheel.
iii. The iron ring is, therefore, first heated to a higher temperature so that it expands in size and the hot ring is then easily slipped over to the rim of the wooden wheel.
iv. Cold water is now poured on the iron ring so that it contracts in size and holds the wooden wheel tightly.

Rivetting

i. Rivets are used to join two steel plates together.
ii. Hot rivet is driven through the hole in the plates.
iii. One end of the rivet is hammered to form a new rivet head.
iv. When cooled, the rivet will contract and hold the two plates tightly together.

Unit

ELECTRICITY

02

LEARNING OBJECTIVES

- To know the sources of electricity
- To be aware of the equipments working on electricity
- To know the different kinds of electric cells and understand their applications
- To be able to use different types of cells in different applications
- To understand the symbols of circuits and apply them in different circuits
- To identify conductors and insulators
- To be able to make their own batteries

Evaluation

I. Choose the appropriate answer.

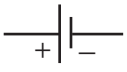
1. The device which converts chemical energy into electrical energy is

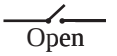
(a) fan (b) solar cell
(c) cell (d) television **[Ans : (c) cell]**

2. Electricity is produced in

(a) transformer (b) power station
(c) electric wire (d) television **[Ans : (b) power station]**

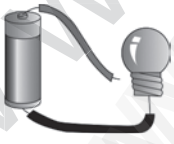
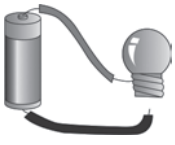
3. Choose the symbol for battery

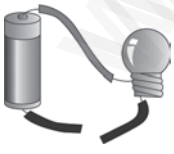
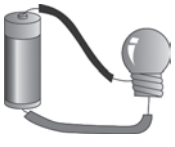
(a)  (b) 

(c) 

(d) **[Ans : (a)**  **]**

4. In which among the following circuits does the bulb glow?

(a)  (b) 

(c)  (d)  **[Ans : (d)**  **]**

5. _____ is a good conductor

(a) silver (b) wood
(c) rubber (d) plastic **[Ans : (a) silver]**

II. Fill in the blanks.

1. _____ are the materials which allow electric current to pass through them.
[Ans : conductors]

2. Flow of electricity through a closed circuit is _____
[Ans : a complete electric circuit]

3. _____ is the device used to close or open an electric circuit.
[Ans : Key or Switch]

4. The long perpendicular line in the electrical symbol represents its _____ terminal.
[Ans : positive]

5. The combination of two or more cells is called a _____. **[Ans : Battery]**

III. True or False. If False, give the correct statement.

1. In a parallel circuit, the electricity has more than one path.

Ans : True

2. To make a battery of two cells, the negative terminal of one cell is connected to the negative terminal of the other cell.

Ans : False. To make a battery of two cells, the negative terminal of one cell is connected to the **positive** terminal of the other cell. (OR) To make a battery of two cells, the **positive** terminal of one cell is connected to the **negative** terminal of the other cells.

3. The switch is used to close or open an electric circuit.

Ans : True

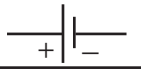
4. Pure water is a good conductor of electricity. ⊗

Ans : False. **Impure** water is a good conductor of electricity

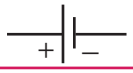
5. Secondary cell can be used only once. ⊗

Ans : False. **Primary** cells can be used only once

IV. Match the following :

S. No.	Symbol	Description
1.		open key
2.		cell
3.		bulb glows
4.		battery
5.		bulb does not glow

Ans :

S. No.	Symbol	Description
1.		battery
2.		bulb does not glow
3.		open key
4.		bulb glows
5.		cell

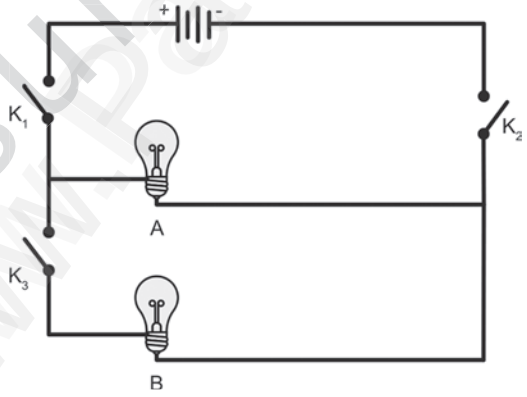
V. Arrange in sequence:

A CELL | A DEVICE | ELECTRICAL ENERGY | IS CALLED | IN TO | CHEMICAL ENERGY | THAT CONVERTS

Ans : A DEVICE | THAT CONVERTS | CHEMICAL ENERGY | IN TO | ELECTRICAL ENERGY | IS CALLED | A CELL

VI. Give very short answer:

1. In the given circuit diagram, which of the given switch(s) should be closed, So that only the bulb A glows.



Ans : Switches K_1 and K_2 should be closed.

2. Assertion (A) : It is very easy for our body to receive electric shock.
Reason (R) : Human body is a good conductor of electricity.

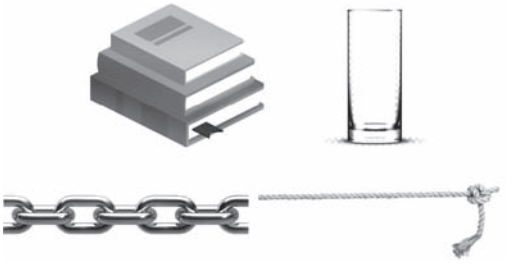
a. Both A and R are correct and R is the correct explanation for A.
b. A is correct, but R is not the correct explanation for A.
c. A is wrong but R is correct.
d. Both A and R are correct and R is not the correct explanation for A.

Ans : (a) Both A and R are correct and R is the correct explanation for A.

3. Can you produce electricity from lemon?

Ans : Yes, I can produce electricity from lemon.

4. Identify the conductor from the following figures.



Ans : The conductor is **Iron chain.**

5. What type of circuit is there in a torch light?

Ans : Simple circuit is there in a torch light.

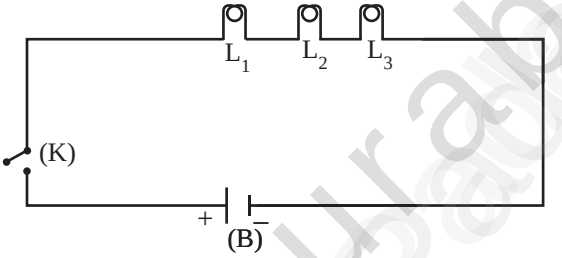
6. Circle the odd one out. Give reason for your choice.
Switch, Bulb, Battery, Generator.

Ans : Generator. Switch, Bulb, Battery are the components used to make simple circuit. Generator is used to generate electricity.

VII. Give short answer:

1. Draw the circuit diagram for series connection.

Ans :



2. Can the cell used in the clock give us an electric shock? Justify your answer.

Ans : No, The cell used in the clock **cannot** give us an electric shock. It produces least amount of electric energy like 1.5 V.

3. Silver is a good conductor but it is not preferred for making electric wires. Why?

Ans : Silver is a good conductor. But it is a costly metal. So it is not preferred for making electric wire.

VIII. Answer in detail.

1. What is the source of electricity? Explain the various power stations in India.

Ans : Any device from which electricity is produced is called source of electricity.

We get electricity from different sources.

1. Thermal Power stations

In thermal power stations, the thermal energy generated by burning coal, diesel or gas is used to produce steam. The steam thus produced is used to rotate the turbine. While the turbine rotates, the coil of wire kept between the electromagnet rotates. Due to electro magnetic induction electricity is produced. Here heat energy is converted into electrical energy.

2. Hydel power stations

In hydel power stations, the turbine is made to rotate by the flow of water from dams to produce electricity. Here kinetic energy is converted into electrical energy. Hydel stations have long economic lives and low operating cost.

3. Atomic power stations

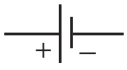
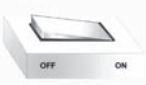
In atomic power stations, nuclear energy is used to boil water. The steam thus produced is used to rotate the turbine. As a result, electricity is produced. Atomic power stations are also called as nuclear power stations. Here nuclear energy is converted into mechanical energy and then electrical energy.

4. Wind mills

In wind mills, wind energy is used to rotate the turbine to produce electricity. Here kinetic energy is converted into electrical energy.

2. Tabulate the different components of an electric circuit and their respective symbols.

Ans :

S.No.	Electric component	Figure	Symbol
1.	Electric cell		
2.	Battery		
3.	Switch-open		
4.	Switch-closed		
5.	Electric bulb		 (not glowing)
			 (Glowing)
6.	Connecting wires		

Additional Questions

I. Choose the correct answer:

1. **One of the atomic power station is located in _____**
   (a) Mettur (b) Papanasam
   (c) Neyveli (d) Kalpakkam **[Ans : (d) Kalpakkam]**

2. **In atomic power station _____ is used to rotate the turbine.**
   (a) water (b) steam
   (c) Air (d) diesel **[Ans : (b) Steam]**

3. **Secondary cells are used in _____**
   (a) Mobile phone (b) wall clocks
   (c) watches (d) toys **[Ans : (a) Mobile phone]**

4. **If two or more _____ are connected in series in a circuit, then it is called series circuit.**
   (a) keys (b) cells
   (c) connecting wires (d) bulbs **[Ans : (d) bulbs]**

5. **_____ is an instrument used in electric circuits to find the quantity of current flowing through the circuit.**
   (a) Volt meter (b) Ammeter
   (c) Cell (d) Key **[Ans : (b) Ammeter]**

6. **Thomas Alva Edison invented more than _____ useful inventions which are used in homes.**
   (a) 100 (b) 10
   (c) 500 (d) 1000 **[Ans : (d) 1000]**

II. Fill in the blanks.

1. Hydel electricity is produced in _____in Tirunelveli district. **[Ans : Papanasam]**
2. In Thermal power station _____ is used as fuel. **[Ans : Coal or diesel]**
3. _____ Cells used in automobiles like cars and buses are large and very heavy. **[Ans : Secondary]**
4. The rate of flow of electric charges in a circuit is called _____. **[Ans : Electric current]**
5. _____is a kind of fish which is able to produce electric current. **[Ans : Electric Eel]**
6. _____are used to connect devices. **[Ans : Connecting wires]**
7. _____was an American inventor, who invented electric bulb. **[Ans : Thomas Alva Edison]**

III. Find whether the following sentences are true or false. If false Correct the statement.

1. Wind mills are located at Neyveli in Kanyakumari district.

Ans : False. Wind mills are located at **Aralvaimozhi** in Kanyakumari district.

2. In atomic power station nuclear energy is converted into electrical energy.

Ans : True.

3. Primary cells are usually produced in large sizes.

Ans : False. Primary cells are usually produced in **small** sizes.

4. Primary cells are used in mobile phones.

Ans : False. **Secondary cells** are used in mobile phones.

5. In a circuit if the key is in open (off) condition, then electricity will not flow.

Ans : True.

6. Ebonite do not allow electric charges to pass through them.

Ans : True.

IV. Analogy.

1. Thermal power station : Neyveli.
Hydel power station : _____

Ans : Mettur

2. Kayatharu in Tirunelveli district : Wind mills.
Koodankulam in Tirunelveli district : _____

Ans : Atomic power station.

3. Primary cells : Toys
Secondary cells : _____

Ans : Emergency lamps.

4. Bulbs are connected in series : Series circuit.
Bulbs are connected in parallel : _____

Ans : Parallel circuit.

V. Match the following :

A.

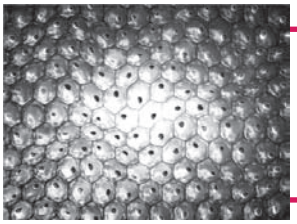
1. Thermal power stations	a)	Kinetic energy converted into electrical energy
2. Hydel power stations	b)	Nuclear energy is converted into mechanical energy and then electrical energy
3. Atomic power stations	c)	Wind energy is used to produce electricity.
4. Wind mills	d)	Heat energy is converted into electrical energy.

Ans : 1 - d, 2 - a, 3 - b, 4 - c

B.

i. Source of electricity	a)	Conductors
ii. To connect devices	b)	Bulb
iii. Consumes electricity	c)	Insulators
iv. Allow electric charges	d)	Connecting wires
v. Do not allow electric charges	e)	Cell

Ans : i. - e, ii. - d, iii - b, iv. - a, v. - c



Unit

THE CELL

05

LEARNING OBJECTIVES

- To know that all living things are made up of cells
- To observe the cell structure using microscope
- To understand the structure of cell
- To explain the components of a cell
- To understand the structural difference between animal and plant cell

Evaluation

I. Choose the appropriate answer:

1. The unit of measurement used for expressing dimension (size) of cell is ____

(a) centimeter (b) millimeter
(c) micrometer (d) meter **[Ans : (c) micrometer]**

2. Under the microscope Priya observes a cell that has a cell wall and distinct nucleus. The cell that she observed is

(a) a plant cell (b) an animal cell
(c) a nerve cell (d) a bacteria cell **[Ans : (d) a bacteria cell]**

3. A 'control centre' of the eukaryotic cell is

(a) Cell wall (b) Nucleus
(c) Vacuoles (d) Chloroplast **[Ans : (b) Nucleus]**

4. Which one of the following is not an unicellular organism?

(a) Yeast (b) Amoeba
(c) Spirogyra (d) Bacteria **[Ans : (c) Spirogyra]**

5. Most organelles in a eukaryotic cell are found in the

(a) Cell wall (b) cytoplasm
(c) nucleus (d) Vacuole **[Ans : (b) cytoplasm]**

II. Fill in the Blanks:

1. The instrument used to observe the cell is _____. **[Ans : microscope]**
2. I control the food production of a cell. Who am I? ____ **[Ans : chloroplast]**
3. I am like a policeman. Who am I ____?. **[Ans : cell wall]**
4. The Term " cell" was coined by _____. **[Ans : Robert hooke]**
5. The egg of an Ostrich is the _____ single cell. **[Ans : largest]**

III. True or False. If False, give the correct answer:

1. A cell is the smallest unit of life.

Ans : True

2. Nerve cell is the longest cell.

Ans : True

3. Prokaryotes were the first form of life on earth.

Ans : True

4. The organelles of both plants and animals are made up of cells.

Ans : False

5. New cells are produced from existing cells.

Ans : True

IV. Match the following:

1. Control center	Cell membrane
2. Food producer (Plant cell)	Mitochondria
3. Gate of the nucleus	Nucleus
4. Gate of the cell	Chloroplasts
5. Energy producer	Nuclear membrane

Ans :

1. Control center	Nucleus
2. Food producer (Plant cell)	Chloroplasts
3. Gate of the nucleus	Nuclear membrane
4. Gate of the cell	Cell membrane
5. Energy producer	Mitochondria

V. Arrange in a correct sequence:

1. **Elephant, Cow, Bacteria, Mango, Rose plant.**

Ans : Bacteria, Rose plant, Mango, Cow, Elephant.

2. **Hen Egg, Ostrich egg, Insect egg.**

Ans : Insect egg, Hen egg, Ostrich egg.

VI. Analogy:

1. **Prokaryote : Bacteria :: Eukaryote :_____**

Ans : Plant or animal cell.

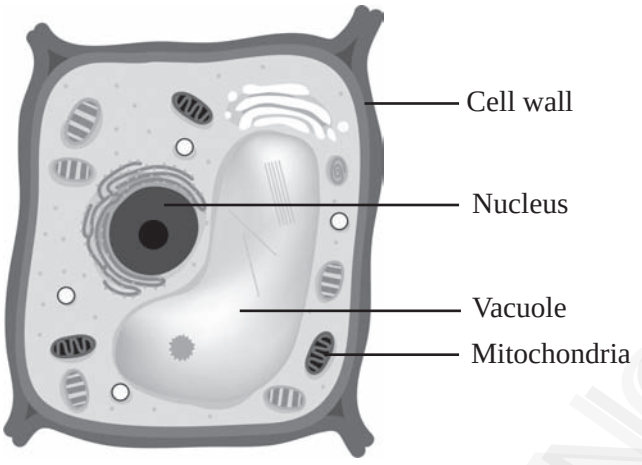
2. **Spirogyra : Plant cell :: Amoeba :_____**

Ans : animal cell.

3. **Food producer : Chloroplasts :: Power house _____**

Ans : mitochondria.

Ans :



Plant cell

3. Distinguish between prokaryotic and eukaryotic cells.

Ans :

Prokaryotic cell	Eukaryotic cell
It's diameter ranges from 1 to 2 micron	It's diameter ranges from 10 to 100 micron
Absence of membrane bound organelles	Presence of membrane bound organelles
Nucleus consisting of no nuclear membrane	True nucleus consisting of nuclear membrane
Absence of nucleoli	Presence of nucleoli

4. Make sketches of animal and plant cells which you observe under microscope.

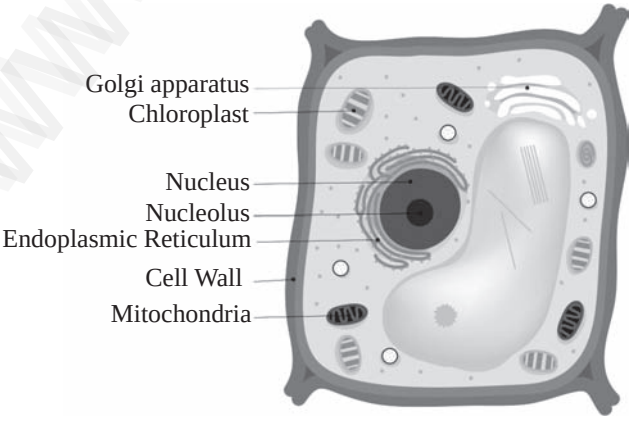
Ans : Plant cell

i. It is usually larger in size. It is hard in nature.

ii. Plant cell have a cell wall in addition to their cell membrane.

iii. Plant cell have chloroplast which contain chlorophyll

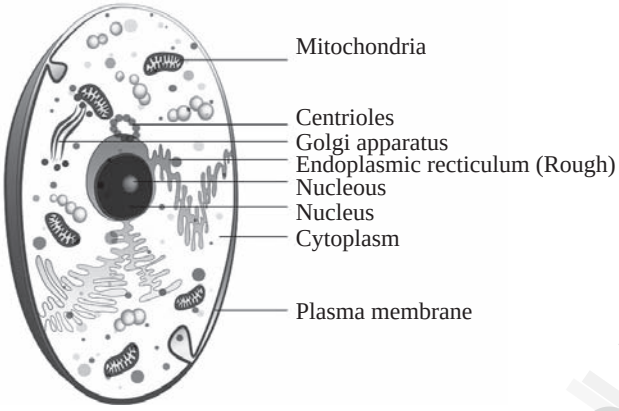
iv. Plant cells have large vacuoles. Centrioles are absent.



Plant cell

Animal cell

i. Animal cells are generally smaller than plant cells. It is not so hard as plant cell.
ii. A cell wall is absent.
iii. Chloroplast is usually absent.
iv. An animal cell may have many small vacuoles.
v. Centrioles are found in animal cells.



Animal cell

5. Write about the contribution of Robert Hooke in cell biology.

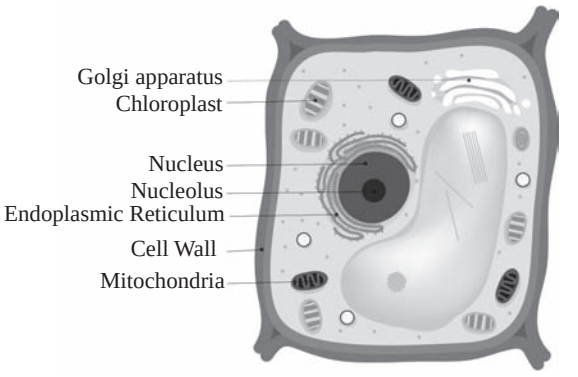
Ans : Robert hooke was a scientist and inventor. He improved microscope and built a compound microscope. One day he made thin sections of the cork and observed many small identical chambers through his microscope. They were hexagonal in shape. Based on this observations Hooke published a book named Micrographia in the year 1665, where he first used the term Cell . He describes the structure of tissue using the term cell.

IX. Answer in detail:

1. Tabulate any five cell organelles and their function.

Ans :

S.No.	Cell Components	Main Functions
1.	Cell wall	♦ Surrounds and protects the cell ♦ Make the cell stiff and strong
2.	Cell membrane	♦ Holds and protects the cell ♦ Controls the movement of materials in and out of the cell
3.	Cytoplasm	♦ A watery, gel-like material in which cell parts move
4.	Mitochondria	♦ Produce and supply most of the energy for the cell
5.	Chloroplasts	♦ Contain green pigment chlorophyll ♦ Capture the energy of sunlight and use it to produce food for the cell by photosynthesis.
6.	Nucleus	♦ Acts as 'brain' of the cell ♦ Regulates and controls all the cell activities



(iii) Plant cell have chloroplast which contain chlorophyll

(iv) Plant cells have large vacuoles. Centrioles are absent.

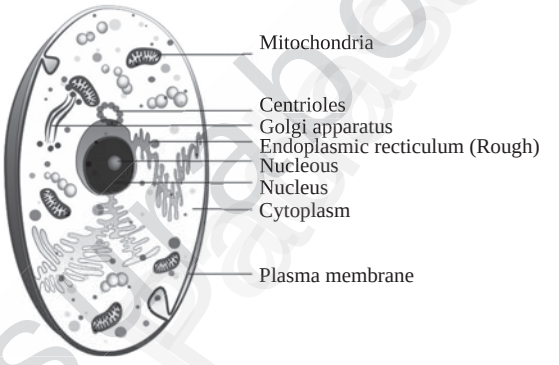
2. Write the characteristics of animal cell with diagram.

Ans : Animal cell

(i) Animal cells are generally smaller than plant cells. It is not so hard as plant cell.

(ii) A cell wall is absent.

(iii) Chloroplast is usually absent.

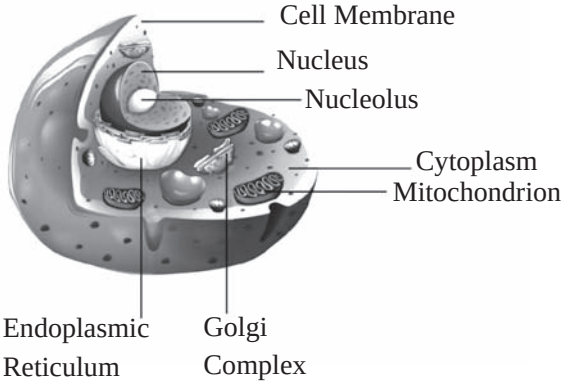


(iv) An animal cell may have many small vacuoles.

(v) Centrioles are found in animal cells.

3. Draw the 3-dimensional cell structure and label the parts.

Ans :



4. Give the difference between animal cell and plant cell.

Ans :

S. No.	Animal cell	Plant cell
i.	Animal cells are generally smaller than plant cells. It is not so hard as plant cell.	It is usually larger in size. It is hard in nature.
ii.	A cell wall is absent.	Plant cell have a cell wall in addition to their cell membrane.
iii.	Chloroplast is usually absent.	Plant cell have chloroplast which contain chlorophyll
iv.	An animal cell may have many small vacuoles.	Plant cells have large vacuoles. Centrioles are absent.

★★★

UNIT TEST

Time : 60 min. **Marks : 25**

I. Choose the correct answer. (4 × 1 = 4)

1. Approximate number of cells in the human body is _____.
   (a) 3.7×10^{13} (b) 3.7×10^{12} (c) 3.7×10^{14} (d) 3.7×10^{15}
2. A control centre of the Eukaryotic cell is _____.
   (a) Cell wall (b) Nucleus (c) vacuoles (d) Chloroplast
3. The unit of measurement used for expressing dimension (size) of the cell is ____.
   (a) centimeter (b) millimeter (c) micrometer (d) meter
4. Which one is prokaryotic cell among the following?
   (a) Plant cell (b) Animal cell (c) Nerve cell (d) Cyano bacteria cell

II. Fill in the blanks. (3 × 1 = 3)

5. _____ is present in plant cell only.
6. The instrument used to observe the cell is _____.
7. The term 'cell' was coined by _____ .

III. Find whether the following sentences are true or false. If false Correct the statement. (3 × 1 = 3)

8. Prokaryotes were the first form of life on earth.
9. All the cells can be seen with our naked eye.
10. The size of the bacterial cell range from 0.01 micrometer to 0.5 micrometer.

IV. Answer any five only. (5 × 2 = 10)

11. Distinguish between prokaryotic and eukaryotic cells.
12. Why cells are called building blocks of life?

SCIENCE - TERM - II

13. Analogy.

a. Spirogyra : plant cell : : Amoeba : _____.

b. Smallest cell : Virus : : Biggest cell : _____.

14. Match the following.

i.	Control center	a)	Amoeba
ii.	Energy producer	b)	Nucleus
iii.	Longest cell	c)	Mitochandria
iv.	Unicellular cell	d)	Nerve cell

15. Arrange in correct sequence.

Hen Egg, Ostrich egg, Insect egg.

16. Define - Prokaryotic cell.

17. What are the functions of nucleus.

V. Write in detail. (any one only) **(1 × 5 = 5)**

18. Tabulate any five cell organelles and their function.

19. Write the characteristics of animal cell with diagram.

★★★

Answer Key

I. 1. (a) 3.7 × 1013, 2. (b) Nucleus,
3. (c) micrometer, 4. (d). Cyano bacteria cell

II. 5) Chloro plast 6) microscope 7) Robert hooke

III. 8) Refer Sura's Guide Page No. 144; Q. No. III - 3.
9) Refer Sura's Guide Page No. 150; Q. No. III - 3.
10) Refer Sura's Guide Page No. 150; Q. No. III - 4.

IV. 11) Refer Sura's Guide Page No. 146; Q. No. VIII - 3.
12) Refer Sura's Guide Page No. 150; Q. No. VIII - 1.
13) Refer Sura's Guide Page No. 144, 148, ; Q. No. VI - 2, V - 1,
14) (i). b, (ii). c, (iii). d, (iv). a
15) Refer Sura's Guide Page No. 144; Q. No. V - 2.
16) Refer Sura's Guide Page No. 151; Q. No. VI - 3.
17) Refer Sura's Guide Page No. 151; Q. No. VI - 5.

V. 18) Refer Sura's Guide Page No. 147; Q. No. IX - 1.
19) Refer Sura's Guide Page No. 152; Q. No. VII - 2.

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Science

6th Standard

Term - III

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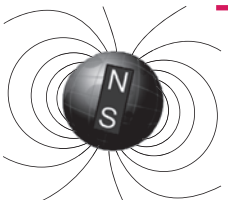


Unit

MAGNETISM 01

LEARNING OBJECTIVES

- To know about the discovery of magnets
- To identify Magnetic and Non Magnetic Materials
- To distinguish between north and south poles
- To list out the properties of magnets
- To explain the principle of Maglev Train

Evaluation

I. Choose the appropriate answer:

1. An object that is attracted by magnet.

(a) wooden piece (b) plain pins
(c) eraser (d) a piece of paper **[Ans : (b) plain pins]**

2. People who made mariner's compass for the first time.

(a) Indians (b) Europeans
(c) Chinese (d) Egyptians **[Ans : (c) Chinese]**

3. A freely suspended magnet always comes to rest in the _____ direction.

(a) North - East (b) South - West
(c) East - West (d) North - South **[Ans : (d) North-South]**

4. Magnets lose their properties when they are

(a) used (b) stored
(c) hit with a hammer (d) cleaned **[Ans : (c) hit with a hammer]**

5. Mariner's compass is used to find the

(a) speed (b) displacement
(c) direction (d) motion **[Ans : (c) direction]**

II. Fill in the blanks:

1. Artifical magnets are made in different shapes such as _____, ____ and _____.

[Ans : Bar-magnet, Horseshoe magnet, Ring magnet]

2. The materials which are attracted towards the magnet are called _____.

[Ans : magnetic substances]

3. Paper is not a_____ material. **[Ans : magnetic]**

4. In olden days, sailors used to find direction by suspending a piece of _____. **[Ans : bar magnet (or) lode stones]**

5. A magnet always has _____ poles. **[Ans : two]**

III. True or False. If False, give the correct statement:

1. A cylindrical magnet has only one pole.

Ans : False. A cylindrical magent has **two poles**.

2. Similar poles of a magnet repel each other.

Ans : True.

3. Maximum iron filings stick in the middle of a bar magnet when it is brought near them.

Ans : False. Maximum iron filings stick in the **poles** of a bar magnet when it is brought near them.

4. A compass can be used to find East-West direction at any place.

Ans : True. A magnetic compass always points towards the North-South direction. If the North-South direction is known, then the East-West direction can also be determined. This direction is perpendicular to the North-South direction, ie., perpendicular to the compass needle in the same plane.

5. Rubber is a magnetic material.

Ans : False. Rubber is a **non-magnetic** material.

IV. Match the following:

1. Compass	Maximum magnetic strength
2. Attraction	Like poles
3. Repulsion	Opposite poles
4. Magnetic poles	Magnetic needle

Ans :

1. Compass	Magnetic needle
2. Attraction	Opposite poles
3. Repulsion	Like poles
4. Magnetic poles	Maximum magnetic strength

V. Circle the odd ones and give reasons:

1. **Iron nail, pins, rubber tube, needle.**

Ans : Rubber tube.

Rubber tube is a non-magnetic substance, others are magnetic substances.

2. **Lift, escalator, electromagnetic train, electric bulb.**

Ans : Electric bulb.

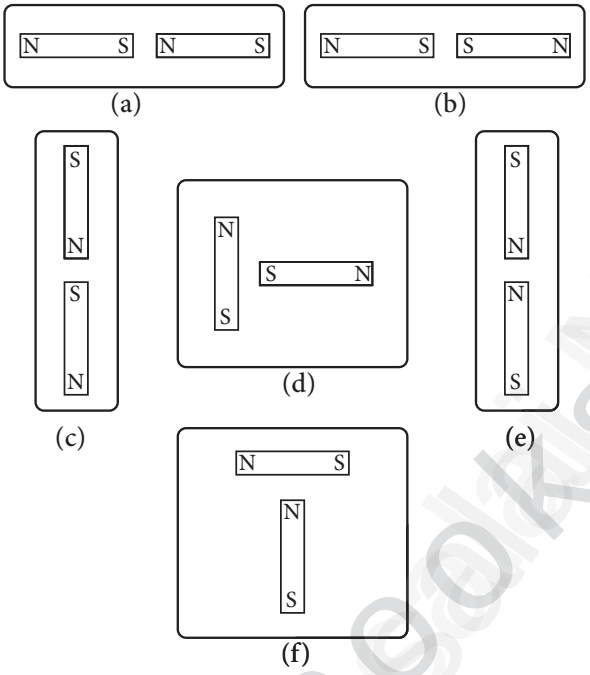
Electric bulb does not have magnets others have electromagnets.

3. **Attraction, repulsion, pointing direction, illumination.**

Ans : Illumination

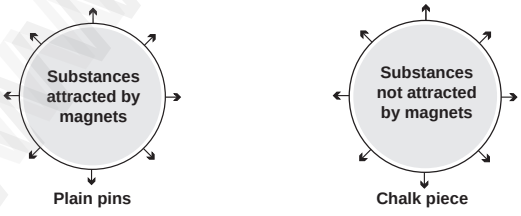
Illumination is not a property of magnet, others are magnetic properties.

VI. The following diagrams show two magnets near one another. Use the words, 'Attract, Repel, Turn around' to describe what happens in each case.

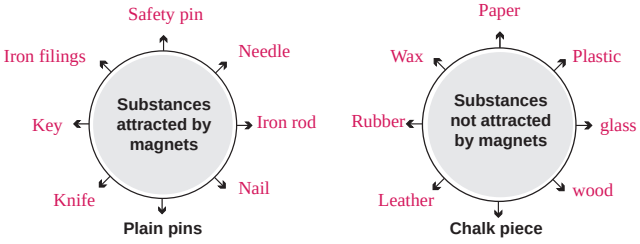


Ans : a. Unlike poles **attract** one another.
b. Like poles **repel** each other.
c. Unlike poles **attract** one another.
d. Perpendicular poles **turn around** and attract one another.
e. Like poles **repel** each other.
f. Perpendicular poles **turn around** and attract one another.

VII. Write down the names of substances :



Ans :



Unit

02

WATER

LEARNING OBJECTIVES

- To recognize the sources and availability of water
- To clarify the composition of water and the process of water cycle
- To develop skills in suggesting ways to conserve water
- To realize the importance of water for life on earth
- To appreciate the efforts made to conserve water

Evaluation

I. Choose the appropriate answer :

1. Around 97% of water available on earth is _____ water.

(a) fresh (b) pure
(c) Salty (d) polluted **[Ans : (c) Salty]**

2. Which of the following is not a part of water cycle?

(a) evaporation (b) condensation
(c) rain (d) distillation **[Ans : (d) distillation]**

3. Which of the following processes add water vapour to the atmosphere?

i. Transpiration ii. Precipitation
iii. Condensation iv. Evaporation

(a) ii and iii (b) ii and iv
(c) i and iv (d) i and ii **[Ans : (c) i and iv]**

4. About 30% of the fresh water is found in?

(a) glaciers (b) ground water
(c) other sources of water (d) Surface water **[Ans : (b) ground water]**

5. Using R.O. (Reverse Osmosis) plant at home eliminates lot of non-potable water. The best way to effectively use the expelled water of R.O. plant is _____.

(a) make the expelled water go and seep near the bore well
(b) use it for watering plants
(c) to drink the expelled water after boiling and cooling
(d) to use for cooking as the water is full of many nutrients

[Ans : (b) use it for watering plants]

II. Fill in the blanks :

1. Only _____ percent of natural water is available for human consumption.
[Ans : 0.3]
2. The process of changing water into its vapour is called _____.
[Ans : Evaporation]
3. _____ is built on rivers to regulate water flow and distribute water. **[Ans : Dam]**
4. Water levels in rivers increase greatly during _____. **[Ans : Raining]**
5. Water cycle is also called as _____. **[Ans : Hydrological cycle]**

III. True or False. If False, give the correct statement :

1. Water present in rivers, lakes and ponds is unfit for use by human beings.

Ans : False. Water present in rivers, lakes and ponds is **fit** for use by human beings.

2. Seas are formed when the water table meets the land surface.

Ans : False. **Ponds** are formed when the water table meets the land surface.

3. The evaporation of water takes place only in sunlight.

Ans : True.

4. Condensation results in the formation of dew on grass.

Ans : True.

5. Sea water can be used for irrigation as such.

Ans : False. Sea water **cannot** be used for irrigation as such.

IV. Match the following :

1. Flood	Lake
2. Surface water	Evaporation
3. Sun light	Water vapour
4. Cloud	Pole
5. Frozen water	Increased rain fall

Ans :

1. Flood	Increased rain fall
2. Surface water	Lake
3. Sun light	Evaporation
4. Cloud	Water vapour
5. Frozen water	Pole

V. Arrange the following statements in correct sequence :

1. **These vapours condense to form tiny droplets of water.**
2. **The water droplets come together to form large water droplets.**
3. **The heat of the sun causes evaporation of water from the surface of the earth, oceans, lakes, rivers and other water bodies.**

4. **The large water droplets become heavy and the air cannot hold them, therefore, they fall as rains.**
5. **Water vapour is also continuously added to the atmosphere through transpiration from the surface of the leaves of trees.**
6. **Warm air carrying clouds rises up.**
7. **Higher up in the atmosphere, the air is cool.**
8. **These droplets floating in the air along with the dust particles form clouds.**

Ans :
1. The heat of the sun causes evaporation of water from the surface of the earth, oceans, lakes, rivers and other water bodies.
2. Water vapour is also continuously added to the atmosphere through transpiration from the surface of the leaves of trees.
3. Higher up in the atmosphere, the air is cool.
4. These vapours condense to form tiny droplets of water.
5. These droplets floating in the air along with the dust particles form clouds.
6. Warm air carrying clouds rises up.
7. The water droplets come together to form large water droplets.
8. The large water droplets become heavy and the air cannot hold them, therefore, they fall as rains.

VI. Analogy :

1. **Population explosion : Water scarcity :: Recycle : _____**

Ans : Water Management.

2. **Ground water : _____ :: Surface water : lakes**

Ans : Tube wells

VII. Give very short answer:

1. **Name four different sources of water.**

Ans : Different sources of water are wells, canals, tanks, ponds, rivers, water tanks, hand pipes.

2. **How do people in cities and rural areas get water for various purposes?**

Ans : In city, people get water from water tanks, hand pipes and bore wells.

In rural area, people get water from wells, canals, ponds and rivers.

3. **Take out of cooled bottle of water from refrigerator and keep it on a table. After some time you notice a puddle of water around it. Why?**

Ans :
i. The cooled water bottle has very cold exposed surface.
ii. Due to cool surface there is condensation of water-vapour from air on the surface of water bottle. It is because of the fact that water vapour is present in atmosphere.
iii. The condensed water molecules spread around the bottle.
iv. So a puddle of water is noticed after sometime.

4. **We could see clouds almost every day. Why doesn't it rain daily?**

Ans :
i. The millions of tiny droplets do not collide with another to form larger droplets.
ii. The air around the clouds is not cool.

UNIT TEST

Time : 60 min. **Marks : 25**

I. Choose the correct answer. (4 × 1 = 4)

1. Around 97% of water available on earth is _____ water.
   (a) Fresh (b) Pure
   (c) Salty (d) Polluted

2. About 30% of the fresh water is found in?
   (a) glaciers (b) ground water
   (c) Other source of water (d) 0.3%

3. _____ is a transparent, tasteless, odourless, chemical substance.
   (a) Petrol (b) Wax
   (c) Water (d) Kerosene

4. Volume of liquid is measured by _____.
   (a) Gallon (b) Litre
   (c) Cusec (d) All of the above

II. Fill in the blanks. (3 × 1 = 3)

5. Water cycle is also called as _____.
6. The molecular formula of water is _____.
7. Every year _____ is observed as the world water day.

III. Find whether the following sentences are true or false. If false correct the statement. (3 × 1 = 3)

8. Seas are formed when the watertable meets the land surface.
9. Sea water can be used for irrigation as such.
10. When the air around the clouds is cool these drops of water fall in the form of snow or rain.

IV. Answer any five only. (5 × 2 = 10)

11. Match the following.

1. Flood	a. Lake
2. Surface water	b. Evaporation
3. Sun light	c. Pole
4. Frozen water	d. Increased rain fall

12. Anology:
    a. Ground water : _____
       Surface water : Lake.
    b. Napier Bridge area: _____
       Pallikkaranai : Wet land.

13. Name the places where water is found as ice.
14. Differentiate between surface water and ground water.
15. Which places have fresh water?
16. What are the salts dissolved in sea water?
17. List any two wet-land in Tamilnadu.

V. Write in detail. (Only one) **(1 × 5 = 5)**

18. Give the importance of water.
19. What is rainwater harvesting? Explain in a few sentences how it can be used in houses.

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Answer Key

I. 1. (c) Salty 2. (b) ground water 3. (c) Water 4. (d). All of the above

II. 5. Hydrological cycle.
6. H_2O.
7. March 22nd.

III. 8. False. Ponds are formed when the water table meets the land surface.
9. False. Sea water cannot be used for irrigation as such.
10. True.

IV. 11. 1. (d) 2. (a) 3. (b) 4. (c).
12. a. Tube wells. b. Estuary
13. Refer Sura's Guide Page No.194, Q.No.VII - 5.
14. Refer Sura's Guide Page No.194, Q.No. VIII - 1
15. Refer Sura's Guide Page No.202, Q.No.V - 3.
16. Refer Sura's Guide Page No.202, Q.No.V - 7.
17. Refer Sura's Guide Page No.203, Q.No.V - 13.

V. 18. Refer Sura's Guide Page No.204, Q.No VI - 3.
19. Refer Sura's Guide Page No.195, Q.No.IX - 3.

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Unit

03

CHEMISTRY IN EVERYDAY LIFE

LEARNING OBJECTIVES

- To understand the importance of science in everyday life
- To understand the preparation of soaps and detergents
- To know about kinds of fertilizers and its uses
- To know about uses of cement, gypsum, Epsom and plaster of paris
- To know about uses of phenols and adhesives in day to day life

Evaluation

I. Choose the appropriate answer :

1. Soaps were originally made from _____.

(a) proteins (b) animal fats and vegetable oils
(c) chemicals extracted from the soil
(d) foam booster **[Ans : (b) animal fats and vegetable oils]**

2. The saponification of a fat or oil is done using _____ solution for hot process.

(a) Ammonium hydroxide (b) Sodium hydroxide
(c) Hydrochloric acid (d) Sodium chloride
[Ans : (b) Sodium hydroxide]

3. Gypsum is added to the cement for _____.

(a) fast setting (b) delayed setting
(c) hardening (d) making paste **[Ans : (b) delayed setting]**

4. Phenol is _____.

(a) carbolic acid (b) acetic acid
(c) benzoic acid (d) hydrochloric acid **[Ans : (a) carbolic acid]**

5. Natural adhesives are made from _____.

(a) Protein (b) fat
(c) starch (d) vitamins **[Ans : (c) starch]**

II. Fill in the blanks :

1. _____ gas causes tears in our eyes, while cutting onions.
[Ans : Propanethial s-oxide]
2. Water, coconut oil and _____ are necessary for soap preparation.
[Ans : Sodium hydroxide]
3. _____ is called as farmer's best friend. **[Ans : earthworm]**
4. _____ fertilizer is ecofriendly. **[Ans : Organic]**
5. _____ is an example for natural adhesive. **[Ans : Starch dissolved in water]**

III. True or False. If False, give the correct statement :

1. Concentrated phenol is used as a disinfectant.

Ans : False. **Low concentrated** phenol is used as a disinfectant.

2. Gypsum is largely used in medical industries.

Ans : False. Gypsum is largely used in **cement preparation**.

3. Plaster of Paris is obtained from heating gypsum.

Ans : True.

4. Adhesives are the substances used to separate the components.

Ans : False. Adhesives are the substances used to **join** the components.

5. NPK are the primary nutrients for plants.

Ans : True.

IV. Match the following :

1. Soap	C_6H_5OH
2. Cement	$CaSO_4 . 2H_2O$
3. Fertilizers	NaOH
4. Gypsum	RCC
5. Phenol	NPK

Ans :

1. Soap	NaOH
2. Cement	RCC
3. Fertilizers	NPK
4. Gypsum	$CaSO_4 . 2H_2O$
5. Phenol	C_6H_5OH

V. Arrange the following statements in correct sequence :

1. **Pour that solution into an empty match box, soap can be obtained after drying.**

2. **Take necessary quantity of water in a jar.**

3. **Then add coconut oil drop by drop and stir it well.**

4. **Add concentrated sodium hydroxide in the jar and allow it to cool.**

5. **Try this soap to wash your hand kerchief.**

6. **Cover your work area with old newspaper.**

Ans : 1. Cover your work area with old newspaper.
2. Take necessary quantity of water in a jar.
3. Add concentrated sodium hydroxide in the jar and allow it to cool.
4. Then add coconut oil drop by drop and stir it well.
5. Pour that solution into an empty match box, soap can be obtained after drying.
6. Try this soap to wash your hand kerchief.

VI. Analogy :

1. **Urea : Inorganic fertilizer :**
Vermi compost : _____.

Ans : Organic fertilizer.

2. **_____ : Natural adhesives :**
Cello tape : Artifical adhesives.

Ans : Starch dissolved in water.

VII. Give very short answer:

1. What are the three main constituents of soap?

Ans : The three main constituents of soap are Lye (Sodium hydroxide), coconut oil and water.

2. What are the two different types of molecules found in the soap?

Ans : The two types of molecules found in the soap are (i) water loving, (ii) water hating.

3. Give an example for inorganic fertilizer.

Ans : The Inorganic fertilizers are Urea, Ammonium sulphate and Super phosphate.

4. Mention any three physical properties of phenol.

Ans : Phenol properties :

i. It is a weak acid.
ii. It is a volatile, white crystalline powder.
iii. It is a colourless solution, but changes into red in the presence of dust.

5. Explain the uses of plaster of paris.

Ans : Uses of plaster of pairs :

1. In making black board chalks.
2. In surgery for setting fractured bones.
3. For making casts for statues and toys etc.
4. In construction industry.

6. What are the ingredients of the cement?

Ans : The ingredients of the cement are lime, clay and gypsum.

7. Why gypsum is used in cement production?

Ans : Gypsum is added to control the setting of cement.

VIII. Give short answer:

1. Why earthworm is called as farmer's friend?

Ans : Earthworms take organic wastes as food and produce compost castings. So earthworms are known as Farmer's Friends because of the multitude of services they provide to improve soil health and consequently plant health.

2. Explain the process of manufacturing cement.

Ans :
i. The cement is manufactured by crushing of naturally occurring minerals such as lime, clay and gypsum through milling process.
ii. Cement becomes hardened when it is mixed with water.
iii. Gypsum plays a very important role in controlling the rate of hardening of the cement.
iv. During the cement manufacturing process, a small amount of gypsum is added at the final grinding process. Gypsum is added to control the "setting of cement".

3. What are uses of Gypsum?

Ans : Uses of Gypsum :

i. It is used as fertilizers.
ii. It is used in the process of making cement.
iii. It is used in the process of making Plaster of Paris.