SECTION A: OBJECTIVE TYPE QUESTIONS

Q. 1

i. **Why is self-management important for students studying AI?**   1
   a. It enhances creativity
   b. It improves communication skills
   c. It helps in managing workload and deadlines
   d. It increases knowledge retention

ii. **"All the deleted files and folder are stored in task bar". True or false**   1

iii. ..ie entrepreneurial skill refers to the ability to handle multiple responsibilities at the   same time is   1
   . self confidence
   . multitasking
   passion
   . self-management

iv. **Which of the following is not the self-management skill?**   1

   a. Being positive

   b. Being responsible

   c. Being stubborn

   d. working with hygiene and grooming

v. **Rohan's face lights up with a big smile, and his eyes widen in excitement as he sees Mayank.** 1
   Mayank's face also lights up, expressing joy and surprise. This is an example of ………………
   a.   **Verbal Communication**
   b.   **Non-Verbal Communication**
   c.   **Visual Communication**
   d.   **None of these**

vi. **Which of these is not one of the objective of sustainable development?**   1
   a. Social
   b. Environmental
   c. Political
   d. Economic

Q. 2

i. **Assertion(A): Machine Learning is a subset of Artificial Intelligence.**   1

   Reasoning(R): While AI encompasses a broader range of concepts and approaches, Machine Learning specifically involves the use of algorithms that enable computers to learn patterns from data.
   a.   **Both A and R are correct and R is the correct explanation of A**

b.   Both A and R are correct but R is not the correct explanation of A

c.   A is correct but R is not correct

d.   A is not correct but R is correct.

ii.   **How many domains of AI is there?**   1
  a. One
  b. Two
  c. Three
  d. Four

iii.   **Which is the last stage of AI project cycle.**   1
  a. Problem Scoping
  b. Evaluation and Development
  c. Modelling
  d. Data Exploration

iv   **A…………… is the smallest unit of a digital image that can be displayed on a digital   display device.**   1
  a. bit
  b. byte
  c. pixel
  d. none

v   **In which of the following layers of a neural network does the processing of data occurs?**   1
  a. Input layer
  b. Hidden layers
  c. output layer

vi   **A python program saved with an extension………..**   1
  a. py
  b. pt
  c. ph
  d. po

Q. 3

i   **Which of the following is not an application of NLP?**   1
  a. Chatbot
  b. Virtual assistant
  c. Biometric
  d. None

ii   **Which of the following is not a Sustainable Development Goal?**   1
  a. Zero hunger
  b. climate Action
  c. Green Agriculture
  d. No poverty

iii   **Which of the following enables the software to train itself to perform tasks with vast amount of data?**   1
  a. Data modeling
  b. Deep learning
  c. System map
  d. none

iv	The recommendation feature in YouTube is an example of which of the following? a. Machine Learning b. Deep Learning c. Both a and b d. None	1
v	What is the function of dendrites? a. Transmit Information b. Receive signals c. Store data d. both a and b	1
vi	Which function is used to take input from the user? a. print( ) b. input( ) c. in( ) d.int( )	1
Q 4		
i	Which of the following is an application of Computer Vision? a. Fingerprint Recognition b. Face recognition c. speech recognition d. None	1
ii	Which of the following phase in the AI project cycle identify the objectives of developing the project? a. Data exploration b. Problem Scoping c. Data acquisition d. Evaluation	1
iii	Which one of the following is not a parameter of big data? a. Velocity b. Virtuosity c. Varity d. Volume	1
iv	A neural network is a machine learning algorithm based on the model of a human neuron. (a) True (b) False	1
v	Which operator divide the operand and return the reminder? a. / b. // c. % d. #	1
vi	In python output of following statement print (10**2) will be…………. a. 100 b. 20 c. 5 d. 0	1
Q. 5		

i SDGs are a set of _____ goals   **1**

ii _____ provides a visual summary of information that helps to find out the trends and patterns contained within data.   **1**

iii A neural network learns by three methods, namely Supervised learning, unsupervised learning and _____.   **1**

iv In _____ learning, the algorithm learns from a data set which is unlabeled.   **1**

v A _____ is a reserved word which you cannot use as the name of an identifiers.   **1**

vi The _____ function is used to print or display the output .   **1**

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer each question in 20 – 30 words.

Q. 6 Differentiate between encoding and decoding in the communication cycle ?   **2**

Q. 7 What is the importance of time management in self-management ?   **2**

Q. 8 State two key difference between a computer's RAM and ROM.   **2**

Q. 9 What is entrepreneurship?   **2**

Q. 10 Mrs. Gupta is concerned about her high monthly electricity bills. She has spent a lot of money in replacing her old appliances with those that have high energy rating, but her household electricity bill hasn't come down significantly. Suggest some other measures she could take to reduce the electricity bill.   **2**

Q. 11 What are the different components of NLP ?   **2**

Q. 12 What is computer vision ?   **2**

Q. 13 Name any two data visualization tool .   **2**

Q. 14 What is big data ?   **2**

Q. 15 Write any two application of Neural network ?   **2**

Q. 16 Write any two feature of python ?   **2**

Q. 17 What do you understand by AI ethics? Explain any three AI Ethics issues.   **4**

Q. 18 Explain any two limitations of Artificial Intelligence ?   **4**

Q.19 What is the importance of AI project cycle? List all the stages.   **4**

Q 20 Describe two different way of collecting data .   **4**

Q 21 Define variable and mention rules for choosing a variable names.   **4**

22 What is the impact of AI in social media?   **4**

23 Explain each element of 4Ws separately.   **4**

24 Why data exploration and data visualisation is an important stage in an AI Project?   **4**

25 Kalpesh is a botanist who is researching how temperature affects a particular culture of bacteria. While researching he found that with the increase in temperature the bacterial growth steadily increases, then the growth plummets. Based on this information answer the following questions?
a) Which AI model is best to represent this situation? Justify your answer.
b) Plot a graph to show the trend of this data.   **4**

26 Explain the important symbols of flowchart?   **4**

Prepare a project : USE OF ICT IN CRIME DETECTION AND SCHOOL SECURITY

DO IT IN A4 PAPER
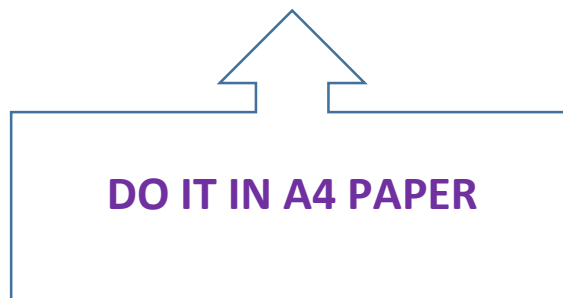
केंद्रीय विद्यालय गुणुपुर

शीतकालीन अवकाश गृहकार्य

1. मोबाइल फोन के दुरुपयोग पर अनुच्छेद लेखन

2. अपने किसी यादगार यात्रा का वर्णन करते हुए अपने मित्र को पत्र लिखें।

3. पढ़ायें गये पाठ से वर्तनी अभ्यास करें एवं पाठ का सार लिखें।

MATHEMATICS

Answer the following question on your Math H.W. Notebook:

CASE STUDY A:

The sides of a rectangular park are 80 m and 90 m respectively. A small triangular area of side 8m, 10m and 6m respectively is to be left out at the four corners of the park for growing flowering plants. The remaining area is be planted with natural grass.

Q1. What is the area of the rectangular garden?

Q2. What is the semi-perimeter of the triangle for the above measurements?

Q3. Find the area used for growing flowering plants.

Q4. If the cost of planting the flowering plant is ₹ 75.50 per m^2, then find the total cost of planting the flowering plants.

Q5. Find the area of the grass to be planted.

CASE STUDY B:

While selling clothes for making flags, a shopkeeper claims to sell each piece of cloth in the shape of an equilateral triangle of each side 10 cm while actually he was selling the same in the shape of an isosceles triangle with sides 10 cm, 10 cm and 8 cm.
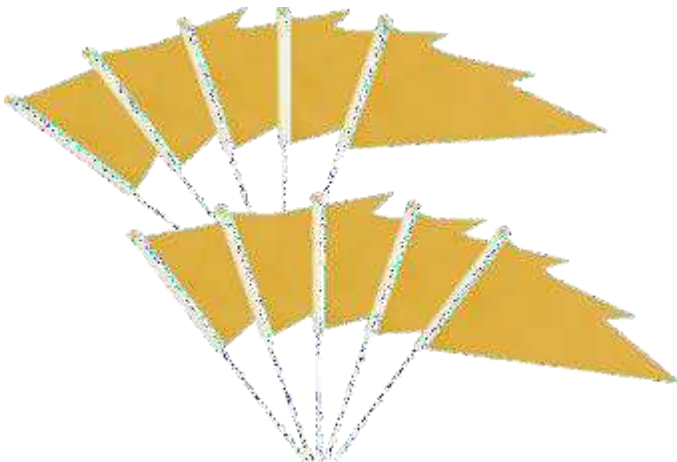
Q6. Find the area of an equilateral triangular flag?

Q7. If the shopkeeper sells 500 equilateral triangular flags, then find its area.

Q8. What is the semi-perimeter of an isosceles triangular flag.

Q9. Find the area of an isosceles triangular flag.

Q10. How much cloth was he saving in selling each flag? (use $\sqrt{3} \cong 1.73$ *and* $\sqrt{21} \cong 4.56$)

CASE STUDY C:

Triangles are used in bridges because they evenly distribute weight without changing their proportions. When force is applied on a shape like rectangle it would flatten out. Before triangles were used in bridges, they were weak and could not be very big. To solve that problem engineers would put a post in the middle of a square and make it more sturdy. Isosceles triangles were used to construct a bridge in which the base and equal sides of an isosceles triangle are in the ratio 1:2:2 and its perimeter is 200 m.

Q11. What is the value of the common ratio?

Q12. What are the measurements of the sides of an isosceles triangle?

Q13. Find the semi-perimeter of the above triangle.

Q14. What is the area of the above isosceles triangle?

Q15. Find the cost of painting the so formed triangle at the rate of ₹ 18.25 per m^2.

CASE STUDY D:

A craft mela is organized by Welfare Association to promote the art and culture for tribal people. Fairs and festivals are the custodians of our great cultural heritage. The pandal is to be decorated by using triangular flags around the field. Each flag has dimensions 25 cm, 25 cm and 22 cm.

Q16. What is the semi-perimeter of the flag for the above-mentioned dimensions?

Q17. What is the area of the flag? (Use √14 ≅ 3.74)

Q18. Find the area of cloth required for making 300 such flags in m^2.

Q19. If the rate of the cloth is ₹ 200 per m^2, find the total cost of 300 flags.

Q20. Find the area of cloth required for making 1500 such flags in cm^2.

CASE STUDY E:

Q21. Rama got up early in the morning and asked for a cup of coffee to his mom. But his mom served the coffee in a hemispherical bowl of diameter 2cm. How much coffee Rama would have consumed?

Q22. Rama got up early in the morning and asked for a cup of coffee to his mom. But his mom served the coffee in a hemispherical bowl of diameter 2cm. By seeing the bowl, he wanted to apply the concept from previous day's class, so he decided to find the surface area of the bowl. Could you help Rama in finding the surface area of the bowl in which coffee was served?

CASE STUDY F:

Q23. Priya is having a Mathematical project work in her school for which she requires 64 small metal balls, but she has only one big metal ball of radius 8cm. So she decides to melt the big ball and make it into 64 small metal balls of same size and arrange them for her project as shown in the figure. And also she decides to calculate the surface area of the each small ball. Calculate the surface area of each small spherical ball and help Priya?

Q24. Priya is having a Mathematical project work in her school for which she requires 64 small metal balls, but she has only one big metal ball of radius 8cm. So she decides to melt the big ball and make it into 64 small metal balls of same size and arrange them for her project as shown in the figure. And also she decides to calculate the volume of the each small ball. Calculate the volume of each small spherical ball and help Priya?

CASE STUDY G:

Q25. Shyam was watching a group of students playing basketball in his school. He saw one student shooting the basketball into the basket correctly. On watching the ball go into the basket

correctly Shyam got a thought that how much air the ball could hold if the ball had a diameter of **6cm**. Help Shyam in finding the amount of air in the basketball.

CASE STUDY H:

Q26. A toy maker was making the models of fruits and selling. One among the models was as above. He made the above model with the clay of Red, White and Green colours and volumes in the proportion 7:5:3 respectively. The surface area of the toy was found to be $1039.5cm^2$. Find the volume of each colour of clay used to make 100 such models.

<div align="center">केन्द्रीयविद्यालयः गुणपुर:</div>

कक्षा – नवमी - **9**   विषय- संस्कृतम्

शीत-अवकाश-गृहकार्यम् 2024-2025

संस्कृत विषय का 10 दिवसीय अवकाश गृहकार्य -

प्रिय छात्र/छात्राएँ,

कृपया निम्नलिखित कार्य को अपनी नोटबुक में पूरा करें:

1. प्रतिदिन एक धातु रूप लिखें और उसका अभ्यास करें। (syllabus के आधार से)

2. निम्नलिखित शब्द रुप अभ्यास -

    कवि, लता, नदी,किम्, अस्मद्, युष्मद्, भवत् , तद्,एतद्

3.पोर्टफोलियो/पत्राचार का निर्माण किजीए।

Expt. : 1

Preparation of a true solution of common salt, sugar and alum distinguish between these on the basis of
a)transparency
b) filtration criterion
c) stability

Aim :

To prepare a true solution of common salt, sugar and alum and distinguish between these on the basis of:

(1) transparency
(ii) filtration criterion
(iii) stability

Theory :

A true solution is a homogeneous mixture of two or more substances which cannot be separated by the method of filtration. The component that is present in a larger amount is called the solvent. The component present in a smaller quantity is called the solute. A true solution is transparent and stable.

Materials Required :

Beakers, Common salt (Sodium chloride), Sugar, Alum, Test tubes, Glass Rod, Water

Procedure :

Step 1: Three beakers are taken and 100 ml of water is added in each of them and labelled them as A, B and C respectively.

Step 2: 10g of finely powdered common salt, sugar and alum is added in each beaker separately.

Step 3: Solution is stirred with the help of glass rod.

Step 4: Put the solutions in test tubes and labelled them as A, B and C.

Observation Table :

Observation Table

Property	Experimental Procedure	Observation	Inference
Transparency	Small strip of cellophane paper is pasted on each test tubes and the coloured paper of each test tube is observed from other side of test tube.	Colour spot is clearly seen on test tubes as seen from other side.	A true solution is transparent.
Filtrate	Contents of test tubes labelled as A, B and C are filtrated.	No residue is observed on filter paper and clear filtrate is obtained.	Solid particles cannot be separated from true solution by filtration.
Stability	Leave the test tubes without disturbance for 20-25 minutes.	No change in the solutions are observed.	The true solutions are stable and do not show deposition of components.

Results and Discussion :

True solutions are transparent. They pass through filter paper leaving no residue on the filter paper. The filtrate is also transparent.

Precautions :

(i) Handle the materials and solutions with care.
(ii) While filtering a solution drop the contents along a glass rod into the funnel.
(III) Keep the sample undisturbed while checking stability.

Expt.2 :

Determination of the melting point of ice and the boiling point of water.

Objective :

To determine the melting point of ice and boiling point of water.

Theory :

• Melting Point: The temperature at which the solid changes into liquid at the atmospheric pressure is called melting point. For example, ice melts at 0°C to form water.

• Boiling Point: The temperature at which the liquid boils and changes into gaseous state at the atmospheric pressure is called boiling point. For example, water boils at 100°C to form water vapour (at 76 cm pressure).

• Latent Heat of Fusion: The heat energy absorbed during the melting of ice is stored in the water formed, this energy is called latent heat of fusion. The amount of heat energy that is required to change 1 kg of a solid into liquid at atmospheric pressure at its melting point is known as the latent heat of fusion.

• Latent Heat of Vaporisation: The heat energy absorbed by water when it changed its phase to steam, this hidden heat is called latent heat of vaporisation.

Conditions Affecting Melting Point and Boiling Point :

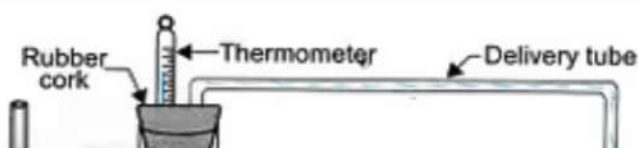|	Melting Point	Boiling Point
Pressure	If pressure increases, M.P. decreases.	If pressure increases, B.P. increases.
Addition of Impurities (soluble salts)	M.P. will decrease on addition of soluble salts.	B.P. will increase on addition of soluble salts.

Materials Required :

Two thermometers, (Celsius scale), boiling tube, a glass rod, two iron stands, a bunsen burner, wire gauze, beakers, tripod stand, distilled water, ice cubes prepared from distilled water.

Procedure :

1. To determine the boiling point of water.
• Take 25-30 ml of water in a boiling tube and add few pumice stones to it.
• Clamp the boiling tube on iron stand with two holed cork, in one hole fix the thermometer and in the other one fix the delivery tube.
• Place the thermometer above the water in the flask as shown in the figure and record its temperature.
• Place a burner under the boiling tube.
• Read the temperature and record it in the given observation table till the water boils. Record the reading after the time interval of 1 minute.

Rubber cork — Thermometer — Delivery tube
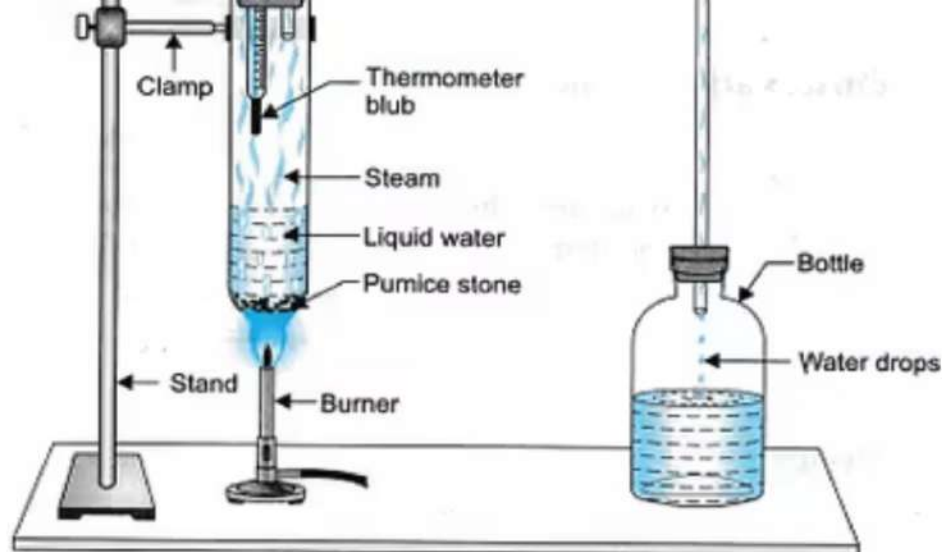
Determine the boiling point of water

Observation Table :

Boiling Point of Water

| S.No.	Temperature when water starts boiling (t_1 °C)	Temperature when water continues to boil till constant (t_2 °C)	Boiling point of water $\left(\dfrac{t_1+t_2}{2}\right)$ °C
1.	99.8	100	99.9
2.	100	100	100

Result :

• Boiling Point of water is 100 °C.
• Once the boiling point is attained the temperature reading on thermometer does not change for sometime.

2. To determine the melting point of ice.

• Take a beaker half-filled with the dry crushed ice obtained from distilled water.
• Suspend a Celsius thermometer from the clamp stand such that

the bulb of the thermometer is completely surrounded by ice.
• Read the thermometer reading and record the temperature after every 1 minute till the ice melts and the thermometer reading remains stationary for 2 minutes.
• Note the readings in the observation table.
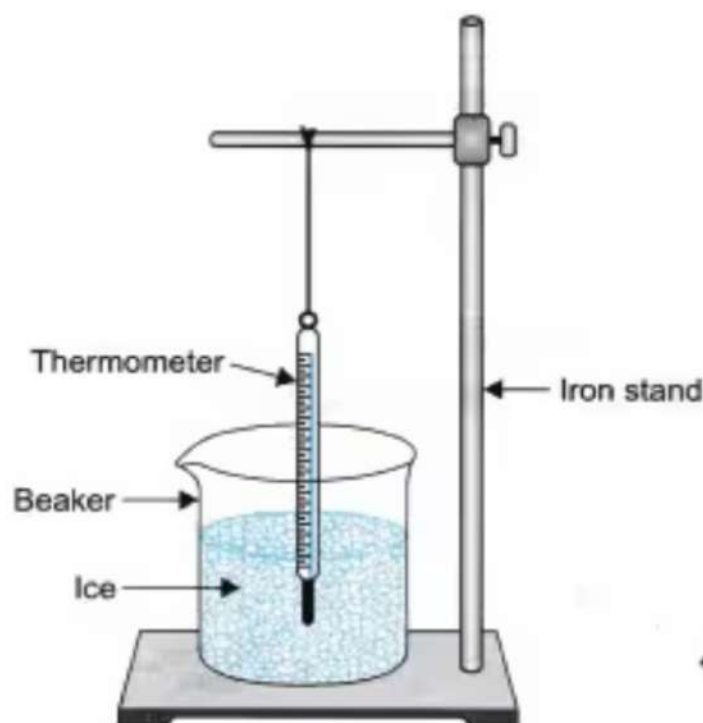
Determine the melting point of ice

Observation Table :

Melting Point of Ice

S.No.	Temperature when ice starts melting (t_1 °C)	Temperature when ice melts completely (t_2 °C)	Melting point of ice $\left(\dfrac{t_1+t_2}{2}\right)$
1.	0.5	0	0.25
2.	0	0	0

Result :

• Melting point of ice is 0 °C.
• Once the melting of ice begins the temperature remains constant

for some time.

Precautions :

• Choose a better quality thermometer whose graduated scale is clearly readable.
• Record the temperature in whole numbers.
• While reading the thermometer the eye level should be parallel with mercury level.
• Dip only the bulb of thermometer into water/ice.
• Thermometer should not touch the walls of beaker or boiling tube.

Expt : 3

Identification of Parenchyma, Collenchyma and Sclerenchyma tissues in plants, striped, smoothand cardiac muscle fibers and nerve cells in animals, from prepared slides. Draw their labeled diagrams.

Aim :

To identify parenchyma and sclerenchyma tissues in plants, striated muscle fibres and nerve cells in animals, from prepared (permanent) slides and to draw their labelled diagrams.

Theory :

Tissues: A group of cells having similar structure, origin and functions is called a tissue. There are two types of tissues — plant tissues and animal tissues.

Materials Required :

Permanent slides of parenchyma tissues, sclerenchyma tissues,Collenchymatous tissues, cardiac muscle ,straited muscle fibre, smooth muscle, nerve cell and compound microscope.

Observation ;

1. Plant tissues

(a) Parenchymatous tissues:

- All cells are same in size and length.
- Corners of the cells show intercellular spaces.
- Each cell shows prominent nucleus and a large central vacuole.
- Each cell has thin cell walls.
- Intercellular spaces are present in between the cells.

Inference

- These are plant cells as large vacuole is seen and cell wall is present.
- These are all living cells.
- These cells are present all over the plant body i.e. − stems, leaves, roots, flowers and fruits.

(b) Sclerenchymatous tissues:

- These cells show thick comers and thick cell walls.
- They do not have any protoplasm in it.
- They show lignified walls.
- They can be divided into two types: sclerenchyma fibres and sclereids.

- These cells are dead.

Inference

The sclerenchymatous tissues are dead cells, with hard cell wall and provides mechanical support to plant. For e.g. coconut husk, hard shells of fruits.

(c) Collenchymatous tissues:

- The cells of collenchyma may be oval or elongated.
- Each cell consists of central nucleus with cytoplasm at the periphery.
- Cell walls are thickened at the comers. The thickening is due to cellulose and pectin.
- Intercellular space is absent.
- These cells are commonly seen below the epidermis in petiole, leaves and stems.
- Its main function is to provide mechanical strength.

Inference

- These cells have thick comers.
- There is no space between the cells.
- The nucleus is prominent at the periphery with cytoplasm but the centre of the cells consist of vacuole.

2. Animal tissues
(a) Striated muscles:

- These muscles show long cylindrical fibres.
- The cells are multinucleated.
- The muscles show alternate dark and light bands.
- The cells are surrounded and held by connective tissue.
- The cells are surrounded by a membrane called as sarcolemma.

Inference

- The slide shows cylindrical fibres, with dark and light bands
- These are voluntary muscles and work according to our will.

(b) Smooth muscles:

- The cells are spindle-shaped.
- Nucleus is centrally located.
- These muscles do not show dark and light bands striations.
- Non-striated muscles are involuntary in nature.
- They are found in blood vessels and in alimentary canal.

Inference

- The cells of non-striated muscles are tapering at both the ends i.e., spindle- shaped.
- The nucleus is prominent and is centrally located.
- The dark and light bands are not seen.

(c) Cardiac muscles:

- Cardiac muscle cells are long, branched and uninucleate.
- They show alternate light and dark bands.
- These are involuntary muscles.
- They are seen only in the walls of heart.
- They are non-tiring muscles and responsible for rhythmic contraction and relaxation of heart muscles throughout life.

Inference

- These cells are branched and each cell consist of single nucleus.
- The striations are seen.

(d) Nerve cell:

- The nerve cells has a neuron with a large body called cyton.
- The cyton has a prominent nucleus.
- It has projections called dendrites.
- One of the dendrite which is long called axon.
- The nerve endings are attached to muscles.

Inference

Each nerve cell consists of prominent nucleus and granular cytoplasm with projections called dendrites

Precautions :

- Handle the microscope carefully.
- Handle the permanent slides carefully.
- Always focus the slide first at low power and then at high power.

Expt : 4

Establishing the relation between the loss in weight of a solid when fully immersed in
a) Tap water
b) Strongly salty water with the weight of water displaced by it by taking at least two differentsolids.

Objective :

To establish the relation between the loss in weight of a solid when fully immersed in

• tap water
• strongly salty water, with the weight of water displaced by it by taking at least two different solids.

Theory :

• Fluids: Gases and liquids flow and are thus called fluids.
• Buoyancy: The upward force exerted by fluids on any body is called the buoyant force and this phenomenon is known as buoyancy.
• Thrust: The force acting on a body perpendicular to its surface is called thrust. S.I. unit is Newton.
• Pressure: The thrust per unit area is called pressure.
Pressure = Thrust/Area
S.I. Unit = N/m^2 . This unit (N/m^2)is also called Pascal,
1 Pascal (Pa) = 1 N/m^2
• Weight of a body = Mass x acceleration due to gravity W = mg
• When a body is immersed in water or liquid, the body displaces some liquid.
• The volume of liquid displaced = total volume of the solid.
• The mass of liquid displaced can be measured as: Mass of liquid displaced = Volume x Density M=VxD
• Weight of liquid displaced = Volume x Density x g (acceleration due to gravity)
W=VxDxg
• The body loses some weight when immersed in fluid, it can be found as follows:
Weight of the body in air = W1
Weight of the body when immersed in liquid = W2
• Hence loss in weight = W2-W1 How much will be this upward force/buoyant force depends on the density of liquid in which it is immersed. The upthrust is more by denser liquids.
• Archimedes' Principle: When a body is immersed fully or partially in a fluid, it experiences an upward force that is equal to the weight of the fluid displaced by it.

Materials Required :

A spring balance, a metal bob, a cotton thread, an overflow can, a glass beaker, tap water, salty water, an iron stand.

Procedure :

1. Find the zero error and least count of spring balance:

• Take an iron stand and suspend a spring balance to it.
• Study the spring balance, its scale and its least count.
• Record your observations. If any error, record it as 'x' gf.

2. Find the weight of solid metal bob in air:

• Take a metal bob, tie thread to it and suspend on the hook of the spring balance.
• Record the weight of the metal bob in air. Let this weight be Wr

3. Find the weight of the metal bob immersed in tap water and record the apparent loss in weight :

• Take an overflow can, fill it with water such that its water level touches the spout of the overflow can.
• Keep an overflow can under the spring balance such that the metal bob gets fully immersed in the water of the overflow can.
• Keep a beaker whose weight P_1 is recorded, at the mouth of the spout of overflow can.
• As soon as the metal bob is suspended in water the weight on spring balance scale is recorded. This loss in weight is due to buoyancy (W2).
• Collect the water that has overflown in a beaker till the last drop that comes out of the spout.
• Weigh the beaker with water (P2).

- Calculate the weight of the displaced water (P2-P1).
- Calculate the loss in weight of the metal bob when immersed in water.

4. Find the weight of metal bob immersed in salty water and record the apparent loss in weight.

- Prepare salty water by taking a 500 mL beaker and adding 300 mL of water in it and dissolving common salt till the saturated solution is obtained.
- Take the same metal bob and repeat the steps from 1 to 8 as given in procedure 'C'
- Tabulate your observations.

Observations and Calculations :

- Zero error in spring balance = (x) = 0 gf.
- Least count of the spring balance = 2 gf.
- Density of water = 1g / cm³
- Weight of empty beaker P1= 100 gf.

Table A: Verification of Apparent Loss in Weight of Solid Body in Tap Water

S.No.	Weight of metal bob in air W_1 (gf)	Weight of metal bob in tap water W_2 (gf)	Loss in weight of metal bob $W = W_1 - W_2$ (gf)	Weight of beaker		Weight of displaced water $P_2 - P_1$ (gf)
				empty P_1 (gf)	with water P_2 (gf)	
1.	120	100	20	100	120	20
2.	121	100	21	100	121	21
3.	120	100	20	100	120	20

Table B: Verification of Apparent Loss in Weight of Solid Body in Salty Water

S.No.	Weight of metal bob in air W'$_1$ (gf)	Weight of metal bob in salty water W'$_2$ (gf)	Loss in weight of metal bob W'=W'$_1$-W'$_2$ (gf)	Weight of beaker		Weight of displaced water P'$_2$-P'$_1$ (gf)
				empty P'$_1$ (gf)	with water P'$_2$ (gf)	
1.	125	100	25	100	125	25
2.	126	100	26	100	126	26
3.	125	100	25	100	125	25

(i) Table A $\rightarrow$ $W_1 - W_2 \cong P_2 - P_1$

(ii) Table A $\rightarrow$ $W'_1 - W'_2 \cong P'_2 - P'_1$

Conclusion :

• Hence it is proved that the weight of the water displaced by the metal bob is approximately equal to the apparent loss of weight of the metal bob in water.

Archimedes' principle is verified.

• The weight of water displaced by a given solid when immersed fully in strongly salty water is more than the weight of the water displaced when fully immersed in tap water.

Precautions :

• Carefully study the spring balance used for the experiment.
• Fill the overflow can above the mark of the spout, allow extra water to overflow through the spout without disturbing it. Use this overflow can for the experiment.
• Do not allow the suspended solid mass i.e. metal bob/stone to touch the base and sides of the overflow beaker.

Expt : 5

Verification of the law of conservation of mass in a chemical reaction.

Aim :

To verify the law of conservation of mass in a chemical reaction.

Theory :

Law of conservation of mass states that the mass remains conserved during a chemical reaction . In this experiment we shall verify the law of conservation of mass u sing a precipitation reaction. This reaction is considered as the simplest method to verify this law.

Materials Required :

Barium chloride ($BaCl_2.2H_2O$), sodium sulphate ($Na_2SO_4.10H_2O$), distilled water, two beakers (150 mL), one beaker (250 mL), physical balance, spring balance (0 – 500 g) and a polythene bag, two watch glasses of known masses and a glass stirrer.

Procedure :

Step 1: 100 mL distilled water is poured in two beakers (150 mL).
Step 2: The physical balance and a watch glass of known mass are used, weigh 7.2 g of $BaCl_2.2H_2O$ and dissolved in a beaker (150 mL) containing 100 mL distilled water.
Step 3: Similarly, 16.1 g of $Na_2SO_4.10H_2O$ is weighed in another watch glass of known mass and dissolved in another beaker (150 mL) containing 100 mL distilled water.
Step 4: The third beaker (250 mL) is taken and weighed using a

spring balance and polythene bag.

Step 5: Both solutions of 150 mL beakers is mixed in the third beaker (250 mL). The contents are mixed using a glass stirrer.

Step 6: White precipitate of BaSO4 appears on mixing due to precipitation reaction.

Step 7: The beaker containing the reaction mixture is weighed again to determine the mass of the precipitation reaction products.

Step 8: The masses of before and after the chemical reaction are compared.

Observations

(i) Mass of 100 mL distilled water = 100.0 g (The density of distilled water is 1 g/mL.)

(ii) Mass of $BaCl_2 .2H_2O$ = 7.2 g

(iii) Mass of $BaCl_2$ solution = 107.2 g

(iv) Mass of $Na_2 SO_4.10H_2O$ = 16.1 g

(v) Mass of Na_2SO_4 solution = 116.1 g

(vi) Total Mass of reactants = 223.3 g (solutions of $BaCl_2$ and Na_2SO_4)

(vii) Mass of empty 250 mL beaker, m_1 = 20 g

(viii) Initial mass of reaction mixture and empty beaker (before the precipitation), m_2 = (m_1 + 223.3 g) = 243.3g

(ix) Final mass of reaction mixture in the beaker after the precipitation, m_3 = 243.3g.
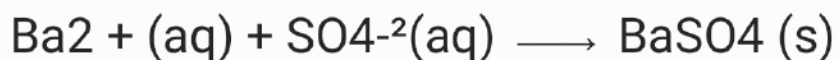
Results and Discussions

Compare the initial mass (m_2) of the reaction mixture (before the precipitation) with the final mass (m_3) of the reaction mixture (after the precipitation). If the two masses are same within the reasonable limits, then the law of conservation of mass stands verified.

The verification of the law rests on accurate mass measurements in the laboratory. The chemical reaction involved is:

$BaCl_2$ (aq) + Na_2SO_4 (aq) $\longrightarrow$ $BaSO_4$ (s) + $2NaCl$ (aq)
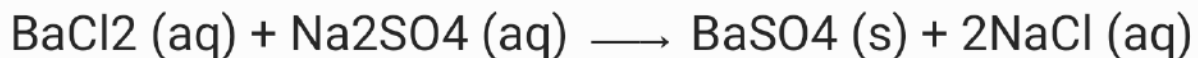
<div align="center">White precipitate</div>

and more precisely

$Ba_2 +$ (aq) + SO_4^{-2}(aq) $\longrightarrow$ $BaSO_4$ (s)

Precautions

1. The spring balance should be held vertical while taking measurements.
2. Before making use of the spring balance it must be ensured that its pointer is at zero mark. If not then ask your teacher to help.
3. The readings of the spring balance should be noted only when its pointer comes to rest.
4. Mixing of barium chloride and sodium sulphate solutions be done slowly with constant stirring.

Each student should prepare a project within 5 pages

1. Write a project on parliamentary and presidential form of government.

2.Collect newspapers for the last one week and Classify the news related to the working of the institutions, - Legislature Executive Judiciary, write a project report on them.

3.Prepare a project on the industrial revolution in england.

4.Read through the Chapter india- size and location

5.Learn to locate states of India and their capital

6.write an essay ," electoral process in india since 1951 to 2024

7.write a short biography of a from the french revolution Personally famous Personality from the French revolution

8.Draw a label on a map of india showing major rivers and mountains.

9.write about the climate of Gunupur during winter

10 write about any three fundamental rights of indian citizen

KENDRIYA VIDYALAYA GUNUPUR
WINTER BREAK HOMEWORK
SUBJECT- ENGLISH
CLASS-IX

A. Write a Diary Entry on how you felt about the conduct of the Annual Sports Meet of your school.

B. You all read the newspaper everyday and also watch the news on television. Choose a news story that has piqued your interest and Write a report on that news story.

OR

Write a dialogue in which a journalist interviews a prominent personality involved in the story.

C. **Convert the following sentences into reported speech.**

1. Sana said, "Mother, where have you kept my new pair of jeans?"
2. Mother said to her friend, "My daughter sang well, didn't she?"
3. Sita said to him, "Will you play today?"
4. He said, "May you succeed in your venture, my daughter."
5. She said, "Oh! What a lovely dress."
6. Mridula asked Manisha, "Did you buy the magic show tickets?"
7. He said, "Let's go to the market."
8. They said, "Alas! We have lost our way in the forest."
9. Akbar said to HImesh, "A very happy birthday."
10. The chemistry teacher said to her students, "You have understood the experiment, haven't you?"
11. Reena said, "I think the book is too expensive."
12. He said, "Oh! I have met you after a long time."
13. The compere announced, "The chief guest will reach here any moment."
14. The fisherman said to the customer, "The fish is fresh and will taste good."
15. Rahul said, "Are you exhausted today?"