

## SCIENCE-I

### UNIT-I - HEAT AND TEMPERATURE

#### I. Choose the best 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 temperature of these two places?

Kodaikanal has greater temperature

Temperature of srinagar (J&K) =  $-4^{\circ}\text{C}$

Temperature of kodaikanal =  $3^{\circ}\text{C}$

$$\begin{aligned}\text{Difference} &= 3^{\circ}\text{C} - (-4^{\circ}\text{C}) \\ &= 7^{\circ}\text{C}\end{aligned}$$

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  $94^{\circ}\text{C}$  to  $108^{\circ}\text{C}$ )

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

Clinical thermometer has small temperature range.

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

A kink in the clinical thermometer prevents the mercury from flowing back in 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?

To allow the mercury level to flow back into the bulb.

#### II. Give short answers.

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

We use mercury in thermometers because

- It is opaque & shiny
- It expands uniformly
- It does not stick to the glass
- It is a good conductor of heat.

Water is transparent and wets the glass. So it cannot be used.

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.

- So swathi should not read the reading when the thermometer bulb is surrounded by not water.

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

Yes, Srinath is suffering from fever because the normal body temperature is  $98.6^{\circ}\text{F}$  and it varies among individuals

III. Higher order thinking questions. (HOTS)

1. What must be the temperature in Fahrenheit, so that it will be twice its value in Celsius?

$$\text{Formula } \frac{F-32}{9} = \frac{C}{5}$$

Assume that  $F=2C$

$$F-32 = \frac{9C}{5}$$

$$F = \frac{9C}{5} + 32$$

Substitute the value of  $F=2C$

$$2C = \frac{9C}{5} + 32$$

$$2C - \frac{9C}{5} = 32$$

By taking L.C.M

$$\frac{10C - 9C}{5} = 32$$

$$\frac{1C}{5} = 32$$

$$1C = 32 \times 5$$

$$C = 160^{\circ}$$

Substitute the value of  $c$  in  $F=2C$

$$F = 2 \times 160^{\circ}$$

$$F = 320^{\circ}$$

2. Go to a veterinary doctor (a doctor who treats animals) Discuss and find out the normal temperature of domestic animals and birds.

S.No	Domestic Animals	Temperature
1	Dog	$38.9^{\circ}\text{C}$
2	Horse	$38^{\circ}\text{C}$
3	Rabbit	$38.3^{\circ}\text{C}$
4	Cow	$38.6^{\circ}\text{C}$
5	Cat	$39^{\circ}\text{C}$
6	Goat	$39.7^{\circ}\text{C}$
7	Pigeon	$44.1^{\circ}\text{C}$
8	Crow	$40^{\circ}\text{C}$
9	Duck	$40.7^{\circ}\text{C}$



flow – False

- The fuse wire does not melt whenever there is overload in the wiring - False
- In a parallel circuit, the electric components are divided into branches – True
- The representation of the electric current is A – False
- The electrical conductivity of the semiconductor is in between a conductor and an insulator – True

#### IV. Match the following.

- Cell - A device which converts chemical energy into electrical energy.
- Switch - Use to open or close a circuit
- Circuit - A complete path for the flow of an electric current
- Miniature circuit breaker- Reset by hand, circuit becomes complete once again
- Fuse - Safety device used in electric circuit

#### V. Analogy.

- Water : Pipe : : Electric current : wire
- Copper : conductor : : wood : Insulator
- Length : Metre scale : : current : Ammeter
- Milliampere : Microampere : :  $10^{-3}A$  :  $10^{-6}A$

#### VI. Assertion and Reason

- Assertion (A) : Copper is used to make electric wires  
Reason (R) : Copper has very low electrical resistance  
(a) Both A and R are true and R is the correct explanation of A  
(b) Both A and R are true but R is not the correct explanation of A  
(c) A is true but R is false  
(d) A is false but R is true  
Ans : Both A and R are true and R is the correct explanation of A
- Assertion : (A) : Insulators do not allow the flow of current through themselves.
- Reason (R) : They have no free charge carriers  
(a) Both A and R are true and R is the correct explanation of A  
(b) Both A and R are true but R is not the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

Ans : Both A and R are true and R is the correct explanation of A

#### VII. Very short answer.

- What is the speed of electric current?  
Current travels at the speed of  $1/100$  times the speed of light ( $0.0002m/s$ )
- What is the SI unit of electrical conductivity?  
The SI unit of electrical conductivity is Siemens / meter (S/m)
- Name the device used to generate electricity.  
Electric Cell.
- Define fuse.  
Electric fuse is a safety device which is used in household wiring and in many appliances.
- Name some devices that run using heat effect of electric current.  
Electric bulb, Geyser, Iron box
- Name few insulators.  
Rubber, Wood, Plastic glass
- 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.

- Define an electric current.  
Ans: 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'
- Differentiate parallel and series circuits.

Ans:

S.NO	PARALLEL CIRCUIT	SERIES CIRCUIT
1.	It is connected by branches	It consists of single loop connection
2.	Bulbs glow brighter	Bulbs glow dimmer
3.	Each bulb is fully powered	All the bulbs share

		power
4.	All bulbs stay lit if one goes out	All bulbs go out if one goes out

3. Define electrical conductivity.

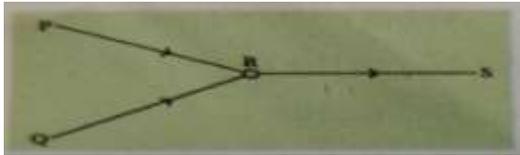
Ans: Electrical conductivity is the measure of a material's ability to conduct an electric current.

**IX. Picture based questions.**

1. Three conductors are joined as shown in the diagram.

The current in conductor RS is 10 A. The current in conductor QR is 6 A. What will be the current in conductor PR.

- a) 4 A                      b) 6 A                      c) 10 A                      d) 16 A



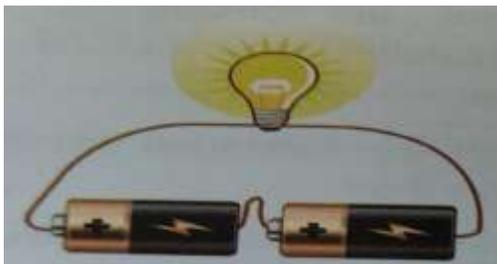
2. Draw the circuit diagram for the following series connection.

$$PR + QR = RS$$

$$PR + 6A = 10A$$

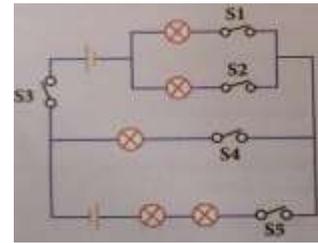
$$PR = 10A - 6A$$

$$= 4A$$



3. Study the electric circuit below. Which of the following switches should be closed so that only two bulb will light up

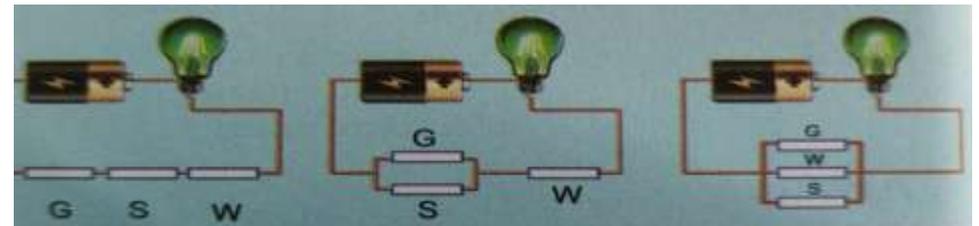
- a) S1, S2 and S4 only  
b) S2, S3 and S4 only  
c) S2, S3 and S4 only  
d) S2, S3 and S5 only



4. Study the three electric circuits below. Each of them has a glass rod (G), steel rod (s), and a wooden rod (w), and a wooden rod (w).

In which of the electric circuits would the bulb not light up.

- a) A only                      b) C only                      c) An and B only                      d) A, B, and C



**UNIT-III CHANGES AROUND US**

**I. Choose the best answer.**

1. When a woolen yarn is knitted to get a sweater, the change can be classified as Physical change

- a) Physical change                      b) Chemical change  
c) Endothermic change                      d) Exothermic change

2. Condensation and melting of the following are endothermic changes.

- a) Condensation and melting                      b) Condensation and Freezing  
c) Evaporation and melting                      d) Evaporation and Freezing

3. The chemical change is cowdung to biogas

- a) Water to clouds                      b) growth of a tree  
c) Cowdung to biogas                      d) Ice cream to molten ice – cream

4. Earthquake is an example of a periodic change

- a) Earthquake                      b) Formation of rainbow in sky  
c) Occurrence of tides in seas                      d) Showering of rain

5. Melting of polar ice caps is not a chemical change.

- a) Dissolution of ammonia in water  
b) Dissolution of carbon dioxide in water  
c) Dissolution of oxygen in water  
d) Melting of polar ice Caps.

II. Fill in the blanks.

1. Filling up a balloon with hot air is a physical change
2. Stretching gold coin into a ring is a physical change
3. Opening a gas cylinder knob converts liquid fuel into gaseous fuel. This is an example of chemical change.
4. Spoiling of food is a chemical change.
5. Respiration is a Exothermic chemical change .

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

1. Cutting of cloth is an example of a periodic change

Ans: False

Reason : Cutting of cloth is an example of a physical change.

2. Taking a glass of water and freezing it by placing it in the freezer is a chemical change.

Ans: False

Reason : Taking a glass of water and freezing it by placing it in the freezer is a physical change.

3. A bean plant collecting sunlight and turning it into bean seeds is an example of physical and non periodic change.

Ans: False

Reason : A bean plant collecting sunlight and turning it into bean seeds is an example of physical and non-periodic change

4. If the chemical properties of a substance remain unchanged and the appearance or shape of a substance changes it is called a periodic change.

Ans: False

Reason : If the chemical properties of a substance remain unchanged and the appearance or shape of a substance changes it is called a physical change.

5. Tarnishing of silver is an example of endothermic change.

Ans: False

Reason : Tarnishing of silver is an example of chemical change.

IV. Match the following.

1.

1. Melting -	Change of state from solid to liquid-	Ice cube of to water
2. Condensation-	Change of state from gas to liquid-	Steam to water drops
3. Evaporation -	Change of state from liquid to gas	Water to steam
4. Freezing -	Change of state from liquid to solid	Formation of Ice Cube
5. Periodic change-	Occurs at Irregular time intervals	Ticking of clock

6. Non-periodic change-	Occurs at regular time intervals-	Collecting flowers
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V. Classify the following changes as physical and chemical changes

PHYSICAL CHANGES	CHEMICAL CHANGE
<ul style="list-style-type: none"> <li>• Bending a paperclip</li> <li>• Pounding silver into thin plate</li> <li>• Rolling a chappathi dough into thin wire</li> <li>• Occurrence of a day and night</li> <li>• Blinking of eyelids</li> <li>• Occurrence of a thunder storm</li> <li>• Rotation of the earth</li> <li>• Formation of eclipses</li> <li>• Painting the grill</li> <li>• A rough piece of wood is sanded and polished resulting in change in texture</li> <li>• Dosa from the batter</li> </ul>	<ul style="list-style-type: none"> <li>• Rusting of a Iron nail</li> <li>• Eruption of volcano</li> <li>• Burning of Matchstick</li> </ul>

VI. Analogy.

1. Physical change : Boiling :: Chemical change : Burning
2. Wood to saw dust : physical change :: wood to ash : chemical change
3. Forest fire : Non – periodic change :: change in period in a school : periodic change

VII. Very short answer type question.

1. State two examples of periodic changes.

Ans: Seasonal changes, Motion of hands of a clock

2. Mention any two exothermic reactions.

Ans: Burning of Magnesium ribbon and burning of a candle

3. Coldmilk is heated and it becomes hot . which type of change it is ?Ans: Reversible

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

Ans: Irreversible chemical changes

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

Ans: physical change

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

Ans: Growing of nail is a periodic change, because it occurs periodically at regular intervals

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

Ans: ice Meltingm water

i) physical change

ii) Endothermic cheat energy is absorbed

VIII. Short answer type question.

1. Distinguish physical and chemical changes

Ans:

PHYSICAL CHANGE	CHEMICAL CHANGE
i) No new substance if formed ii) Reversible iii) Change in physical properties like size, shape, state eg-Melting of ice	i) New sunstance is formed ii) Irreversible iii) Change in properties of reactants and products Eg.- Burning of paper

2. How can a change occur in a substance?

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

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

Ans: Evaporation

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

Ans: 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	BURNING OF SUGAR
<ul style="list-style-type: none"><li>• When sugar is dissolved in water it disappears if we taste the solution, the sugar is still present in dissolved form</li><li>• If water is evaporated we get back the sugar.</li><li>• So it is a physical and revisable change</li></ul>	<ul style="list-style-type: none"><li>• Fire activities of a chemical reaction between sugar and oxygen. The oxygen in the air reacts with the sugar as the chemical bonds broke.</li><li>• Energy is released in the form of smoke.</li><li>• So , burning of sugar is a chemical change.</li></ul>

IX. Assertion –Reason type question.

Option :

a) Both A and R are true and r is the correct explanation of A.

b) Both A and R true but R is not the correct explanation of A

c) A is False but R is true

d) Bothe A and R are false.

1. Assertion (A) : The explosion of fire cracker is a physical change.

Reason (R) : A Physical change is a reversible change.

Ans: option (d) A is False but R is true

2. Assertion (A) : The process of conversion of liquid water to its vapours by heating the liquid is called boiling.

Reason (R) The process of conversion of water vapours to liquid by cooling the vapours is called condensation.

Ans: option (b) Both A and R are true but R is not the correct explanation of A

3. Assertion (A) : Burning of wood log to charcoal is a physical change.

Reason: (R) : The products formed of burning a piece of wood can be easily converted back to wood log.

Ans: Option(E) Both A and R are False

4. Assertion (A) The formation of Iron oxide from iron is a chemical change.

Reason (R) : For the rust to form iron, it must be expected to air and water.

Ans: Option (A) Both A and R are true and R is the correct explanation of A

5. Assertion (A) : A drop of petrol when touched with finger gives a chill feeling.

Reason (R) : The above phenomenon is an endothermic one.

Ans: Option (A) : Both A and R are true and R is the correct explanation of A.

X. Higher order thinking questions.

1. Peeled and unpeeled banana does not look the same. Does that mean peeling banana is a chemical change.

Ans: No, it is not a chemical change. We just separated the skin of the banana and there is no change in its composition.

2. A very hot glass on putting in cold water cracks. What does this change indicate?

Ans: When hot glass is cooled fast, the glass cools down unevenly and therefore cause the glass to crack because inside it contracts while the outside remains expanded. Glass expands when hot and contracts when cold. It's a physical but irreversible change.

3. Boiling Of water is a physical change , but boiling of egg is a chemical Change . why?

Boiling of water is a physical change.

On boiling, water is converted into steam. If we cover the beaker with a lid, steam condenses back to water. So boiling of water is a physical change since only the physical state of water changes.

Boiling of egg is a chemical change:

When egg is a boiled, chemical nature of the egg changes. The properties of a boiled egg are totally different from the raw egg hence, boiling of an egg is a chemical change.

Cell membrane

- a) Cell wall    b) Nucleus    c) Cell membrane    d) Nuclear membrane
3. Which part of the cell is called the brain of the cell? Nucleus
- a) Lysosome    b) Ribosome    c) Mitochondria    d) Nucleus
4. Centriole helps in cell division
- a) Endoplasmic reticulum    b) Centriole  
c) Golgi complex    d) Nucleus
5. Suitable term for various components of cell is cell organelle
- a) Tissue    b) Nucleus    c) Cell    d) Cell organelle

**II. Fill in the blanks.**

1. The jelly like substance present in the cell is called Cytosol
2. I convert the sun's energy into food for the plant. Who am I?  
Chlorophyll
3. Mature red blood cell do not contain a Nucleus
4. Unicellular organisms can only be seen under a Microscope
5. Cytoplasm plus nucleoplasm is equal to protoplasm

**III. True or false – if false give the correct answer.**

1. Animal cells have a cell wall – False  
plant cells have a cell wall
2. Salmonella is a unicellular bacteria – True
3. Cell membrane is fully permeable – False  
Cell membrane is selectively permeable
4. Only plant cells have chloroplasts – True
5. Human stomach is an organ – True
6. Ribosomes are small organelles with a membrane – False  
Ribosomes are organelles without a membrane

**III. Match the following.**

- |                         |                         |
|-------------------------|-------------------------|
| 1. Transporting channel | - Endoplasmic reticulum |
| 2. Suicidal bag         | - Lysosome              |
| 3. Control room         | - Nucleus               |
| 4. Power house          | - Mitochondria          |
| 5. Food Producer        | - Chloroplast           |

**V. Analogy.**

1. Bacteria : Microorganism : Mango tree . Macro organisms
2. Adipose : Tissues : : Eye : Organ
3. Cell wall : Plant cell : : Centrioles : Animal Cell
4. Chloroplast : Photosynthesis : : Mitochondria: Aerobic Respiration

**VI. Choose the correct alternative from the following.**

1. Assertion (A) : Tissue is a group of dissimilar cells.  
Reason : Muscle is made up of Muscle cell
- a) Both A and R are true  
b) Both A and R are false

**SCIENCE-II**

**UNIT-IV CELL BIOLOGY**

**I. Choose the correct answer.**

1. Basis unit of life cell
- a) Cell    b) Protoplasm    c) Cellulose    d) Nucleus
2. I am the outer most layer of an animal cell. Who am I?

c) A is true but R is false

d) A is false but R is true

Ans: A is false but R is true

2. Assertion (A) Majority of cells cannot, be seen directly with naked eye because

Reason: Cells are microscopic

a) Both A and R are true

b) Both A and R are false

c) A is true but R is false

d) A is false but R is true

Ans: Both A and R are true.

### VII. Very short answers.

1. What are the functions of cell wall in plant cell?

Functions of cell wall.

- Cell wall provides a frame work for support and stability.
- Cellulose in the cell wall helps to maintain the shape of the plant cell.

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

Chloroplasts, which contain green pigment chlorophyll uses energy from sunlight to make starch.

3. What are the main things in a nucleus?

- Nucleus is surrounded by a Nuclear envelope
- One or two nucleolus and the chromatin body are present inside the nucleoplasm
- The fluid inside the nucleus is known as nuclear fluid or nucleolus

4. What does cell membrane do?

Cell membrane also known as plasma membrane is selectively permeable, which allows only certain substances to pass in and out of the cell.

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

lysosomes are known as scavengers of the cell because they lyse a cell and are the main digestive compartment of the cell

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

Yes, I agree with the statement.

- Virus are not living things because they cannot do anything on their own
- They can multiply only when they enter a living cell.

### VIII. Give short answers.

1. Why the cell is very important for us ?

- Cell is the basic functional unit of an organism

- Structure of a cell represents the arrangements of organelles in a cell

- Cells are the basic building blocks of an organism.

Thus, the cell is very important for us.

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

SMOOTH ENDOPLASMIC RETICULUM	ROUGH ENDOPLASMIC RETICULUM
Smooth endoplasmic reticulum is a network of tubular sacs without ribosomes on the membrane . They play a role in synthesis of lipids, steroids and transport them within the cell.	Rough endoplasmic Reticulum are rough due to the ribosomes attached to the membrane. They play a role in synthesis of proteins.

CELL WALL	CELL MEMBRANE
<ul style="list-style-type: none"><li>• Present in plant cell.</li><li>• It is rigid</li><li>• It provides support and protection.</li></ul>	<ul style="list-style-type: none"><li>• Present in animal cell</li><li>• It is thin</li><li>• It is selectively permeable</li></ul>

CHLOROPLAST	MITOCHONDRIA
<ul style="list-style-type: none"><li>• They are food producers. Photosynthesis takes place.</li></ul>	<ul style="list-style-type: none"><li>• Power houses of the cell. Aerobic respiration takes place.</li></ul>

3. Write correct sequence from cell to organism.

Cell- tissue – organ- organ system – organism

4. Write a short note on Nucleus

- The nucleus is the control centre of the cell.
- It is the largest organelle
- Plant and animal cells have nucleus inside the cytoplasm
- It is surrounded by a nuclear envelope. One or two nucleolus and chromatin are present.
- The nuclear fluid or nucleoplasm body present in the nucleus.

5. Classify the following terms into cells, tissues, organs and write in the tabular column. Neuron, Lungs, xylem, Brain, Adipose, leaf, RBC, WBC, Heart, Muscle, Heart, Ovum, Squamous, Phloem, Cartilage.

CELL	TISSUE	ORGAN
RBC	xylem, Adipose,	Lung



4. Write two examples of Monera.

Ans: Bateria and Blue green algae are examples for monera.

5. What is binomial nomenclature?

Ans: Bionomial nomenclature is a universal system in which each organism has two names-the first is the Genus name and the second is the spices name.

6. Write the binomial name of

a) Human being

b) Paddy

Ans: a) Human being - Homo sapiens

b) Paddy - Oryza satvia

7. Write two features of protista.

Ans: 1. The kingdom protista includes unicellular and a few simple multicellular eukaryotes.

2. there are two main groups of protists, they are Algae and protozoans

8. What are vertebrates?

Ans: Vertebrates are the animals with backbone

9. What are Invertebrates?

Ans: Invertebrates are the animals without backbone.

10. Who is Gaspard Bauhin?

Ans: Gaspard Bauhin is a botanist who introduced the naming of organisms with two names which is known as binomial nomenclature.

### VII. Give short answer.

1. Write the levels of classification.

Ans: **Kingdom**



**Phylum**



**Class**



**Order**



**Family**



**Genus**



**Species**

2. Differentiate Plantea and Animalia

Ans:

<b>Characteristics</b>	<b>Plantea</b>	<b>Animalia</b>
1. Cell wall	Present	Absent
2. Movement	It Cannot move	It can move
3. Mode of nutrition	Autotrophic	Heterotrophic

3. Write any two merits of five kingdom classification.

Ans: i) This system of classification is more scientific and natural  
ii) It indicates gradual evolution of complex organisms from simpler one.

4. Write any two demerits of five kingdom classification.

Ans: 1. In this system of classification viruses have not been given a proper place

2. Multicellular organisms have originated several times from protists

5. Write the scientific name of

a) Onion      b) Rat      c) Pigeon      d) Tamarind

Ans: Onion - Allium sativum

Rat - Rattus nrattus

Pigeon - Columba livia

Tamarind - Tamirindus indica

### UNIT - VI DIGITAL PAINTING

#### I. Choose the correct answer.

1. Tux paint software is used to paint.

a) Paint      b) Program      c) Scan      d) PDF

2. Which toolbar is used for drawing and editing controls in tux paint software? Left side : Toolbar

a) Left side toolbar      b) Right side Toolbar

c) Middle: Toolbar      d) Bottom : tool bar

3. What is the short cut key for undo option?

Ctrl+Z

a) Ctrl+Z      b) Ctrl+R              c) Ctrl+Y      d) Ctrl+N

4. Tux math software helps in learning the Arithmetic

a)Painting    b) Arithmetic              c) Programmin      d) Graphics

5. In tux Math, space coded option is used for simple addition

a) Simple addition    b) Division    c) Drawing    d) Multiplication

**II. Answer the following question.**

1. What is Tux Paint?

Tux paint is a free drawing program. It has a simple, easy – to- use interface, fun sound effects, and an encouraging cartoon mascot which helps to guide as the programe is being used.

2. What is the use of tuxx tool?

The use of Tux tool is to type texts.

3. What is the shortcut key for save option?

The short key for save option is Ctrl+S

4. What is the Tux Math?

Tux Math is an open source arcade- style video game for learning arithmetic.The main goal is to make learning effective and fun.

5. What is the use of Ranger?

Ranger is used in addition subtraction, Multiplication and division to ten.