



SCIENCE

8th Standard

TERM - III

**Based on the New Syllabus and
New Textbook for 2019-20**

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- ✦ Term-wise Guide for the year 2019-20, Term-III.
- ✦ Complete Answers to Textbook Exercises.
- ✦ Exhaustive Additional Questions in all Units.
- ✦ Unit Test Question paper for each unit, with answer key
- ✦ Sura's Public Exam Model Question Paper 2019 - 20 with answers (Based on three terms) - Useful for Public Exam 2020.



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NOTE FROM PUBLISHER

It gives me great pride and pleasure in bringing to you **Sura's Science Guide** for **8th Standard Term-III**. It is prepared as per the Revised Textbook for Term-III for the year 2019.

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.

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

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CONTENTS

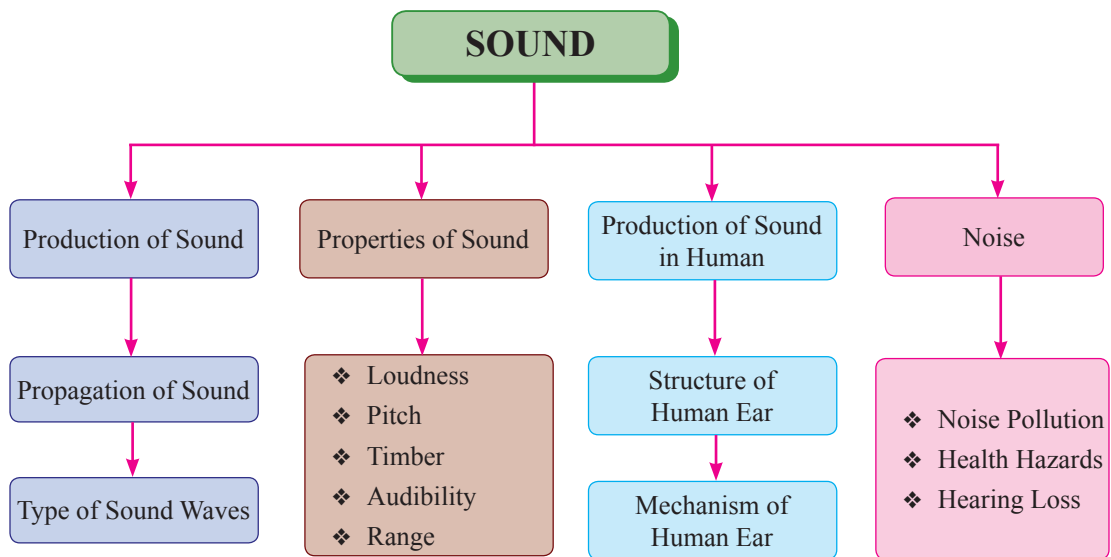
Unit	Name	Page No.
1.	Sound	1 - 16
2.	Magnetism	17 - 28
3.	Universe and Space Science	29 - 38
4.	Water	39 - 52
5.	Acids and Bases	53 - 66
6.	Chemistry in Everyday Life	67 - 76
7.	Crop Production and Management	77 - 86
8.	Conservation of Plants and Animals	87 - 98
9.	Visual Communication	99 - 104
	Sura's Model Public Exam Question Paper 2019 - 20	105 - 108

Unit

1

SOUND

Concept Map



Must Know Definitions

Sound	:	Sound is a form of energy that is transferred as vibrations through the air or any other medium in the form of waves.
Time period	:	The time taken by a vibrating particle to complete one vibration is known as time period of the vibration.
Audible sound	:	Sound with the frequency ranging from 20 Hz to 20000 Hz is called sonic sound or audible sound .
Infrasonic sound	:	A sound with a frequency below 20 Hz is called as subsonic or infrasonic sound .
Ultrasonic sound	:	A sound with a frequency greater than 20000 Hz is called as ultrasonic sound .
Vibration	:	Vibration means a kind of rapid to and fro motion of an object.
Compression	:	The region of high pressure in a longitudinal wave is called a compression .
Rarefaction	:	The region of low pressure in a longitudinal wave is called a rarefaction .
Wavelength	:	The distance between any two consecutive rarefactions or compressions in a wave is called wavelength.
Amplitude	:	The maximum displacement of a wave on either side of its mean position is called amplitude .

- 3. The amplitude of the sound wave decides it's _____.**
 (a) speed (b) pitch (c) loudness (d) frequency
[Ans. (c) loudness]
- 4. What kind of musical instrument is a sitar?**
 (a) String instrument (b) Percussion instrument
 (c) Wind instrument (d) None of these **[Ans. (a) String instrument]**
- 5. Find the odd one out.**
 (a) Harmonium (b) Flute
 (c) Nadaswaram (d) Violin **[Ans. (d) Violin]**
Reason : Violin is a stringed instrument. Other are wind or reed instruments.
- 6. Noise is produced by _____**
 (a) vibrations with high frequency. (b) regular vibrations.
 (c) regular and periodic vibrations. (d) irregular and non-periodic vibrations.
[Ans. (d) irregular non-periodic vibrations]
- 7. The range of audible frequency for the human ear is _____.**
 (a) 2 Hz to 2000 Hz (b) 20 Hz to 2000 Hz
 (c) 20 Hz to 20000 Hz (d) 200 Hz to 20000 Hz
[Ans. (c) 20 Hz to 20000 Hz]
- 8. If the amplitude and frequency of a sound wave are increased, which of the following is true?**
 (a) Loudness increases and pitch is higher
 (b) Loudness increases and pitch is unchanged
 (c) Loudness increases and pitch is lower
 (d) Loudness decreases and pitch is lower
[Ans. (a) Loudness increases and pitch is higher]

II. Fill in the blanks :

- 1.** Sound is produced by _____. **[Ans. vibrating bodies]**
- 2.** The vibrations of a simple pendulum are also known as _____. **[Ans. oscillation]**
- 3.** Sound travels in the form of _____. **[Ans. mechanical waves]**
- 4.** High frequency sounds that cannot be heard by you are called _____. **[Ans. Ultrasonic]**
- 5.** Pitch of a sound depends on the _____ vibration. **[Ans. frequency of the]**
- 6.** If the thickness of a vibrating string is increased, its pitch _____. **[Ans. decrease]**

III. Match the following :

- | | |
|--------------------------|--------------------------------|
| 1. Ultrasonics | - Frequency below 20Hz |
| 2. Speed of sound in air | - Needs material medium |
| 3. Infrasonics | - 330 m |
| 4. Sound propagation | - Frequency more than 20000 Hz |

Ans.

- | | |
|--------------------------|--------------------------------|
| 1. Ultrasonics | - Frequency more than 20000 Hz |
| 2. Speed of sound in air | - 330 m |
| 3. Infrasonics | - Frequency below 20Hz |
| 4. Sound propagation | - Needs material medium |

7. Mention few measures to be taken to reduce the effect of noise pollution.

- Ans. (i)** Strict guidelines should be set for the use of loudspeakers on social, religious and political occasions.
- (ii)** All automobiles should have effective silencers.

8. Define the following terms: a) Amplitude, b) Loudness.

- Ans. (a) Amplitude :** Amplitude is the maximum displacement of a vibrating particle from its mean position. It is denoted by 'A' and its unit is 'metre' (m).
- (b) Loudness :** It is defined as the characteristic of a sound that enables us to distinguish a weak or feeble sound from a loud sound. The unit of loudness of sound is decibel (dB).

9. How does planting trees help in reducing noise pollution?

- Ans. (i)** Plant parts such as stems, leaves, branches wood, etc., absorb sound.
- (ii)** Rough bark and thick, fleshy leaves are particularly effective at absorbing sound due to their dynamic surface area and helps in reducing noise pollution.

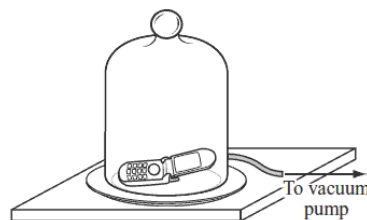
VI. Answer in detail :**1. Describe an experiment to show that sound cannot travel through vacuum.**

- Ans. Aim :** To prove that sound cannot travel through vacuum and it needs a medium for propagation.

Materials Required : Bell jar, mobile phone and vacuum pump.

Procedure :

- (i)** Take a bell jar and a mobile phone.
- (ii)** Switch on the music in the mobile phone and place it in the jar.
- (iii)** Now, pump out the air from the bell jar using a vacuum pump.
- (iv)** As more and more air is removed from the jar, the sound from the mobile phone becomes feebler and finally, very faint.



Conclusion : This experiment proves that sound cannot travel in vacuum and it needs a medium.

2. What are the properties of sound?

- Ans. (a)** Loudness

(b) Pitch

(c) Quality or Timbre

(a) Loudness :

- (i)** It is defined as the characteristic of a sound that enables us to distinguish a weak or feeble sound from a loud sound.
- (ii)** The loudness of a sound depends on its amplitude.
- (iii)** Higher the amplitude louder will be the sound and vice-versa.
- (iv)** When a drum is softly beaten, a weak sound is produced. However, when it is beaten strongly, a loud sound is produced.
- (v)** The unit of loudness of sound is decibel (dB).

(b) Pitch :

- (i)** The pitch is the characteristic of sound that enables us to distinguish between a flat sound and a shrill sound.
- (ii)** Higher the frequency of sound, higher will be the pitch. High pitch adds shrillness to a sound.
- (iii)** The sound produced by a whistle, a bell, a flute and a violin are high pitch sounds.

Ans. Case 1 :

- (i) Now, strike it with a stick.
- (ii) Touch the pan gently with your index finger. Do you feel the vibrations?

Observation :

we can feel the vibration for sometime.

Case 2 :

- (i) Strike the pan with the stick and hold tightly with your hands, immediately after striking.
- (ii) Do you still hear the sound?

Observation :

we cannot hear the sound.

Conclusion : This activity shows the vibrating pan produces sound.

→ ACTIVITY - 3

Take a metal dish, pour some water in it. Strike it at its edge with a spoon. Do you hear any sound?

Ans. We see that a vibrating object produces sound.

Again strike the dish and touch it. Can you feel the dish vibrating?

Ans. I can feel the dish vibrating.

Strike the dish again. Look at the surface of water. Do you see any movement on the water surface?

Ans. I can see the waves on the surface of water.

Now, hold the dish. What change do you observe on the surface of water?

Ans. I cannot see the waves on the surface of water.

**→ ACTIVITY - 5**

Take two stones and strike them together and listen to the sound produced by them. Now take the stones underwater and strike them. You will find that the sound produced by the stones underwater is feeble and not very clear.

Ans. Observation : We observe that the sound produced by the stones underwater is feeble and not very clear.

Conclusion : This activity shows that the speed of sound depends on the properties of the medium through which it travels.

**Additional Questions****I. Choose the correct answer :**

1. Sound cannot travel through _____.

- (a) solid (b) liquid (c) vacuum (d) air [**Ans. (c) vacuum**]

2. Vibrations in a body produce _____.

- (a) pressure (b) sound (c) density (d) current
[**Ans. (b) sound**]

9. Sound is produced by vibrating bodies.

Ans. True.

10. The frequency of sound is varied by varying the length of the vibrating wire.

Ans. True.

IV. Match the following :

1.	String vibration	(a)	Flute
2.	Membrane vibration	(b)	Bicycle bell
3.	Vibration of air	(c)	Table
4.	Vibration of plate	(d)	Gitar

[Ans. (1 - d, 2 - c, 3 - a, 4 - b)]

1.	Audible range	(a)	50 Hz to 45000 Hz
2.	Infrasonic range	(b)	Above 20,000 Hz
3.	Ultrasonic range	(c)	20 Hz to 20 k Hz
4.	Dog's hearing range	(d)	Below 20 Hz

[Ans. (1 - c, 2 - d, 3 - b, 4 - a)]

1.	Pitch	(a)	Woman
2.	Loudness	(b)	Man
3.	Shriller voice	(c)	Frequency
4.	Flatter voice	(d)	Amplitude

[Ans. (1 - c, 2 - d, 3 - a, 4 - b)]

1.	Frequency	(a)	Decibel
2.	Loudness	(b)	Noise buffers
3.	Wavelength	(c)	Hertz
4.	Tree	(d)	Metre

[Ans. (1 - c, 2 - a, 3 - d, 4 - b)]

V. Assertion and Reason.

Mark the correct choice as :

- (a) Both assertion and reason are true and reason is the correct explanation of assertion.
- (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
- (c) Assertion is true but reason is false.
- (d) Assertion is false but reason is true.
- (e) Both Assertion and reason are false.

1. **Assertion** : Sound waves do not travel through vacuum.

Reason : The speed of sound is too small when compared to speed of light.

[Ans. (b) Both assertion and reason are true but reason is not the correct explanation of assertion.]

Reason : Sound is mechanical wave, which require medium to travel.

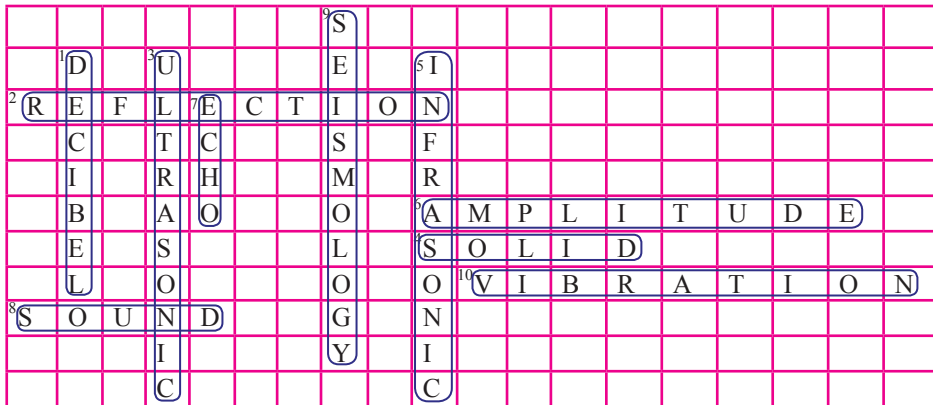
2. **Assertion** : We cannot hear the sound produced by a vibrating pendulum.

Reason : The frequency of the pendulum is very less.

[Ans. (a) Both assertion and reason are true and reason is the correct explanation of assertion.]

Down :

1. A unit used to measure the loudness or intensity of sound.
3. Sound wave whose frequency is too high to be heard by humans.
5. Sound wave whose frequency is too low to be heard by humans.
7. A reflection of sound.
9. The branch of science deals with the study of seismic waves.

**XI. Problems for practice :**

1. A sound has a frequency of 60 Hz and a wavelength of 20 m. What is the speed of the sound?

Solution :**Given :** Frequency $n = 60 \text{ Hz}$ Wavelength $\lambda = 20 \text{ m}$ **To find :** Speed $V = ?$

Formula : $V = n \lambda$
 $= 20 \times 60$
 $V = 120 \text{ ms}^{-1}$

2. A sound has a wavelength of 50 m and a speed of 10 ms^{-1} . What is the frequency of the sound wave?

Solution :**Given :** Wavelength $\lambda = 50 \text{ m}$ Speed $V = 10 \text{ ms}^{-1}$ **To find :** $n = ?$

Formula : $n = \frac{V}{\lambda}$
 $n = \frac{10}{50} = 0.2 \text{ m}$

★★★★★

5. How can you identify non-magnetic materials? Give an example of a non-magnetic material.

- Ans.** (i) Materials which are not attracted by magnets are called non-magnetic materials.
 (ii) Example : Wood, Glass, Rubber, Plastic, Aluminium.

VI. Answer in detail :

1. List out the uses of magnets in day-to-day life.

- Ans.** (i) In ancient times, the magnet in the form of 'direction stone' helped seamen to find the directions during a voyage.
 (ii) Nowadays, magnets are used to generate electricity in dynamos.
 (iii) Electromagnets are used in our day-to-day life.
 (iv) They are used in electric bells and electric motors.
 (v) They are used in loudspeakers and microphones.
 (vi) An extremely powerful electromagnet is used in the fast moving Maglev train to remain floating above the tracks.
 (vii) In industries, magnetic conveyor belts are used to sort out magnetic substances from scraps mixed with non-magnetic substances.
 (viii) Magnets are used in computer in its storing devices such as hard disks.
 (ix) In banks, the magnets enable the computers to read the MICR numbers printed on a cheque.
 (x) The tip of the screw drivers are made slightly magnetic so that the screws remain attached to the tip.
 (xi) At hospitals, extremely strong electro magnets are used in the MRI (Magnetic Resonance Imaging) to scan the specified internal organ.

2. How will you convert a 'nail' into a temporary magnet?

- Ans.** (i) Spread some steel pins on a wooden board and bring an iron nail near them.
 (ii) Now, make one of the magnetic poles of the bar magnet touch one end of the iron nail.
 (iii) Slide it along its length in one direction slowly till the other end is reached.
 (iv) Repeat the process, as shown in the diagram, 20 to 30 times.
 (v) The magnet has to be moved in one direction only.
 (vi) Avoid the swiping of the magnet back and forth.
 (vii) Now, bring the iron nail near the steel pins.
 (viii) The steel pins stick to the iron nail because nail has become a temporary magnet.

3. Write a note on Earth's magnetism.

- Ans.** (i) Earth has been assumed or imagined by the scientists as a huge magnetic dipole.
 (ii) The south pole of the imaginary magnet inside the Earth is located near the geographic north pole and the north pole of the Earth's magnet is located near the geographic south pole.
 (iii) The line joining these magnetic poles is called the magnetic axis.
 (iv) The magnetic axis intersects the geographic north pole at a point called the north geomagnetic pole or northern magnetic pole.
 (v) It intersects the geographic south pole at a point called the south geomagnetic pole or southern magnetic pole.

8. _____ behaves as a magnet under the influence of an external magnetic field produced in a coil of wire carrying a current. [Ans. Soft iron]

9. The unit of frequency is _____. [Ans. hertz]

10. The strip on the back of a credit card/debit card is a magnetic strip, often called a _____. [Ans. magstripe]

III. True or False - if false, give the correct statement :

1. Magnets found in the nature are called artificial magnets.

Ans. False. Correct statement: Magnets found in the nature are called **natural** magnets.

2. Magnetite is an oxide ore of iron with the formula Fe_3O_4 .

Ans. True.

3. The strength of a artificial magnet is well determined and difficult to change.

Ans. False. Correct statement: The strength of a **natural** magnet is well determined and difficult to change.

4. When a magnet is split vertically, the length of the magnet is altered and each piece acts as a magnet.

Ans. True.

5. Unlike poles attract each other and like poles repel each other.

Ans. True.

6. The unit of magnetic field is metre.

Ans. False. Correct statement: The unit of magnetic field is tesla or gauss.

7. The compass needle gets deflected to a large extent, which it is closer to the magnet.

Ans. True.

8. Magnetic character of diamagnetic substances is not affected by the external temperature.

Ans. True.

9. Magnets used in electric bells and cranes are the examples of permanent magnets.

Ans. False. Correct statement: Magnets used in electric bells and cranes are the examples of **temporary** magnets.

10. Magnetic neutron star is located in the Milky way Galaxy.

Ans. True.

IV. Match the following :

1.	Directive property	(a)	Never intersect
2.	Magnetic poles	(b)	Magnetic compass
3.	Lines of force	(c)	Attract
4.	Unlike poles	(d)	Exist in pairs

[Ans. (1 - b, 2 - d, 3 - a, 4 - c)]

V. Very short answer questions :

1. What is the other name of lodestone?

Ans. Magnetite. (Iron oxide)

2. Convert 1 tesla into gauss.

Ans. 1 tesla = 10,000 gauss.

4. A freely suspended magnet aligns along the _____ direction.

- (a) North-east (b) North - west
(c) North-south (d) South-west

II. Fill in the blanks.

(4 × 1 = 4)

5. _____ are used to lift heavy iron pieces

6. A magnet has _____ magnetic poles.

7. Attractive property of a magnet is more at the _____.

8. The strip on the back of a credit card/debit card is a magnetic strip, often called a _____.

III. Write True or False. If false, write the correct statement. (2 × 1 = 2)

9. The compass needle gets deflected to a large extent, which it is closer to the magnet.

10. Magnets found in the nature are called artificial magnets.

IV. Answer the following briefly :

(5 × 2 = 10)

11. Distinguish between natural and artificial magnets?

12. What is magnetic field?

13. Mention the properties of a magnet.

14. Write a note on Maglev train.

15. Draw the magnetic field lines of a bar magnet.

V. Answer the following in detail:

(5 × 1 = 5)

16. (a) How will you convert a 'nail' into a temporary magnet?

(or)

(b) Compare the characteristics of diamagnetic, paramagnetic and ferromagnetic materials.

★★★★★

Answer Key

I. 1. (d) All of these

2. (d) Neodymium

3. (c) both a and b

4. (c) North-south

II. 5. Electromagnets

6. two

7. poles

8. magstripe

III. 9. True

10. False. Correct statement: Magnets found in the nature are called natural.

IV. 11. Refer Sura's Guide, Textbook Q. No. V - 3

12. Refer Sura's Guide, Textbook Q. No. V - 1

13. Refer Sura's Guide, Additional Q. No. VI - 7

14. Refer Sura's Guide, Additional Q. No. VI - 3

15. Refer Sura's Guide, Additional Q. No. VI - 10.

V. 16. Refer Sura's Guide, Textbook Q. No. VI - 2

(or)

Refer Sura's Guide, Additional Q. No. VII - 2.

★★★★★

4. PSLV and GSLV are India's popular satellites.

Ans. True.

5. The propellant of a rocket is only in the form of solids.

Ans. False. Correct statement: The propellant of a rocket is **may be** in the form of solids **or liquids**.

IV. Match the following :

- | | | |
|----------------|---|---------------------------------------|
| 1. Chandrayaan | - | Fuel |
| 2. Mangalyaan | - | Moon |
| 3. Cryogenic | - | First manned mission to the moon |
| 4. Apple - 8 | - | First man landing mission to the moon |
| 5. Apollo - 11 | - | Mars |

Ans.

- | | | |
|----------------|---|---------------------------------------|
| 1. Chandrayaan | - | Moon |
| 2. Mangalyaan | - | Mars |
| 3. Cryogenic | - | Fuel |
| 4. Apple - 8 | - | First manned mission to the moon |
| 5. Apollo - 11 | - | First man landing mission to the moon |

V. Answer briefly:

1. What are celestial objects?

Ans. The stars, the planets, the Moon and any other objects like asteroids and comets in the sky are called celestial objects.

2. Define galaxy.

Ans. A collection of billions of stars held together by mutual attraction is called galaxy.

3. What are the objectives of Chandrayaan -1?

- Ans. (i) To find the possibility of water on the Moon.
 (ii) To find the elements of matter on the Moon.
 (iii) To search for the existence of Helium-3.
 (iv) To make a 3-dimensional atlas of the Moon.
 (v) To study about the evolution of the solar system.

4. List out the objectives of Mangalyaan.

- Ans. (i) To develop the technology required for interplanetary mission.
 (ii) To explore the surface of Mars.
 (iii) To study the constituents of the Martian atmosphere.
 (iv) To provide information about the future possibility of life and past existence of life on the planet.

5. What are Cryogenic Fuels?

Ans. Cryogenic fuels are the fuels used in rocket engine. They are maintained or stored at very low temperature in order to keep them in liquid state.

6. Name the Indians worked at NASA.

Ans. Kalpana Chawla and Sunita Williams.

V. Very short answer questions :

1. Name an Indian pilot who was selected as a cosmonaut in a joint space program between India and Soviet Russia.

Ans. Rakesh Sharma.

2. Name the solid fuels used in rockets.

Ans. Polyurethanes and Polybutadienes.

3. Name the fuels which do not need any ignition system.

Ans. Cryogenic fuels.

4. Name the principle which is used in rocket propulsion.

Ans. Newton's third law (For every action there is an equal and opposite reaction).

5. What are the 4 major parts or systems in a rocket?

Ans. (i) Structural system

(ii) Payload system

(iii) Guidance system

(iv) Propulsion system

6. Name the 2 popular rockets of India.

Ans. Polar satellite launch vehicle (PSLV)

Geosynchronous satellite launch vehicle (GSLV)

7. What are the most popular missions of NASA?

Ans. Apollo missions.

VI. Short answer questions.

1. Write a note on propulsion system of rocket.

Ans. (i) It takes up most of the space in a rocket.

(ii) It consists of fuel (propellant) tanks, pumps and a combustion chamber.

(iii) There are two main types of propulsion systems, liquid propulsion system and solid propulsion system.

2. What is a propellant?

Ans. A propellant is a chemical substance that can undergo combustion to produce pressurized gases whose energy is utilized to move a rocket against the gravitational force of attraction.

3. Write a note on orbiter and lander of Chandrayaan - 2.

Ans. (i) Orbiter : It revolves around the Moon and it is capable of communicating with Indian Deep Space Network (IDSN) at Bylalu as well as Vikram Lander.

(ii) Lander : It is named as Vikram in the memory of Dr. Vikram A. Sarabhai, the father of Indian space program.

4. Write about Sunitha Williams's work at NASA.

Ans. (i) Sunitha Williams started her career as an astronaut in August 1998.

(ii) She made two trips to the International Space Station.

(iii) She set a record of the longest space walking time by a female astronaut in 2012, with a total space walk of 50 hour and 40 minute (7 space walks).

(iv) She is one of the crew of NASA's Manned Mars Mission.



TEXT BOOK EXERCISES

I. Choose the correct answer :

1. Water changes to ice at _____.
(a) 0°C (b) 100°C (c) 102°C (d) 98°C [Ans. (a) 0°C]
2. Solubility of carbon dioxide in water is high when the _____.
(a) pressure is low (b) pressure is high
(c) temperature is high (d) None of the above
[Ans. (b) pressure is high]
3. The gas collected at the cathode on electrolysis of water is _____.
(a) oxygen (b) hydrogen
(c) nitrogen (d) carbon dioxide [Ans. (b) hydrogen]
4. Which of the following is a water pollutant?
(a) Lead (b) Alum
(c) Oxygen (d) Chlorine [Ans. (a) Lead]
5. Permanent hardness of water is due to the presence of _____.
(a) Sulphates and Chlorides (b) Dust particles
(c) Carbonates and Bicarbonates (d) Other soluble particles
[Ans. (a) Sulphates and Chlorides]

II. Fill in the blanks :

1. Water is colourless, odourless and _____. [Ans. tasteless]
2. The boiling point of water is _____. [Ans. 100°C]
3. Temporary hardness of water can be removed by _____ of water. [Ans. boiling]
4. The density of water is maximum at _____. [Ans. 4°C]
5. Loading speeds up the process of _____. [Ans. Sedimentation]

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

1. Sewage should be treated well before being discharged it into water bodies.
Ans. True.
2. Sea water is suitable for irrigation as it contains dissolved salts.
Ans. False. Correct statement: Sea water is **not** suitable for irrigation as it **has high salinity**.
3. Excessive use of chemical fertilizers depletes the soil and causes water pollution.
Ans. True.
4. Water unfit for drinking is called potable water.
Ans. False. Correct statement: Water **suitable** for drinking is called potable water.
5. Soap lathers well in hard water.
Ans. False. Correct statement: Soap lathers well in **soft** water.

5. The freezing point of water _____ with increase in pressure.
(a) increase (b) decreases (c) remains same (d) none
[Ans. (b) decreases]
6. Every litre of sea water contains _____ grams of dissolved salts.
(a) 40 (b) 70 (c) 35 (d) 10 [Ans. (c) 35]
7. The process of adding chlorine in adequate amounts to water is called _____.
(a) Sterilisation (b) Ozonisation (c) Aeration (d) Chlorination
[Ans. (d) Chlorination]
8. _____ from the air and sunlight destroy the germs present in water.
(a) Oxygen (b) Hydrogen (c) Nitrogen (d) none
[Ans. (a) Oxygen]
9. Aquatic plants make use of dissolved _____ for photosynthesis.
(a) O_2 (b) CO_2 (c) N_2 (d) H_2 [Ans. (b) CO_2]
10. Which one of the following has the highest latent heat of vaporization?
(a) Ice (b) Water (c) Steam (d) Metal
[Ans. (c) Steam]

II. Fill in the blanks :

1. The chemical name of water is _____. [Ans. Dihydrogen monoxide]
2. $2H_2O \xrightarrow{\text{Electrolysis}} 2H_2 + \underline{\hspace{2cm}}$. [Ans. O_2]
3. Water was first prepared by _____. [Ans. Henry Cavendish]
4. Pure water boils at _____ $^{\circ}C$ at one atmospheric pressure. [Ans. 100]
5. Freezing of water will cause an _____ in the volume. [Ans. expansion]
6. _____ has the highest latent heat of fusion. [Ans. Ice]
7. One gram of water requires _____ of heat to raise its temperature by $1^{\circ}C$. [Ans. 1 Calorie]
8. Water is circulated around car engine using the _____ pump and the heat is absorbed.
[Ans. radiator]
9. Pure water is _____ and it shows no action towards litmus paper. [Ans. neutral]
10. _____ does not react with water and any temperature. [Ans. Copper]
11. _____ reacts with steam to produce water gas. [Ans. Red hot carbon]
12. Chlorine gas dissolves in water and produces _____. [Ans. hydrochloric acid]
13. Carbon dioxide dissolved in water reacts with limestone to form _____.
[Ans. Calcium carbonate]
14. RO purifiers have a _____ unit that destroys the germs present in water.
[Ans. ultraviolet]
15. _____ is the process in which air under pressure is blown into filtered water.
[Ans. Aeration]

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

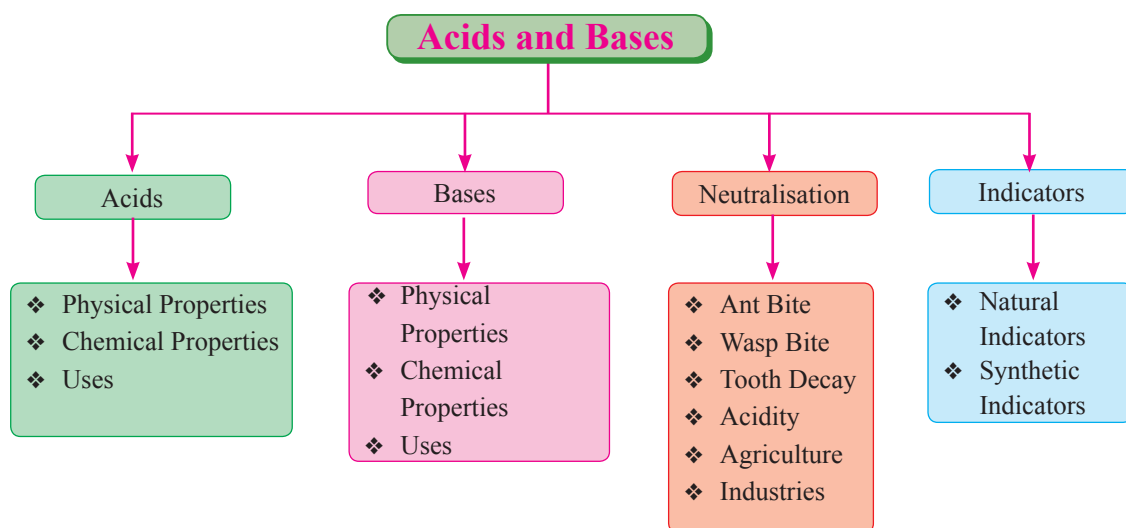
1. Washing soda is used to remove permanent hardness of water.
Ans. True.

Unit

5

ACIDS AND BASES

Concept Map



Must Know Definitions

Acid	:	The chemical compound which has sour taste is called acid .
Organic acid	:	Acid which occur naturally in fruits and vegetables is called organic acid .
Alkalies	:	Water soluble bases are called alkalies.
Bases	:	Bases are chemical substances that are corrosive and bitter in taste.
Neutralization	:	Neutralization is a chemical reaction in which an acid and a base react with each other to form water and salt.
Indicator	:	An indicator or acid - base indicator is a chemical substance which indicates the acidic or basic nature of a solution by suitable colour change.

→ **ACTIVITY - 6**

Find out the nature of the solution.

Sample solution	Change of colour in litmus paper		Acid / Base
	Red litmus	Blue litmus	
Lemon juice	-	✓	Acid
Vinegar	-	✓	Acid
Calcium hydroxide solution	✓	-	Base
Bathing Soap solution	✓	-	Base
Orange juice	-	✓	Acid

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Additional Questions**I. Choose the correct answer :**

- Acids present in fruits and vegetables are called _____ acids.
(a) organic (b) strong (c) mineral (d) fruit
[Ans. (a) organic]
- Vinegar is _____ in taste.
(a) bitter (b) sour (c) sweet (d) sweetless
[Ans. (b) sour]
- Citric acid is present in _____.
(a) curd (b) milk (c) lemon (d) spinach
[Ans. (c) lemon]
- Which of the following is not a natural indicator?
(a) Litmus (b) Turmeric
(c) Methyl orange (d) Hibiscus
[Ans. (c) Methyl orange]
- An acid is _____.
(a) bitter is taste (b) soapy to touch
(c) corrosive in nature (d) all the above
[Ans. (c) corrosive in nature]
- The common salt is _____.
(a) sodium carbonate (b) sodium bicarbonate
(c) sodium nitrate (d) sodium chloride
[Ans. (d) sodium chloride]
- Add few drops of hibiscus indicator in soap solution. What do you observe?
(a) It turns green (b) It turns magenta
(c) It turns yellow (d) It turns red
[Ans. (a) It turns green]
- Acids and bases can be identified in the laboratory by _____.
(a) an indicator (b) tasting (c) touching (d) smelling
[Ans. (a) an indicator]
- Lemon juice will turn _____.
(a) phenolphthalein pink (b) red litmus blue
(c) turmeric indicator red (d) methyl orange red
[Ans. (d) methyl orange red]

Ans.

	Acid	Base	Salt
i.	HCl	NaOH	NaCl
ii.	HNO ₃	NaOH	NaNO ₃
iii.	CH ₃ COOH	NaOH	CH ₃ COONa
iv.	H ₂ SO ₄	NaOH	Na ₂ (SO ₄) ₂

10. Complete the table :-

	Indicator	Acidic solution	Basic solution
i.	Blue litmus	Red	-
ii.	-	No change in colour	Blue
iii.	-	-	Red
iv.	Methyl orange	-	-

Ans.

	Indicator	Acidic solution	Basic solution
i.	Blue litmus	Red	No change in colour
ii.	Red litmus	No change in colour	Blue
iii.	Phenolphthalein	Colourless	Red
iv.	Methyl orange	Red	Yellow

VIII. Long answer questions :

1. Write a note on : a) Ant bite b) Wasp bite.

Ans. a) Ant bite :

- (i) Whenever bees or red ants bite they inject an acid called formic acid.
- (ii) These acids cause burning sensation and pain.
- (iii) To suppress the pain, a suitable base in the form of calcium hydroxide (readily available at home) is applied to neutralise the formic acid.

b) Wasp bite :

- (i) When we are bitten by wasp, we feel the burning sensation and pain.
- (ii) It is due to an alkaline substance injected by the insect.
- (iii) To neutralize the alkalinity we use vinegar which is an acid to neutralise.

2. Write a note on : a) Litmus. b) Phenolphthalein. c) Methyl orange

Ans. a) Litmus :

- (i) Litmus is the most common indicators used in the laboratories.
- (ii) Litmus is a natural indicator which is extracted from lichens.
- (iii) It is available in the form of solution or in the form of strips prepared by absorbing litmus solution on filter paper.
- (iv) It is either red or blue in colour.
- (v) Blue litmus paper turns red in acidic solution and red litmus paper turns blue in the basic solution.

b) Phenolphthalein :

- (i) Phenolphthalein is a colourless compound.
- (ii) Its alcoholic solution is used as an indicator.
- (iii) It is colourless in acidic solution but turns pink in basic solution.

c) Methyl orange :

- (i) Solid methyl orange dissolved in hot water and its filtrate is used as an indicator.
- (ii) It turns red in acidic solution and yellow in basic solution.

2. Mention the advantages of natural gas.

- Ans.** (i) It produces lot of heat as it is easily burnt.
 (ii) It does not leave any residue.
 (iii) It burns without smoke and so causes no pollution.
 (iv) This can be easily supplied through pipes.
 (v) It can be directly used as fuel in homes and industries.

3. Expand CNG. List out its uses.

- Ans.** CNG - Compressed Natural Gas.
 (i) It is the cheapest and cleanest fuel.
 (ii) Vehicles using this gas produce less carbon dioxide and hydrocarbon emission.
 (iii) It is less expensive than petrol and diesel.

4. Identify the gas known as syngas. Why is it called so?

- Ans.** Water Gas is also called as syngas or synthesis gas as it is used to synthesize methanol and simple hydrocarbons. It is used as an industrial fuel also.

5. Anthracite is known as the highest grade coal. Give reason.

- Ans.** (i) Anthracite is the highest grade coal.
 (ii) It has a very light weight and the highest heat content.
 (iii) Anthracite coal is very hard, deep black and shiny.
 (iv) It contains 86-97% carbon and has a heating value slightly higher than bituminous coal.
 (v) It burns longer with more heat and less dust.

6. Distinguish between octane number and cetane number.

Ans.

Octane Number	Cetane Number
Octane rating is used for petrol	Cetane rating is used for diesel
It measures the amount of octane present in petrol.	It measures the ignition delay of the fuel in diesel engine.
Octane number of petrol can be increased by adding benzene or toluene.	Cetane number of diesel can be increased by adding acetone.
The fuel with high octane number has low cetane number	The fuel with high cetane number has low octane number

7. Name the places in Tamilnadu harnessing wind energy from wind mills.

- Ans.** Wind mills are mostly located at Kayathar, Aralvaimozhi, Palladam and Kudimangalam in Tamil Nadu.

8. Solar energy is a non - depleting energy. Justify.

- Ans.** (i) Solar energy is the only viable fuel source of non - depleting nature for, Sun provides a free and renewable source of energy.
 (ii) It is the renewable type of energy without endangering the environment.
 (iii) It is the potential source to replace the fossil fuel in order to meet the needs of the world. With the advancements in science and technology, solar energy has become more affordable, and it can overcome energy crisis.

7. What are the characteristics of fuel?

- Ans.** (i) It should be readily available.
 (ii) It should be easily transportable
 (iii) It should be less expensive
 (iv) It should have high calorific value
 (v) It should produce large amount of heat
 (vi) It should not leave behind any undesirable substances.

8. Write a note on bio - diesel.

Ans. Bio diesel is a fuel obtained from vegetable oils such as soya bean oil, jatropha oil, corn oil, sunflower oil, cotton seed oil, rice-bran oil and rubber seed oil.

9. What are the application of solar energy?

- Ans.** (i) It is used in solar water heater.
 (ii) It is used in drying of agricultural and animal products.
 (iii) It is used in electric power generation.
 (iv) It is used in solar green houses.
 (v) It is used in solar pumping and solar distillation. It is used for solar cooking and solar furnaces also.

10. Write a note on wind energy.

Ans. Wind energy is obtained with the help of wind mills. When wind blows, they rotate the blades of the wind mills and current is produced in the dynamo. Wind mills are mostly located at Kayathar, Aralvaimozhi, Palladam and Kudimangalam in Tamil Nadu.

VI. Long answer type questions :**1. What are the uses of coal?**

- Ans.** (i) Coal is used to generate heat and electricity.
 (ii) It is used to make derivatives of silicon which are used to make lubricants, water repellents, resins, cosmetics, hair shampoos and toothpaste.
 (iii) Activated charcoal is used to make facepacks and cosmetics.
 (iv) It is used to make paper.
 (v) It helps to create alumina refineries.
 (vi) Carbon fibre is an extremely strong but lightweight material is used in construction, mountain bikes, and tennis rackets.
 (vii) Activated carbon used in filters for water and air purification and in kidney dialysis machines is obtained from coal.

2. Explain destructive distillation of Coal.

- Ans.** (a) The destructive distillation of coal can be carried out in the laboratories.
 (b) Finely powdered coal is taken in a test tube and heated.
 (i) At a particular temperature, coal breaks down to produce coke, coal tar, ammonia and coal gas.

Threshing	:	The process of separating the grains from their chaffs or pods is threshing .
Winnowing	:	Winnowing is the process of separating the grains.
Fumigation	:	Fumigation is the process of spraying chemical vapors to minimize pest and insects in godowns.
Crop rotation	:	Crop rotation is planting a series of different crops in the same field following a defined order.
Bioindicator	:	A bioindicator or biological indicator is any species or group of species whose function or status reveals the qualitative status of the environment.
Foliar feeding	:	Foliar feeding is a technique of feeding plants by applying liquid fertilizer directly to their leaves.



TEXT BOOK EXERCISES

I. Choose the best answer :

- The process of placing seeds in the soil is called as _____.
 (a) ploughing (b) sowing
 (c) crop production (d) crop rotation [Ans. (b) sowing]
- Organism that control insects and pests of plant crops is _____.
 (a) bio-pesticides (b) bio-fertilizers
 (c) earthworms (d) neem leaves [Ans. (a) bio-pesticides]
- The method in which water flows over the soil surface and allow it to infiltrate is _____.
 (a) irrigation (b) surface irrigation
 (c) springler irrigation (d) drip irrigation [Ans. (b) surface irrigation]
- Effective microorganisms preparation is not used in _____.
 (a) seed treatment (b) foliar spray
 (c) soil treatment (d) bio-predators [Ans. (a) seed treatment]
- Which of the following is not present in Panchakavya?
 (a) cow dung (b) cow's urine (c) curd (d) sugar [Ans. (d) sugar]

II. Fill in the blanks :

- The process of actively growing seedling from one place and planting in the main field for further growth is called _____. [Ans. Transplantation]
- _____ is a plant growing where it is not wanted. [Ans. Weed]
- The chemicals used for killing the weeds or inhibiting their growth are called as _____. [Ans. herbicides]
- _____ seed transfer its unique characteristics to the descents. [Ans. Heirloom seeds]

4. Neem is a good _____.
 (a) Bio-fertilizer (b) green manure (c) insect repellent (d) Bio predator
[Ans. (c) insect repellent]
5. Royal Botanical garden is located in _____.
 (a) Chennai (b) Mumbai (c) New Delhi (d) Kolkatta
[Ans. (d) Kolkatta]
6. _____ is a method of sowing seeds
 (a) Tillage (b) Winnowing (c) Weeding (d) Dibbling
[Ans. (d) Dibbling]

II. Fill in the blanks :

1. Crops sown in rainy season are called _____. **[Ans. Kharif]**
2. The summer crops are also called _____ crops. **[Ans. zaid]**
3. _____ is an example of Rabi crop. **[Ans. Wheat]**
4. India is the largest producer of _____ in the world. **[Ans. Banana/ Mangoes]**
5. _____ is a fodder crop. **[Ans. Sorghum]**
6. Placing a seed in a pit or furrow is called _____. **[Ans. Dibbling]**
7. The process of separating the grains from their chaffs is called _____. **[Ans. Threshing]**
8. Heirloom seeds are also called _____ seeds. **[Ans. organic]**
9. _____ is commonly called Pusa institute. **[Ans. IARI]**
10. The first KVK was established in 1974 in _____. **[Ans. Pondicherry]**
11. Vermiwash is used as a _____ for crops. **[Ans. foliar spray]**
12. _____ can be used for seed treatment. **[Ans. Pachgavya]**
13. _____ is the main source of bio-fertilizer. **[Ans. Cyanobacteria]**

III. Match the following :

1.	Paddy	(a)	Fodder
2.	Muskmelon	(b)	Oil crop
3.	Millet	(c)	Zaid crop
4.	Sesame	(d)	Food crop

[Ans. (1 - d, 2 - c, 3 - a, 4 - b)]

1.	Nostoc	(a)	Pest
2.	Bacillus	(b)	Cyanobacteria
3.	Cotton bollworm	(c)	Legume
4.	Rhizobium	(d)	Bio-pesticide

[Ans. (1 - b, 2 - d, 3 - a, 4 - c)]

V. Answer the following in detail:**(5 × 1 = 5)****16.** (a) What is weed? Explain the different methods of weed control.

(or)

(b) Explain the agricultural practices.

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Answer Key**I.** 1. (a) bio-pesticides 2. (d) sugar 3. (d) Dibbling**II.** 4. herbicides 5. Weed 6. wheat 7. Pachgavya**III.** 8. Bio-pesticide - Bacillus thuringiensis

9. Bio-predators - Control white flies

10. Bio-fertilizer - Improve soil fertility

IV. 11. Refer Sura's Guide, Textbook Q. No. IV - 2

12. Refer Sura's Guide, Textbook Q. No. IV - 6

13. Refer Sura's Guide, Textbook Q. No. IV - 3

14. Refer Sura's Guide, Additional Q. No. IV - 3

15. Refer Sura's Guide, Additional Q. No. IV - 8.

V. 16. Refer Sura's Guide, Textbook Q. No. V - 3

(or)

Refer Sura's Guide, Textbook Q. No. V - 1

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b) Urbanization :

- (i) Increase in population needs the expansion of cities.
- (ii) More land is needed to establish housing and settlement.
- (iii) Requirements like construction of roads, development of houses, mineral exploitation and expansion of industries also arise due to urbanisation.
- (iv) Forests are destroyed to meet all these needs.

c) Mining :

- (i) Mining of coal, diamond and gold require a large amount of forest land.
- (ii) Large number of trees are cut down to clear the forest area. The waste that comes out from mining pollutes the environment and affects the nearby plants.

d) Construction of dams :

To provide water supply to the increasing population, large size dams are constructed. Hence, a great extend of forest area is being cleared.

e) Timber Production :

- (i) Wood-based industries like paper, match-sticks, furniture need a substantial amount of wood supply.
- (ii) Wood is the most commonly used fuel, thus, a large number of trees are being cut down for fuel supplies.
- (iii) Illegal wood cutting is the main reason for the destruction of some valuable plants.

f) Forest fire :

- (i) Forest fire be caused by humans, accidents or natural factors.
- (ii) Forest fires wipe out thousands of acres of forest land each year all over the world. This has tremendous effects on biodiversity and the economy as well.

g) Cyclones :

Cyclones destroy the trees on a massive scale.

Effects of Deforestation :**a) Extinction of species :**

Deforestation has resulted in the loss of many wonderful species of plants and animals and many are on the verge of extinction.

b) Soil Erosion :

- (i) When the trees are cut down, soils are exposed to the Sun's heat.
- (ii) Extreme temperature of the summer dries up the moisture and makes the nutrients to evaporate. It also affects the bacteria that helps in the breakdown of organic matter.

c) Water cycle :

When trees are cut down, the amount of water vapour released decreases for transpiration and hence there is a decrease in the rainfall.

d) Floods :

When the trees are cut down, the flow of water is disrupted and it leads to flooding.

Additional Questions

I. Choose the correct answer :

1. _____ is not a green house gas.
 (a) Oxygen (b) Carbon dioxide
 (c) Nitrous oxide (d) Methane [Ans. (a) Oxygen]
2. Chipko Movement was started in _____.
 (a) 1980 (b) 1970 (c) 1960 (d) 1953 [Ans. (b) 1970]
3. Each year _____ is celebrated as 'World Biodiversity Day'.
 (a) April 20 (b) May 22 (c) December 8 (d) October 12
[Ans. (b) May 22]
4. _____ is not an endangered animal .
 (a) Nilgiri Tahr (b) Asiatic Lion (c) Snow leopard (d) Dodo duck
[Ans. (d) Dodo duck]
5. Yeoman Butterfly has been declared as state butterfly of _____.
 (a) Manipur (b) Nagaland (c) Tamil Nadu (d) West Bengal
[Ans. (c) Tamil Nadu]
6. _____ is not a biosphere reserve.
 (a) Nanda devi (b) Manas (c) Magamali (d) Sunderbans
[Ans. (c) Magamali]
7. _____ is the largest animal rights organization in the world.
 (a) Blue cross (b) IUCN (c) WWF (d) PETA
[Ans. (d) PETA]

II. Fill in the blanks :

1. The founder of Chipko movement was _____. [Ans. Sunderlal Bahuguna]
2. In a Cryo bank, the seeds are preserved in _____. [Ans. liquid nitrogen]
3. The variety of life forms is called _____. [Ans. Biodiversity]
4. Replanting of trees is called _____. [Ans. Reforestation]
5. The details of endangered species can be viewed in _____. [Ans. Red Data Book]
6. Blue cross of India was established in _____ in India. [Ans. Chennai]
7. _____ has led to destruction of coral seeds. [Ans. Biomagnification]
8. _____ Biosphere reserve is located in Tamil Nadu . [Ans. Nilgiri]
9. National park is an example for _____ conservation. [Ans. In-situ]
10. World Wild life Day is celebrated on _____. [Ans. March 3rd]

III. Very short answer :

1. What is Reforestation?

Ans. Reforestation is the natural or intentional replanting of the existing forests that have been destroyed through deforestation.

Unit

9

VISUAL
COMMUNICATION

TEXT BOOK EXERCISES

I. Choose the best answer :

1. The Keyboard shortcut is used to copy the selected text

- (a) Ctrl + C (b) Ctrl + V (c) Ctrl + X (d) Ctrl + A [Ans. (a) Ctrl + C]

2. The Keyboard shortcut is used to cut the selected text

- (a) Ctrl + C (b) Ctrl + V (c) Ctrl + X (d) Ctrl + A [Ans. (c) Ctrl+x]

3. If the ruler is not displayed in the screen, _____ option is clicked.

- (a) View-> ruler (b) view-> task
(c) File-> save (d) Edit-> paste [Ans. (a) View-> ruler]

4. How many types of page orientation are there in Libre office Writer?

- (a) 1 (b) 2 (c) 3 (d) 4 [Ans. (b) 2]

5. The menu used to save the document is

- (a) File-> open (b) file-> print
(c) file-> save (d) Edit-> close [Ans. (c) file-> save]

II. Answer briefly :

1. What is the use for Text document software?

Ans. (i) A text file is used to store standard and structured textual data or information that is human readable.

(ii) It is defined in several different formate including the most popular ASCII for cross platform usage and ANSI for windows - based operating platforms.

2. What is selecting text?

Ans. Selecting is the process of highlighting text or picking an object. For example, a user may select text to copy, cut or move that text to an alternate location or select a file they want to view.

3. How to close a document?

Ans. Close the current document by selecting File → Close command on the menu bar or click the Close icon if it is visible on the Standard toolbar.

4. How can you change the margins?

Ans. If the user is not having the exact value for the margins then the Ruler option on the View menu can be used to change the margins.

Following steps are used in this method:

- (i) If the ruler is not displayed in the screen, View → Ruler option is clicked.
- (ii) The gray area of the ruler indicates the margin's top area.
- (iii) The mouse pointer is then moved in between the gray and white area of the ruler.
- (iv) When the pointer is in the right spot, it changes into a line with arrows on both sides.
- (v) The margin guide is dragged to a new location.



UNIT TEST

Time : 60 min.

Marks : 20

I. Choose the correct answer:

(4 × 1 = 4)

1. The menu is used to save the document
(a) File-> open (b) file-> print (c) file-> save (d) file-> close
2. The Keyboard shortcut is used to copy the selected text
(a) Ctrl + C (b) Ctrl + V (c) Ctrl + X (d) Ctrl + A
3. How many types of page orientation are there in Libre office Writer?
(a) 1 (b) 2 (c) 3 (d) 4
4. _____ is the LibreOffice formula or equation editor.
(a) Impress (b) Drawing (c) Base (d) Math

II. Answer the following:

(6 × 2 = 12)

5. What is right alignment?
6. What is the use for Text document software?
7. What is the difference between cut and copy?
8. How to close a document?
9. What is selecting text?
10. What is paragraph alignment?

III. Answer the following:

(1 × 4 = 4)

11. List the steps of moving the text.

16. (i) Expansion
(ii) Increase in temperature
(iii) Change in state
 17. Metals can be drawn into thin wires. This property of metals is called ductility. Example :
Copper wires.
 18. a) Manometer, Barometer.
b) Lowers pressure, High pressure.
 19. a) Fermentation
b) pole
 20. During lightning and thunder, we should avoid standing in ground and open spaces. You should make yourself as small as possible by squatting. It is however safe to stay inside a car because the car acts as a shield and protects us from the electric field generated by the storm.
 21. 1 - d, 2 - a, 3 - b, 4 - c
 22. Refer Sura's Guide, Unit - 3, Textbook Q. No. V - 3
 23. Refer Sura's Guide, Unit - 2, Textbook Q. No. VII - 1
 24. If both assertion and reason are true and the reason is the correct explanation of assertion.
 25. Refer Sura's Guide, Unit - 4, Textbook Q. No. VII - 2
 26. Refer Sura's Guide, Unit - 5, Textbook Q. No. IV - 4
 27. Refer Sura's Guide, Unit - 2, Textbook Q. No. V - 2
 28. Refer Sura's Guide, Unit - 1, Textbook Q. No. VII - 2
 29. Refer Sura's Guide, Unit - 8, Textbook Q. No. V - 3
 30. Refer Sura's Guide, Unit - 7, Textbook Q. No. IV - 5
- III. 31. a) Refer Sura's Guide, Unit - 1, Textbook Q. No. VI - 1
- (or)
- b) Refer Sura's Guide, Unit - 3, Textbook Q. No. VI - 2
32. a) Refer Sura's Guide, Unit - 2, Textbook Q. No. VI - 1
- (or)
- b) Refer Sura's Guide, Unit - 4, Textbook Q. No. VIII - 3
33. a) Refer Sura's Guide, Unit - 7, Textbook Q. No. V - 1
- (or)
- b) Refer Sura's Guide, Unit - 8, Textbook Q. No. V - 1
34. a) Refer Sura's Guide, Unit - 5, Textbook Q. No. V - 3
- (or)
- b) Refer Sura's Guide, Unit - 6, Textbook Q. No. V - 2

