

## LESSON 1 HEAT AND TEMPERATURE

### IV. Give very short answer

1. Temperature of Srinagar (J&K) is  $-4^{\circ}\text{C}$  and in Kodaikanal is  $3^{\circ}\text{C}$  which of them has greater temperature? What is the difference between the temperatures of these two places?

- Kodaikanal has greater temperature.
- Temperature of srinagar (J &K) =  $-4^{\circ}\text{C}$
- Temperature of Kodaikanal =  $3^{\circ}\text{C}$
- Difference =  $-4^{\circ}\text{C} + 3^{\circ}\text{C} = 7^{\circ}\text{C}$
- Srinagar is colder than that of kodaikanal.

2. Jyothi was prepared to measure the temperature of hot water with a clinical thermometer. Is it right or wrong? Why?

- It is wrong, because clinical thermometer has small temperature range ( $35^{\circ}\text{C}$  to  $42^{\circ}\text{C}$  or  $94^{\circ}\text{F}$  to  $108^{\circ}\text{F}$ ).

3. A clinical thermometer is not used to measure the temperature of air, why?

- The range of the clinical thermometer is less than that of thermometer used to measure temperature of air.

4. What is the use of kink in clinical thermometer?

- A kink in clinical thermometer prevents the mercury from flowing back into the bulb when the thermometer is taken out of the patient's mouth.

5. Why do we jerk a clinical thermometer before we measure the body temperature?

- The jerk to the thermometer will allow the mercury level to flow into the bulb so that the mercury level is below the normal temperature.

### V. Give short Answer

1. Why do we use Mercury in thermometers? Can water be used instead of mercury? What are the problems in using it?

- Water cannot be used instead of mercury, because of the following reasons:
- Water cannot expand as much as mercury expands for a small rise in temperature.
- Water is not opaque and shining.
- Water sticks to the sides of the glass tube

2. Swathi kept a laboratory thermometer in hot water for some time and took it out to read the temperature. Ramani said it was a wrong way of measuring temperature. Do you agree with Ramani? Explain your answer.

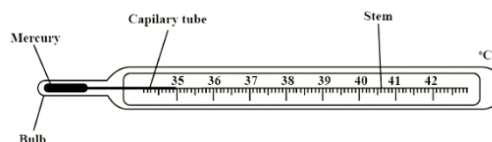
- Yes, I agree with Ramani.
- Laboratory thermometer does not have a kink.
- So, when Swathi takes out the thermometer, the level can go back because of absence of kink.

3. The body temperature of Srinath is  $99^{\circ}\text{F}$ . Is he suffering from fever? If so, why?

- Srinath is having a fever because the normal body temperature is  $98.6^{\circ}\text{F}$ .

### VI. Give long answer

1. Draw the diagram of a clinical thermometer and label its parts.



2. State the similarities and differences between the laboratory thermometer and the clinical thermometer.

#### Similarities:

- Both are long, narrow and uniform glass tubes.
- Bulbs contain mercury.
- Both have Celsius scale.

Laboratory thermometer	Clinical thermometer.
It scales from 10°C to 110°C.	It scales from 35°C to 42°C or from 94°F to 108°F.
No need to give jerk to lower the mercury level.	To lower the mercury level jerks are given.
It is used to take temperature in laboratory.	It is used for taking the body temperature.

## LESSON 2 ELECTRICITY

### V. Analogy

#### 1. Water : pipe :: Electric current :-----

- Wire

#### 2. Copper : conductor :: Wood : -----

- Insulator

#### 3. Length : metre scale :: Current : -----

- Ammeter

#### 4. milli ampere: micro ampere :: $10^{-3}A$ : -----

- $10^{-6}A$

### VII. Very short answer

#### 1. What is the speed of electric current?

- The speed of electric current is  $3 \times 10^8 \text{ ms}^{-1}$ .

#### 2. What is the S.I unit of electrical conductivity?

- The SI unit of electrical conductivity is Siemens / metres (s/m).

#### 3. Name the device used to generate electricity.

- Electric cell.

#### 4. Define fuse.

- Electric fuse is a safety device which is used in household wiring and in many appliances.

#### 5. Name some devices that run using heat effect of electric current

- Electric bulb, fan , Iron box, etc.

#### 6. Name few insulators.

- Rubber, Wood, Plastic, Glass, etc.

### 7. What is a battery?

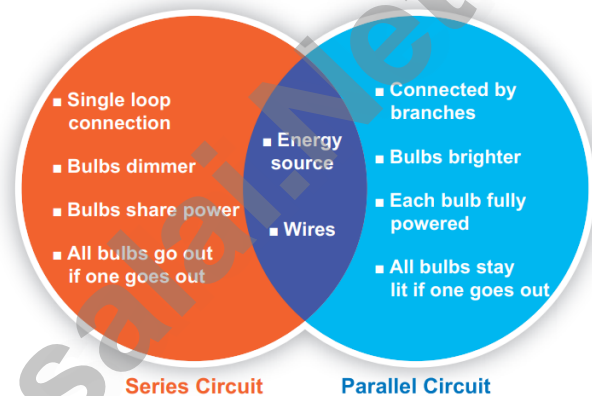
- Batteries are a collection of one or more cells whose chemical reactions create a flow of electrons in a circuit.

### VIII. Short Answer

#### 1. Define an electric current.

- An electric current is measured by the amount of electric charge moving per unit time at any point in the circuit. The conventional symbol for current is I.

#### 2. Differentiate parallel and serial circuits.



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#### 3. Define electrical conductivity.

- Electrical conductivity or specific conductance is the measure of a material's ability to conduct an electric current.

### IX. Long Answer

#### 1. Explain the construction and working of an Telephone.

- In telephones, a changing magnetic effect causes a thin sheet of metal (diaphragm) to vibrate.
- The diaphragm is made up a metal that can be attracted to magnets.
- The diaphragm is attached to spring that is fixed to the earpiece.
- When a current flows through the wires, the soft – iron bar becomes an electromagnet.
- The diaphragm becomes attracted to the electromagnet.

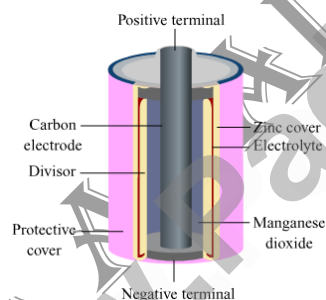
- As the person on the other end of the line speaks, his voice causes the current in the circuit to change.
- This causes the diaphragm in the earpiece to vibrate, producing sound.

## 2. Explain the heating effect of electric current.

- When an electric current passes through a wire, the electrical energy is converted to heat.
- In heating appliances, the heating element is made up of materials with high melting point.
- An example of such a material is nichrome (an alloy of nickel, iron and chromium).
- The heating effect of electric current has many practical applications.
- The electric bulb, geyser, iron box, immersible water heater are based on this effect.
- These appliances have heating coils of high resistance.

## 3. Explain the construction and working of a dry cell.

- Dry cells are normally used in small devices such as remote control for T.V., torch, camera and toys.
- It consists of zinc vessel which acts as a negative electrode or anode.
- The vessel contains a solution of ammonium chloride and zinc chloride.
- The carbon rod covered with a brass cap is placed in the middle of the vessel.
- It acts as positive electrode or cathode.
- $MnO_2$  acts as depolarizer.
- The zinc vessel is sealed at the top with pitch or shellac.



## LESSON 3

### CHANGES AROUND US

#### VI. Analogy

1. Physical Change: Boiling::Chemical Change: \_\_\_\_\_.

- **Rusting of Iron.**

2. Wood to saw dust:\_\_\_\_\_ :: Wood to Ash: Chemical change

- **Physical change**

3. Forest fire: \_\_\_\_\_ change::Change in period in a school: periodic change

- **Non periodic change**

#### VII. Very short answer type question

##### 1. State two examples of periodic changes.

- Rotation and Revolution of earth.
- Beating of the heart.

2. Mention any two exothermic reactions.

Burning of magnesium ribbon and burning of a candle.

##### 3. Cold milk is heated and it becomes hot. Which type of change it is?

- Reversible reaction.

##### 4. What type of change is artificial ripening of fruit?

- Irreversible chemical change.

##### 5. What type of change is colouring of a paper?

- Physical change.

##### 6. Growing of nails is a periodic change. Why?

- Periodic change.
- Because it occurs periodically at regular intervals.

##### 7. What type of energy changes is associated when ice melts?

- Physical change and Endothermic reaction.

**VIII. Short answer type question****1. Distinguish physical and chemical changes.**

Physical change	Chemical change
Reversible	Irreversible
No new substance forms	New substance forms
Melting of ice	Rusting of Iron

**2. How can a change occur in a substance?**

- A change can occur in a substance by an alteration in the properties such as colour, texture and the state of the substance since there is formation of a new substance.

**3. Can you suggest a method to collect water from sea water?**

- Evaporation

**4. Is solar eclipse a periodic change? Give your reason.**

- Yes, solar eclipse is a periodic change as it occurs after a definite interval of time.

**5. What is the difference between dissolution of sugar and burning of sugar?**

- Dissolution of sugar is a Physical and Reversible change.
- Burning of sugar is irreversible and Chemical change.

**IX. Long answer type question****1. Explain the following statement: Digestion is a chemical change.**

- When we eat, our mouth physically breaks down food into small pieces.
- Mechanical digestion occurs in the mouth, stomach and small intestine.
- Food is chemically changed in digestion when new, smaller substances are formed.
- Moreover, we will never be able to get back the raw material in the same form as it was before.

- Digestion of food is a permanent change which is irreversible.

**2. How the iron blade is fixed into a wooden handle in tools used to dig the soil?**

- First the ring in the iron blade of spade is heated.
- Heating of the blade leads to its expansion and thus the ring gets bigger.
- This happens because metals always expand on heating.
- The metal blade is then fitted easily into the wooden handle.
- After this, cold water is usually poured on the iron blade which leads to the contraction of the expanded iron blade.
- The spade can also be left to cool down, undisturbed so that it is firmly fixed, (vii) The blade is attached firmly to the wooden handle of a spade in this process.

**LESSON 4 CELL BIOLOGY****V. Analogy****1. Bacteria : microorganism :: mango tree : \_\_\_\_\_**

- Macroorganism

**2. Adipose : tissue :: eye : \_\_\_\_\_**

- Organ

**3. Cell wall : plant cell :: centriole : \_\_\_\_\_**

- Animal cell

**4. Chloroplast : photosynthesis :: mitochondria : \_\_\_\_\_**

- Respiration

**VII. Very short answer****1. What are the functions of cell wall in plant cell?**

- Provides a frame work for support and stability.
- Helps to maintain the shape of the plant cell.

**2. Which organelle uses energy from sunlight to make starch?**

- Chloroplast organelle uses energy from sunlight to make starch.

**3. What are the main things in a nucleus?**

- Nuclear envelope, Nucleolus, chromatin body.

**4. What does cell membrane do?**

- It acts as boundary of cell and protects it.

**5. Why lysosomes are known as scavengers of the cell?**

- The lysosomes are the main digestive compartments of a cell and digest damaged cell parts. Hence they are called scavengers of the cell.

**6. Teacher said "A virus is not an organism" Do you agree with this statement or not? Explain Why?**

- True I agree with the statement.
- A virus acts as a living organism within the body of a host and behaves like a non-living thing outside.
- It lacks cell wall, cell membrane, cytoplasm and organelles. Hence it is not an organism.

**VIII. Give short Answer**

**1. Why the cell is very important for us?**

- Cell is the basic structural and functions unit of life.
- It is the building unit of living organism.
- This helps a living organism to do its functions.

**2. Distinguish between the following pairs Smooth ER and Rough ER Cell wall and cell membrane Chloroplast and mitochondria**

Smooth ER	Rough ER
Absence of Ribosomes	Presence of ribosomes
Transport of steroid and lipid	Protein synthesis

Cell wall	Cell membrane
Present in plant cell	Present in both cells
Made up of cellulose	Made up of protein and lipids.

Chloroplast	Mitochondria
Present in plant cell	Present in both cells
Storage of Starch	Center of respiration

**3. Write correct sequence from cell to organism?**

- Cell → Tissue → Organ → Organ system → Organism.

**4. Write a short note on nucleus.**

- It controls all the processes and chemical reactions that take place inside the cell.
- Inheritance of character from one generation to another.

**5. Classify the following terms into cells, tissues, organs and write in the tabular column given below Neuron, Lungs, Xylem, brain, adipose, Leaf, RBC, WBC, hand, muscle, heart, ovum, squamous, phloem, cartilage.**

Cell	Tissue	Organ
Neuron	Xylem	Lungs
RBC	Adipose	Brain
WBC	Muscle	Leaf
Ovum	Squamous	Hand
	Phloem	Heart
	Cartilage	

**IX. Give long answer****1. Write about any three organelles in detail.****1. Smooth ER**

- Absence of Ribosomes
- Transport of steroid and lipid

**2. Rough ER:**

- Presence of ribosomes.
- Protein synthesis

**3. Cell wall:**

- Present in Plant cell.
- It protects the cell.
- Made up of Cellulose.

**4. Chloroplast:**

- Present in Plant cell.
- Involve in Photosynthesis.
- Storage of Starch.

**2. In a situation, how to explain, while your friend ask what is this, never seen before?**

- This is an animal cell.
- It is the basic unit of an animal body.
- Animal cell lacks cell wall.
- It has organelles like mitochondria, Golgi apparatus, Ribosomes, etc..
- It lacks chloroplast.
- It has centrioles which are not seen in plant cells.
- Nucleus is the controlling centre of the cell.

## LESSON 5 BASIS OF CLASSIFICATION

**VI. Give very short answer****1. What is classification?**

- Grouping of living organisms based on their common features is known as biological classification.

**2. List out the five kingdoms classification**

- Monera
- Protista
- Fungi
- Plantae
- Animalia

**3. Define – dichotomous key**

- It is a tool used to classify organisms based on their similarities and differences.

**4. Write two examples of Monera.**

- Bacteria
- Blue green algae.

**5. What is binomial nomenclature?**

- As per this system, each organism has two names – the first is the Genus name and the second is the Species name.
- Example: The nomenclature for onion is *Allium sativum*.

**6. Write the binomial name of a) Human being b)****Paddy**

- Human being - *Homo sapiens*
- Paddy - *Oryza sativa*

**7. Write two features of protista**

- Cell type - Unicellular
- Nucleus - Present
- Example - Spirogyra

**VII. Give short answer****1. Write the levels of classification.**

- There are seven main categories of hierarchies namely, Kingdom, Phylum, Class, Order, Family, Genus and Species.

**2. Differentiate plantae and animalia**

Plantae	Animalia
Cell wall present	Cell wall absent
Chloroplast present	Chloroplast absent
E.g: flowering plants	E.g: Humans

**3. Write any two merits of Five Kingdom classification.**

- This system of classification is more scientific and natural.
- It indicates gradual evolution of complex organisms from simpler one.
- Most accepted system of classification.

**VIII. Give answer in Detail****1. Explain about five kingdom classification**

Salient features	KINDS OF KINGDOM				
	Monera	Protista	Fungi	Plantae	Animalia
Cell type	Prokaryotic	Eukaryotic	Eukaryotic	Eukaryotic	Eukaryotic
Cell wall	Non-cellulose structure	Present in some	Present	Present	Absent
Body organisation	Cellular	Cellular	Multicellular Tissue	Tissue Organ	Tissue Organ Organ system
Mode of nutrition	Autotrophic Heterotrophic	Autotrophic Heterotrophic	Heterotrophic	Autotrophic	Heterotrophic

**2. Write short notes on – Binomial Nomenclature.**

- Gaspard Bauhin in 1623, introduced Binomial nomenclature.
- As per this system, each organism has two names – the first is the Genus name and the second is the Species name.
- Example: The nomenclature for onion is *Allium sativum*.

**3. Give an account on the classification of invertebrates with few general features and examples.**

Phylum	Characters	Example
Porifera	Pore bearers	Spongilla
Colenterata	Gastro vascular cavity	Hydra
Platyhelminthes	Flame cells	Tape worm
Aschelminthes	Thread like worms	Ascaris
Annelida	Body is segmented	Earth worm
Arthropoda	Have jointed legs	Spider
Mollusca	Soft bodies with shell	Snail
Echinodermata	Spines on the skin	Star fish
Chordata	Have back bone	Man

**LESSON 6 DIGITAL PAINTING****Answer the following Questions****1. What is Tux Paint ?**

- Tux Paint is a free drawing program designed for young children.

**2. What is the use of Text Tool ?**

- Text tool is used to type texts.

**3. What is the Shortcut key for Save option?**

- Ctrl + S

**4. What is Tux Math?**

- Tux Math is an open source arcade – style video game for learning arithmetic.

**5. What is the use of Ranger ?**

- Ranger is used to do addition, subtraction, multiplication and division to ten.

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