

- In the same group, number of valence electrons and so the valency of the elements is same.
- Atomic sizes of the elements decrease left to right in a period and increase top to bottom in a group generally.
- Metallic character increases down the group and decreases from left to right.
- Generally non-metallic character increases going from left to right in a period and decreases down the group.
- Number of shells in an element is equal to the number of period in which the element is placed.
- The group number of an element may be found as-
  1. If the number of valence electrons is equal to 1 or 2, it indicates the group number.
  2. If the number of valence electrons is 3 to 8 then group number =  $(10 + \text{valence electrons})$ .

**Assessment Parameters:**

The following worksheet may be assessed by giving an equal weightage of 5 mark each to all the questions.

**Student Worksheet****Time: 15 min.**

Following table represents, a part of the Modern Periodic Table containing first three periods in which five elements have been represented by the letters a, b, c, d and e (these are not the chemical symbols of the elements)

Groups →	1	2	13	14	15	16	17	18
Period ↓								
1	a							
2			b				e	c
3	d							

Q1. Select the letter (s) which represent alkali metal.

---



Q2. Select the letter (s) which represent a noble, gas.

---

Q3. Select the letter(s) which represent a halogen.

---

Q4. Where would you place an element 'f' with electronic configuration 2,8,4 in the given table?

---

Q5. How many valence electrons are present in the element denoted by b?

---

Q6. What is the valency of element represented by c?

---

Q7. Select the element with highest metallic character.

---

Q8. How many shells are present in element represented by 'd'?

---

Q9. What is the similarity in the electronic configuration of elements represented by 'a' and 'd'?

---

Q10. Select the elements which form univalent ions.

---

### Suggested Remediation

- Some students may find it difficult to comprehend that element 'a' i.e. hydrogen is not an alkali metal. Teacher may help them by making them recall that hydrogen shares similarities in its properties to both the alkali metals and halogens. So the position of halogen in the periodic table is ambiguous.



- Teacher may have to give the meanings of the words- univalent, bivalent, trivalent and tetravalent ions to the students..
- Some students may find it difficult to identify the place of elements in the periodic table, for this the teacher may have to carry out a revision exercise, in predicting the position of an element whose electronic configuration is given or vice-versa.

## Period Classification of Elements

## Chapter 5

**Assesment Technique:** Data Based Worksheet

**Objectives:** To enable the students to –

- Learn the salient features of Mendeleev’s periodic table
- Appreciate the basis of classification of Mendeleev’s classification of elements.
- Find out the discrepancies and demerits in Mendeleev’s Periodic Table.
- Understand the merits of Mendeleev’s periodic classification.
- Study and analyse the given classification table to appreciate the placement of various elements by Mendeleev.

**Task:**

**Individual**

**Procedure:**

- The teachers may give the following worksheet to the students after teaching- learning episode of need to classify elements and attempts by Dobereiner and Newland to classify the then known elements, emphasizing about the chemical properties and atomic masses that were taken into consideration.

**Assesment Criteria:**

- Q1.** 4 and 7 carry 2 marks each, rest of the questions carry 1 mark each.

### Student Worksheet

**Time : 20 min.**

**Instructions:**

Study the following Periodic table published in a journal in 1872 and answer the questions that follow:



Group →	I		II		III		IV		V		VI		VII		VIII					
Oxide	R <sub>2</sub> O		RO		R <sub>2</sub> O <sub>3</sub>		RO <sub>2</sub>		R <sub>2</sub> O <sub>5</sub>		RO <sub>3</sub>		R <sub>2</sub> O <sub>7</sub>		RO <sub>4</sub>					
Hydride	RH		RH <sub>2</sub>		RH <sub>3</sub>		RH <sub>4</sub>		RH <sub>3</sub>		RH <sub>2</sub>		RH							
Periods ↓	A	B	A	B	A	B	A	B	A	B	A	B	A	B	Transition series					
1.	H 1.008																			
2.	Li 6.939		Be 9.012		B 10.81		C 12.011		N 14.007		O 15.999		F 18.998							
3	Na 22.99		Mg 24.31		Al 29.98		Si 28.09		P 30.974		S 32.06		Cl 35.453							
4. First series:	K 39.102		Ca 40.08		Sc 44.96		Ti 47.90		V 50.94		Cr 52.00		Mn 54.94		Fe 55.85		Co 58.93		Ni 58.71	
Second series:	Cu 63.54		Zn 65.37		Ga 69.72		Ge 72.59		As 74.92		Se 78.96		Br 79.90							
5. First series:	Rb 85.47		Sr 87.62		Y 88.91		Zr 91.22		Nb 92.91		Mo 95.94		Tc 99		Ru 101.07		Rh 102.91		Pd 106.4	
Second series:	Ag 107.87		Cd 112.40		In 134.82		Sn 118.69		Sb 121.75		Te 127.60		I 126.90							
6. First series:	Cs 132.90		Ba 137.74		La 138.91		Hf 178.49		Ta 180.95		W 183.85				Os 192.2		Ir 192.2		Pt 195.09	
Second series:	Au 196.97		Hg 200.59		Tl 204.37		Pb 207.19		Bi 208.98											

**Q1.** Which chemical compounds of the elements, were used to identify the chemical properties and classify the element.

a. \_\_\_\_\_

b. \_\_\_\_\_

**Q2.** Who propounded the given periodic table?

\_\_\_\_\_

**Q3.** How many periods and groups are there in the given periodic table?.

\_\_\_\_\_

**Q4.** What trend is being followed by the atomic mass of elements, in the given periodic table?

\_\_\_\_\_



**Q5.** In group VIII Cobalt is placed before Nickel though atomic mass of cobalt is more than nickel. Do you find any other pair of elements where an element of higher atomic mass is placed before element of lower atomic mass, give eg.?

---

**Q6.** The scientist left some gaps in the Periodic table. How do you think this, helped in the classification ?

---

**Q7.** What is the basis of classification of elements in the given periodic table?

a. \_\_\_\_\_

b. \_\_\_\_\_

### Suggested Remediation:

- Some students may find it difficult to comprehend the basis of the periodic table-Help them by emphasising to spend some time searching solutions to Q. no. 1 and 5
- Help the students appreciate the fore sight of the scientist to predict the placement and properties of undiscovered elements.
- After the students activity following information may be given to the students.
- Mendeleev classified the elements on the basis of atomic masses and chemical properties.
- He arranged elements in the increasing order of their atomic mass.
- He left gaps in the periodic table for the new elements to be discovered.
- In Mendleeve's Periodic table the elements with same type of oxides and hydrides were grouped together.
- A few elements with higher atomic masses got placed before lower atomic mass element in order to keep elements with similar properties together.

## Period Classification of Elements

## Chapter 5

**Assessment Technique:** Role Play

**Objectives:** To enable the students to

- Get familiarized with the elements present in different groups in the Modern Periodic Table.
- Learn and state different properties of the elements.



- Understand and state the variations in trends of different properties of elements belonging to the same group.

**Task :** **Group Task**

**Procedure:**

- The Teacher may divide the whole class in '8' groups and assign each group of students a group number from the Modern Periodic table (1,2,13-18).
- Each group may be asked to collect the information about the elements of the group assigned to them.
- Each group may be asked to share information with the class in some interesting manner and also explain how the properties of elements are changing down the group (Within 5-8 minutes)

**Assessment Parameters:**

- Correct Name of the elements of the group : 1
- Description of different properties (minimum 5 different properties) 5marks
- explanation of Change in different properties : 2 marks
- Effective Presentation : 2 marks

**Suggested Remediation:**

- Some group of students may not speak or arrange the elements of the group in proper sequence (as given in periodic table). Teacher may explain the significance of arranging/ learning the elements in exact sequence as it will help them understand the trends of different properties better.
- A few students may not understand the significance of knowing atomic number to know electronic configuration and finding out the valency of the element. The teacher may explain that and it will further help-them understand other properties and trends in change in the properties.
- A few students may find it difficult to understand the change in metallic and non-metallic character of the elements in a group. Help them to discover the trend in the change in metallic and non metallic characters with the change in the atomic size of the elements of the same group.
- Since it is a self-learning promoting exercise, encouragement may be given to those who find the task difficult.

**Illustration: Group 2**

- Hello We are the Members of group 2
- I am Berrilium, I am \_\_\_\_\_, I am \_\_\_\_\_





- I am Berrilium
- My Atomic Number is \_\_\_\_\_.
- My atomic size/ radius is \_\_\_\_\_.
- My electronic configuration is \_\_\_\_\_.
- Number of valence electron, present in my outer most shell is/are \_\_\_\_\_.
- Look, our atomic number is increasing down the group.
- Our atomic radius is also increasing down the group.
- Because with every period a new shell is being added to us.
- Oh ! Our valency is same.
- Going down the group our metallic character is also increasing (with reason)
- We are a happy family and we are called Alkaline Earth Metals and so on.

**Note:**

Students themselves may bring new ideas of presentation, This may motivate the students to learn better.

## Period Classification of Elements

## Chapter 5

**Assessment Technique:** Project

**Objectives:** To enable the students to-

- Understand the need of classifying elements.
- Appreciate the classification of elements done by different scientists.
- Discover Salient features of each classification.
- Understand the requirement of change in methods of classification with time.

**Task:** **Individual**

**Procedure:**

- The teacher may ask the students to work on the project after giving a brief idea of the classification of elements, the need of classification and related work of different scientist.
- The Students may be asked to collect the information and prepare a written report of the project undertaken by them using the format given below:



- Aim of the Project.
- Introduction.
- Material Required (if any).
- Procedure.
- Presentation of the Information / Data Collected.
- Conclusion.
- Reference used

**Assessment Parameters:**

Area of Assessment	Value Points
Presentation	2
Relevance of the Content	2
Analysis and conclusion	2
Viva	2
Creativity	2

**Suggested Remediation:**

- A few students may not be able to collect information from different sources or may write the content from the text book, students may be motivated to search material from different sources.
- A Few students may not be able to analyze the data collected and understand the merits and demerits of different classification of elements. Teacher may help the students understand the significance of classifying the element in periods and groups.
- After the completion of the project, teacher may give the detailed information about the periodic classification of elements, involving them in the lesson, which may hold the students interest better.

**Period Classification of Elements****Chapter 5**

**Assessment Technique:** Data based worksheet

**Objectives:** To enable the students to-

- Write the electronic configuration of a particular element, knowing its atomic number
- Find the number of valence electrons in an element and so the valency of element
- Calculate the, valency of an element if its atomic number is known.
- Discover the variation in the valency of the elements in the same period.





**Task:** **Individual**

**Procedure:**

- The teacher may give the following worksheet to the students after teaching-learning experience of the Modern Periodic Table. The following information may be recalled with the students before they start working on the worksheet.
- Valency (the combining capacity) of an element can be determined by
  1. The number of valence electrons, if the number is equal to or less than 4.
  2. (8 - Valence electrons) if the number is more than 4.
  3. In the same group, number of valence electrons and so the valency of the elements is same.
  4. In the same period, number of valence electrons changes and so the valency of the elements.
  5. In a period going from left to right first the valiancy of the elements increases up to 4 than decrease down to zero to the noble gas element.

**Assessment Parameters :**

Question. 2,3,5,7 carries 1 mark each and Question 1,4,6 carry 2 mark each.

**Student Work Sheet**

**Time : 10 Minutes**

**Instruction:**

Atomic Number of the elements of 3 period of Modern Periodic table are listed below. Study the data carefully and answer the questions that follows:

Period 3 elements:	Na	Mg	Al	Si	P	S	C	Ar
Atomic Number:	11	12	13	14	15	16	17	18

**Q1.** What are the atomic numbers of Sodium and Phosphorus respectively? Write their respective electronic configurations.

a. \_\_\_\_\_

b. \_\_\_\_\_

**Q2.** Write down the number of valence electrons in an atom of sodium and phosphorus respectively.

a. \_\_\_\_\_

b. \_\_\_\_\_



Q3. What are the Valencies, of Sodium and Phosphorus.

- a. \_\_\_\_\_  
b. \_\_\_\_\_

Q4. What are the Valencies, of Sulphur and Chlorine atom.

- a. \_\_\_\_\_  
b. \_\_\_\_\_

Q5. Comment upon the similarity in the valency of Sodium and Chlorine, though they are the members of different groups.

- a. \_\_\_\_\_  
b. \_\_\_\_\_

Q6. If the number of valence electrons in an atom is known how would you calculate its valency?

- a. \_\_\_\_\_  
b. \_\_\_\_\_

Q7. Going left to right in a Period, how does the Valency of elements vary?

- a. \_\_\_\_\_  
b. \_\_\_\_\_

### Suggested Remediation:

- Some students may find it difficult to comprehend that valency of an element may be found if the atomic number of element is known. Teacher may help them by explaining that the atomic number tells us the number of electrons present in the atom and from which electronic configuration may be written and so the number of valence electrons in the atom and the valence may be found.
- Some students may write the valency of sulphur wrong. The teacher may help them recall that if the number of valency electron is more than 4, Valency of the element will be calculated as  $(8 - \text{no. of valence electrons})$ .
- Some students may find it difficult to understand / discover the trend in the variation in valency in the period. Teacher may suggest to write the valency of elements in different periods. More practice will help them to understand and internalise the concept
- A few students may be able to tell the number of valence electrons but not the valence, they may be given more practice.



## Period Classification of Elements

## Chapter 5

**Assessment Technique:** Diagram / Data based worksheet

**Objectives:** To enable the students to-

- Appreciate the periodic trends in change in metallic and non-metallic character of elements.
- Study and analyse the given table for the placement and property of the elements in the Modern Periodic table.

**Task :**

**Individual**

**Procure:**

The teacher may give the following worksheet after the teaching learning about the modern periodic table. The following information may be recalled with the students before the start working on the worksheet.

- Elements of 1st group are called alkali metals.
- Metallic character increases down the group because of the increase in the size of the atom of the elements because of which the electrons from the outermost shall can easily be removed.
- Metallic character decreases from left to right in a period because of the increase in the effective nuclear charge.
- Non-metallic character increase from left to right in a period because of jncrease in effective nuclear charge.
- Non-metallic character decreases down the group because of increase in the size of the atom.

**Assessment Parameters:**

Question No. 1-6 carries 1 mark each

Question No. 6 & 7 carry 2 marks each

### Student Work Sheet

**Instructions:**

A part of the modern periodic table with elements represented by the letter of English Alphabet (not the elements symbols) is given below:

Observe that carefully and answer the questions that follows:



Groups →	1	2	13	14	15	16	17	18
periods ↓								
I	A							
II	B		H	J			L	N
III	C	F	I	K			M	O
IV	D	G						p
V	E							

- Q1. What are the elements of group one called?  
\_\_\_\_\_
- Q2. Select the letter which represents the most reactive metal?  
\_\_\_\_\_
- Q3. What is the name given to group 17 elements?  
\_\_\_\_\_
- Q4. Select the element which represents, the most reactive non-metal?  
\_\_\_\_\_
- Q5. Which element is most likely to be a metalloid?  
\_\_\_\_\_
- Q6. What will be the chemical formula of a compound formed by combining the elements represented by F and L?  
\_\_\_\_\_
- Q7. How the metallic character of elements vary in a group and why?  
\_\_\_\_\_
- Q8. How the non-metallic character of elements vary in a period & why?  
\_\_\_\_\_

### Suggested Remediation:

- Some students may find it difficult to identify the place of element in the Periodic Table and for this the teacher may have to carry out a revision exercise.
- Some students may not be able to comprehend the logic behind the trend in change in metallic and non-metallic characters, teacher may explain the basics of metallic and non-metallic character and the change in them again.



## Period Classification of Elements

## Chapter 5

**Assessment Technique:** Data based Assessment

**Objectives:** To enable the students to:

- Appreciate that atomic radius is the distance between the centre of the nucleus and the outermost shell of an isolated atom and it is measured in pico meter.
- Discover that going from left to right in a period elements, have atomic radius in decreasing order.
- Draw the inference from the given data.

**Task :** **Individual**

**Procedure :**

The teacher may give the following information to the students as a recall before giving them the worksheet.

- The atomic size refers to the radius of an atom.
- The atomic size or atomic radius is the distance between the centre of the nucleus and the outermost shell of an isolated atom.

**Assessment Parameters:**

Q. 1-7 carry 1 mark each, question no 5 carries 2 marks and 6 carry 3 marks.

### Student Worksheet

**Time : 10 minutes**

**Instructions :**

Atomic Radius of few elements of 2nd period are given below, the elements are randomly arranged and are not in the order they are placed in a periodic table

Elements of 2nd period	B	Be	O	N	Li	C
Atomic Radius (pm)	88	111	66	74	152	77

Now answer the following question:

**Q1.** What is atomic radius of an element?

---

**Q2.** What is the unit of atomic radius?

---

**Q3.** Arrange the above elements in decreasing order of atomic radius.

---



Q4. How does the atomic radius vary going from left to right in a period?

---

Q5. Why does the atomic radius decrease on going from left to right in a Period?

---

**Explain:**

Q6. If the elements in the given data are the members of Group 1, 2, 13, 14, 15 and 16, predict and identify the group number of each element as in the periodic table

Group 1 element \_\_\_\_\_

Group 2 element \_\_\_\_\_

Group 13 element \_\_\_\_\_

Group 14 element \_\_\_\_\_

Group 15 element \_\_\_\_\_

Group 16 element \_\_\_\_\_

Q7. Will the size of the next element in the same period in group 17 be more or less than the group 16 element.

---

**Suggested Remediation:**

- Some students may find it difficult to comprehend that elements are arranged in the decreasing order of their atomic radius in a period in the Modern Periodic Table. Teacher may explain the concept using the Modern Periodic Table.
- Some students may find it difficult to explain the reason behind the variation in the atomic radius going from left to right in a period. Teacher may help, explaining the impact of effective nuclear charge and encourage them to write their answer in points this will bring thorough understanding.
- As an extension anomalies in the trend for radius of noble gases may be discussed, after the students have understood the general trend followed by the elements.





# Life Processes

# Chapter 6

**Assessment Technique :** Individual Worksheet

**Objectives:** To enable the students to

- Recall that all living beings respire to release energy
- Recognise that respiration is a chemical reaction
- Correlate the chemical reaction involved in respiration with presence/absence of Oxygen
- Understand that there may be complete or incomplete breakdown of glucose depending upon the location and availability of oxygen
- Appreciate that energy is produced in varying quantities when glucose is broken down during cellular respiration

**Task :** Individual Work

**Approximate Time :** 15 Minutes

**Procedure:**

- The students are given a worksheet that has a flow chart of breakdown of glucose by various pathways in living organisms.
- The students will fill in the blank spaces in the flow chart and then answer the questions given below the flow chart.

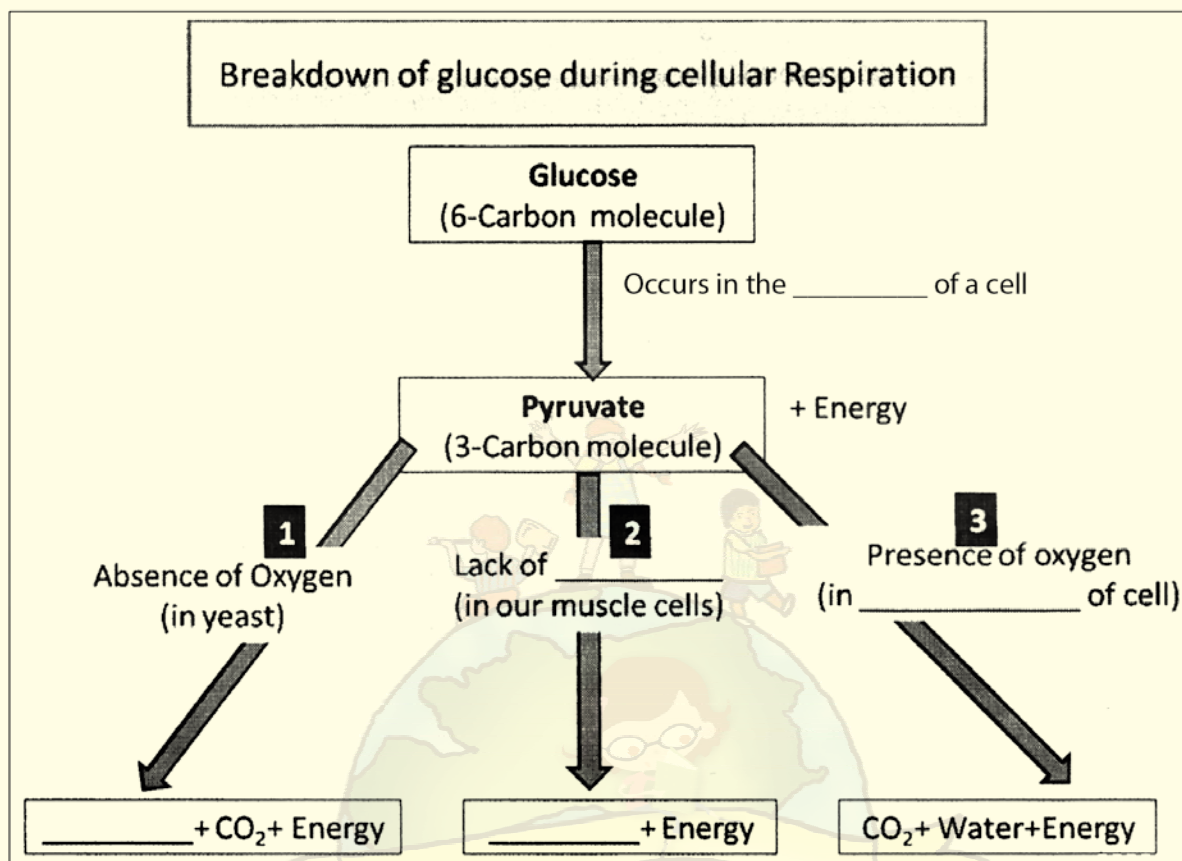
## Student Worksheet

**Time: 15 minutes**

**Max. Marks 5**

**Instructions:** Given below is a flow chart of breakdown of glucose by various pathways. Fill in the blank spaces in the flow chart and answer the questions given below the flow chart.





1. What is the source of glucose molecules that are involved in cellular respiration in plants?
2. What is the source of glucose molecules that are involved in cellular respiration in animals?
3. What is the specific reason for muscle cramps that are caused due to sudden physical exercise?
4. Out of the three types of reactions given in the flow chart, which reactions can be termed as aerobic? (Write the number specified in the flow chart)
5. Out of the three types of reactions given in the flow chart, which reactions can be termed as anaerobic? (Write the number specified in the flow chart)

#### Criteria for Assessment:

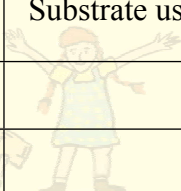


- Marks for each correct answer in the flow chart =  $\frac{1}{2}$   
Total Marks for Flow chart:  $\frac{1}{2} \times 5 = 2\frac{1}{2}$
- Marks for each correct answer to the questions =  $\frac{1}{2}$   
Total Marks for answers to questions :  $\frac{1}{2} \times 5 = 2\frac{1}{2}$

Total:  $2\frac{1}{2} + 2\frac{1}{2} = 5$



**Suggested Remediation:**

- The teacher may indicate that respiration reactions cause a decrease in the size of the substrate molecule (glucose) and are hence termed as catabolic.
- A few students may not be able to give satisfactory answers. The teacher may explain the concepts again and a similar worksheet may be given to them as a remedial exercise.
- The teacher may also prepare an alternative worksheet where the reactions may be written in a tabular format with some areas left blank:

Type of respiration (aerobic / anaerobic)	Location in the cell	Substrate used	Intermediate formed	End products
				
				
				

- The students may be asked to find out the cause of muscle fatigue in athletes, marathon runners and people who go for trekking. They may find out the role of regular physical activity and role of medicines in alleviating the symptoms of fatigue.

**Life Processes****Chapter- 6**

**Assessment Technique :** Individual Worksheet

**Objectives:** To enable the students to

- Recall the parts of excretory system in Human beings
- Realize that nephron is an integral part of the excretory system
- Understand the role of kidneys in removal of waste products

**Task :** **Individual Work**

**Approximate Time:** **15 Minutes**

**Procedure:**

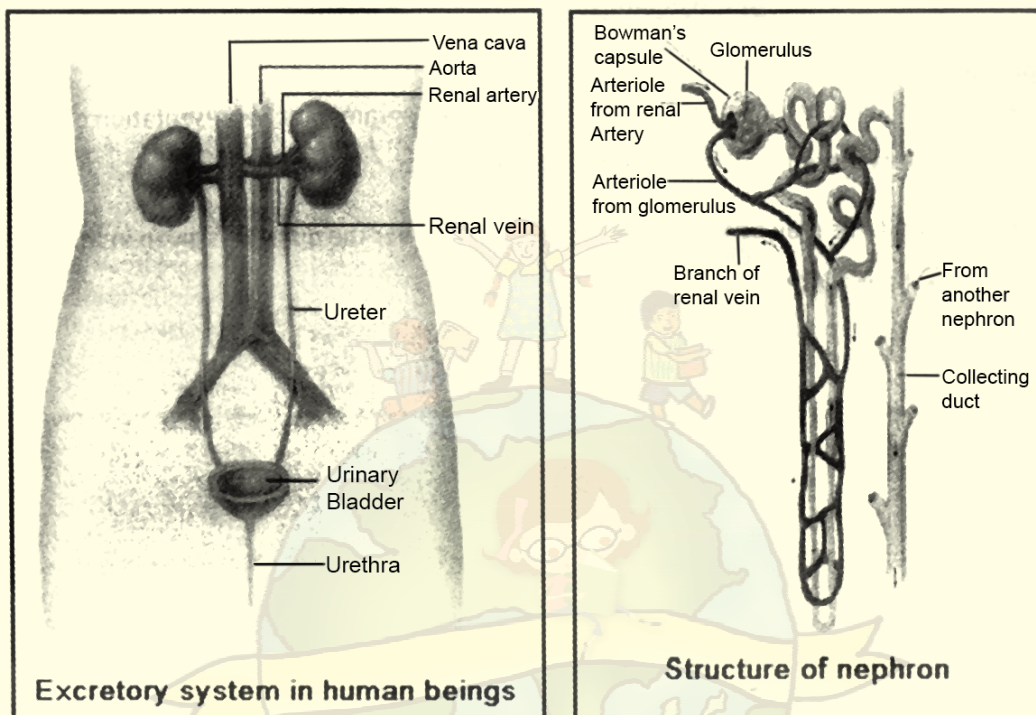
- The students are given a worksheet that has a diagrammatic representation of the excretory system and the structure of nephron.
- The students may observe the diagrams and answer the questions that follow:



Student Worksheet

Time: 15 minutes

**Instructions:** Given below is the diagrammatic representation of the excretory system and the structure of nephron. Observe them carefully and answer the questions given in the worksheet.



1. In which part of the excretory system are the nephrons located?
2. Name the blood vessel that brings nitrogenous wastes to the kidneys for removal.
3. Name the blood vessel that is taking the blood away from the kidneys after the removal of nitrogenous wastes
4. Which part of the nephron is connected to the ureters?
5. In the diagram of excretory system, add arrows (pointing upwards/downwards) in the aorta and vena cava to show the movement of blood.
6. Complete the following table using the word bank given in the box below.

Word Bank: oxygenated, deoxygenated, with nitrogenous wastes, without nitrogenous wastes

Name of the blood vessel	Renal Vein	Renal Artery
Type of blood	1.	1.
	2.	2.



**Criteria for Assessment :**

- Marks for each correct answer for questions 1–4  
=  $\frac{1}{2}$  mark each ( $\frac{1}{2} \times 4 = 2$ )
- Correct answer for question no. 5 = 1 mark ( $\frac{1}{2} + \frac{1}{2}$ )
- Correct answer for question no. 6 =  $\frac{1}{2} \times 4 = 2$  marks

Total Marks: 2 + 1 + 2 = 5

**Suggested Remediation:**

- A few students may not be able to give satisfactory answers. The teacher may explain the concepts again and a similar worksheet may be given to them as a remedial exercise.
- The teacher may also prepare an alternative worksheet in which a crossword puzzle is prepared taking parts of the excretory system as 'words' and their function/description/location as clues.
- Through this worksheet, the teacher should help the students to understand that using terms like 'pure' and 'impure' for blood may not be correct since blood in renal artery may be 'pure' in terms of presence of oxygen but 'impure' in terms of presence of nitrogenous wastes.

**Life Processes****Chapter 6****Assessment Technique :** Diagram based**Objectives :** To help the student to

- Recall that stomata are the 'breathing pores' of leaf
- Recognise the parts of a stomatal complex
- Correlate the structure of guard cells with the specific functions performed by the stomatal pore
- Appreciate the balance which exists in plants w.r.t the changes in environmental conditions.

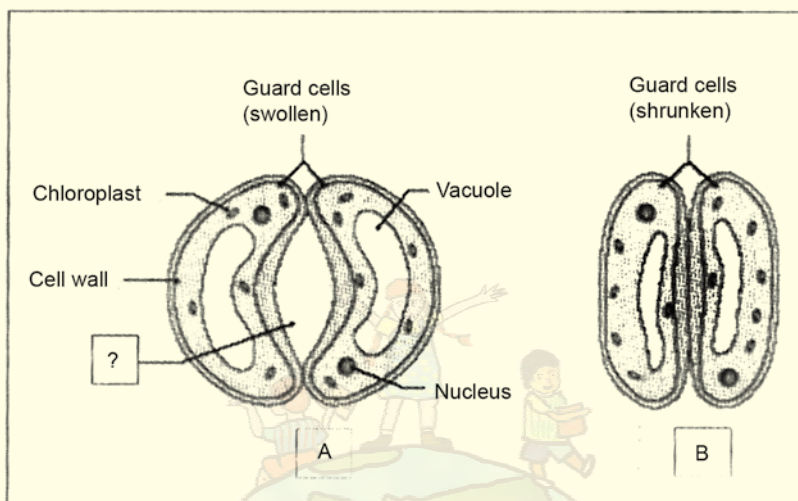
**Task :** **Individual worksheet****Approximate :** **Time: 15 minutes****Procedure :** This worksheet may be used to evaluate the understanding of the 'role of stomata in plants' after the topic 'Autotrophic Nutrition' has been completed in class.



## Student Worksheet

Time: 15 minutes

**Instructions :** Observe the diagram of stomata given below and answer the questions that follow:



1. Where are stomata present in the leaf?
2. In diagram 'A', one area has been marked with a question mark '?' Name this area.
3. The area mentioned in question -'2' is not been shown diagram 'B'. What could be the reason for this?
4. The guard cells in diagram 'A' are different in shape and size from the guard cells in diagram 'B'. Which of the following sentences gives the correct reason:
  - a) Guard cells swell up during the day and shrink at night
  - b) Guard cells swell when water flows into them causing the stomatal pore to open. They shrink when water moves out and the stomatal pore closes.
  - c) The uneven thickness of cell wall of the guard cells enables them to open and close at regular intervals.
5. What will happen if there are no stomata in a plant?

**Criteria for assessment :**

1 mark for every correct answer

Total:  $1 \times 5 = 5$

**Suggested Remediation :**

- The students should be able to understand the importance of stomata through this worksheet.
- Some students may not be able to answer the questions. The teacher may explain the concepts again and relate it to processes like photosynthesis and respiration. The following examples / relationships may be used:





- (a) Stomata close when the temperature is high
- (b) Stomata allow the plant to withstand heat by losing water vapour- a process similar to sweating in human beings.
- (c) The raw materials for photosynthesis are obtained by the plants in different ways. CO<sub>2</sub> enters through stomata.
- (d) Role of stomata in cloud formation
- (e) Gases that move in and out of stomatal pore during day and at night.

## Life Processes

## Chapter 6

**Assessment Technique:** Diagram based individual Worksheet

**Objectives:** To enable the students to

- Recognize the various parts of heart
- Realize the importance of heart as an important organ for transportation of substances
- Understand the role of veins and arteries in transportation
- Appreciate the fact that oxygenated and deoxygenated blood are not mixed in the human heart for greater energy-efficiency

**Task :**

**Individual Work sheet**

**Approximate Time:**

**15 Minutes**

**Procedure :**

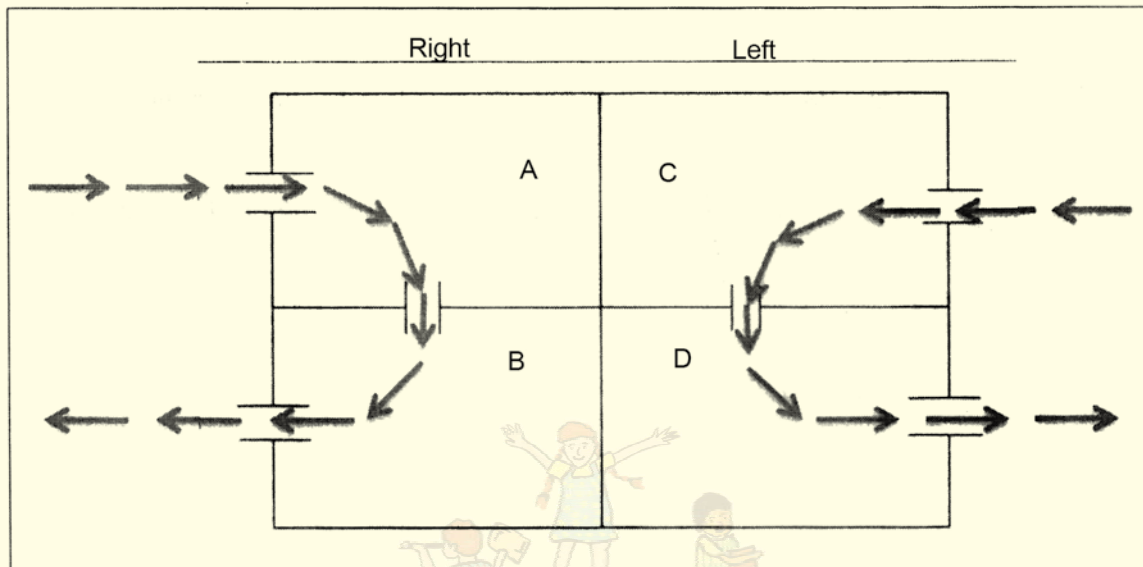
- This worksheet may be used to assess the student's understanding of the working of the human heart.
- The students may be given this worksheet that has a diagrammatic representation of a four-chambered heart.
- The student may observe the diagram and answer the questions given in the worksheet.

## Student Worksheet

**Time: 15 minutes**

**Instructions:** Given below is the diagrammatic representation of a four-chambered heart. Observe the diagram carefully and answer the questions given in the worksheet.





1. Name one group of organisms that has a four chambered heart.
2. Name the chamber marked as 'A' and specify whether it will receive oxygenated blood or deoxygenated blood.
3. Name the chamber marked as 'B' and specify whether it will receive oxygenated blood or deoxygenated blood.
4. Name the chamber marked as 'C' and specify whether it will receive oxygenated blood or deoxygenated blood.
5. Name the chamber marked as 'D' and specify whether it will receive oxygenated blood or deoxygenated blood.
6. Name the blood vessel that brings blood to chamber 'A'.
7. Name the blood vessel that carries blood away from chamber 'B'.
8. Name the blood vessel that brings blood to chamber 'C'.
9. Name the blood vessel that carries blood away from chamber 'D'.
10. What will happen if the blood in chambers 'A' and 'C' mix?

### Criteria for Assessment :

Marks for each correct answer =  $\frac{1}{2}$  marks

Total Marks:  $\frac{1}{2} \times 10 = 5$  marks

### Suggested Remediation :

- A few students may not be able to give satisfactory answers. The teacher may explain the concepts again and a similar worksheet may be given to them as a remedial exercise.
- The teacher may also prepare an alternative worksheet where incomplete labelling has been done, for example: Pulmonary \_\_\_\_\_, right \_\_\_\_\_, \_\_\_\_\_ ventricle etc.



- The students may be asked to prepare a 'Flowchart' showing movement of blood. The teacher may specify the starting point (right atrium or aorta). This may be done as a group activity. The flow-charts may be assessed by 'peer assessment' method where students of different groups may assess the flowcharts. This would enhance the learning experience.

## Life Processes

## Chapter-6

### Assessment Technique : Role Play

**Objectives:** To help the students to :

- Understand the working of the various organs of the digestive system
- Differentiate between types of food digested at different areas in the alimentary canal
- Recognise the order in which the organs are present
- Understand the role of each organ in digestion of food
- Appreciate the relationship between structure and function of the organs of the digestive system.

**Task :**

### Group Work

**Approximate time given to each group: 4-5 minutes**

**Procedure:**

1. The students will be asked to enact the role of a particular organ/part of the digestive system or Respiratory System. This activity may be done in groups too, where one student enacts and the others hold the relevant charts/ material required for role play.
2. The student enacting the part of the digestive/ respiratory system must follow the following steps
  - Introduction
  - Specify area where you are present
  - Explanation of structure/function
  - Role in digestion/ respiration
  - What will happen if you are not there/ you stop working?
  - Any extra information related to working of the organ/part, disease etc.
3. Each group may make a presentation in about five minutes.



4. Organ/part of the digestive system or Respiratory System that can be given for Role play:

Mouth, Oesophagus, Salivary Glands, Liver, Gall Bladder, Stomach, Small Intestine, Large Intestine, Pancreas, Nasal Passage, Trachea, Lungs, Alveoli, Diaphragm, Larynx.

**Illustration:**

**Topic for Role play:** Stomach

The student enacting the role of stomach starts speaking:

“Hello Friends, I am stomach, a very important organ of the digestive system. I am large, muscular and expand when food enters my cavity.

I am placed just below the thoracic cavity towards the left side. I am actually present in the area below the diaphragm known as the abdominal cavity, receive the food from the oesophagus and then pass it to the duodenum. I regulate the exit of food by a sphincter muscle. It is important that food enters the duodenum in small quantities for efficient digestion.

My muscular walls secrete digestive juices. These digestive juices consist of hydrochloric acid, a protein digesting enzyme called pepsin and mucus. The acid facilitates enzyme action and also kills harmful microorganisms. Mucus protects my inner lining from the action of acid. Pepsin facilitates the digestion of proteins.

If I am not present, or if I stop working, then digestion of proteins will be affected. Food that is eaten by a person will not be stored and sent to small intestine in a regulated manner. In other words, a person will not be able to eat a normal sized meal but will have to eat more often, that too in small quantities.

I am that part of the alimentary canal where the lumen is widest. I cannot digest the food completely, but when assisted by other organs of the digestive system, I perform my role efficiently.

**Note to the teacher :** The teacher may help the students to prepare effective presentations by providing guidelines and facilitating the availability of the reference material.

**Criteria for Assessment:**

- Effectiveness of the presentation (2)
- Justification of the role (2)
- Creativity (1)

**Sample record Sheet for Assessment:**



S. N.	Name of the student	Organ/Topic	Role	Effectiveness of the presentation *(2)	Justification of the role **(2)	Creativity ***(1)	Total (5)

*	May include communication skills, confidence, clarity of thought etc.
**	May include content of role play and reasoning
***	Something extra done by the student that is relevant to the role and improves effectiveness of the Role play.

### Suggested Remediation :

- Some students may not be able to perform the 'Role Play' activity properly.
- The teacher may guide them by helping them to collect the relevant material and dividing the work for an effective presentation.
- The teacher may also provide an alternative assignment (Ppt., worksheet, wall magazine) to such students.





## Control and Coordination

## Chapter 7

**Assessment Technique :** Diagram based worksheet

**Objectives :** To help student to:

- Recall functions of Nervous system
- Recognise the importance of a reflex action in our day to day life.
- Correlate between information received and quick response
- Identify tissues/cells involved in a reflex arc
- Differentiate between voluntary actions and a reflex action
- Understand and appreciate the importance of quick response

**Task :** **Individual Worksheet**

**Approximate Time : 10 minutes**

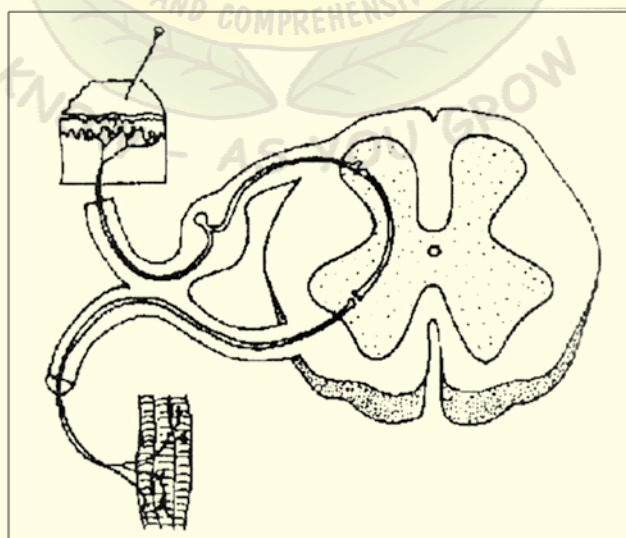
**Procedure :** The following worksheet may be given to the students to assess their basic understanding of a Reflex Arc after completing the unit.

### Student Worksheet

**Time: 10 minutes**

**Instructions :** Read the questions carefully and answer them.

1. The diagram given below shows a reflex arc. Add the following labels to the diagram. Muscle; Sensory neuron; Relay neuron; Motor neuron; Pain receptors in skin





2. List in order the 3 different neurons involved in a reflex arc from the stimulus to the response in a proper order.

Stimulus	..... .....	..... .....	..... .....	Response
----------	----------------	----------------	----------------	----------

3. Name 2 different reflex actions produced in response to two specific stimuli.

Reflex action 1 .....

Reflex action 2 .....

**Criteria For Assessment :**

**Q1.**  $\frac{1}{2}$  mark  $\times$  5 = 2½ marks

**Q2.**  $\frac{1}{2}$  mark  $\times$  3 = 1½ marks

**Q3.**  $\frac{1}{2}$  mark  $\times$  2 = 1 mark

**Total = 5 marks**

**Suggested Remediation :**

- This worksheet has been developed to help student to gradually proceed from recalling to understanding and then relating to real life situation.
- Teacher may ask them to show arrows in the diagram to mark the direction of flow signal which forms a reflex arc.
- To help students to understand the concept of a reflex arc and relating it with real life situation, teacher may also ask/suggest students the name of the sense organ and corresponding muscles/gland in various reflex actions.
- If some students are not able to give satisfactory answers, the teacher may explain the concepts using real-life situations and adding the names of the parts of nervous system involved.
- The worksheet may be simplified, if need be, in the following manner:
  - Labeling lines may be added in the diagram for question 1.
  - The names of the neurons may be given in question 2 and the students may be asked to place it in proper order.
  - The stimuli for the two parts of question 3 may be specified and the student may be asked to then write the specific reflex action that would take place in response to the stimuli.



# Control and Coordination

# Chapter 7

**Assessment Technique :** MCQ based work sheet

**Objectives :** To enable student to:

- understand structure and function of organs involved in controlling and coordinating body functions
- appreciate that structures of organs are complementary to their respective functions
- Identify specific regions of organs/tissues/ cells involved in control and coordination in animals

**Task :** **Individual Worksheet**

**Approximate Time :** **15 minutes**

**Procedure :**

- This MCQ based worksheet may be used at the end , after summing up the lesson to assess knowledge, comprehension, application and analytical capabilities/skills of the students.
- The worksheet will be distributed to the students who may complete it in the class in 15 minutes.

## Student Worksheet

**Time : 15 minutes**

**Instructions:** Select the correct option from the four different choices given for each question.

1.	The sensory receptors in our body to detect smell are		
a.	auditory receptors	c.	Olfactory receptors
b.	gustatory receptors	d.	tactile receptors

2.	Upon receiving a signal the dendrite tip of a nerve cell sets off a chemical reaction that		
a.	creates an electrical impulse in the dendrite.	c.	creates an electrical impulse in the next neuron.
b.	releases some chemicals in the cell body of the neuron.	d.	creates a stimulus.

3.	The chemicals that cross the synapse to start a similar electrical impulse in the next neuron are released from		
----	---	--	--



a.	the dendritic tip	c.	the end of the axon
b.	the cell body	d.	the axon

4.	Part of the neuron where information is acquired is		
a.	dendrite	c.	Cell body
b.	axon	d.	Nerve ending

5.	Part of the neuron through which information travels as an electrical impulse is		
a.	dendrite	c.	Cell body
b.	axon	d.	Nerve ending

6.	Part of the neuron where the impulse is converted into a chemical signal for onward transmission is		
a.	dendrite	c.	Cell body
b.	axon	d.	Nerve ending

7.	Give below parts of a neuron and their functions in two different columns. Match the part to the correct function.						
	i) dendrite	1. the impulse is converted into a chemical signal For onward transmission					
	ii) axon	2. where information is acquired					
	iii) nerve ending	3. through which information travels as an electrical impulse					
a.	i 3	ii 1	iii 2	c.	i 1	ii 3	iii 2
b.	i 2	ii 1	iii 3	d.	i 2	ii 3	iii 1

8.	The order of sequence of tissues involved in producing of a reflex action when a bright light is focused on the eye would be		
a.	effectors, sensory neuron, relay neuron, motor neuron, receptor	c.	effectors, motor neuron relay neuron, sensory neuron, receptor
b.	receptor, sensory neuron, relay neuron, motor neuron, effectors	d.	receptor, motor neuron, relay neuron, sensory neuron, effectors



9.	Given below the parts of brain and one function associated with each part—in two separate columns. Match the part to the correct function.						
	i) Forebrain	1. blood pressure and vomiting					
	ii) Cerebellum	2. walking in a straight line					
	iii) Medulla	3. hearing and sight					
a.	i 3	ii 2	iii 1	c.	i 3	ii 1	iii 2
b.	i 2	ii 3	iii 1	d.	i 1	ii 3	iii 2

10.	Functions of forebrain are						
a.	Sensation of feeling full, control of voluntary muscles, hearing, sight.			c.	control of voluntary muscles, control of blood pressure, hearing, sight		
b.	control of voluntary muscles, hearing, sight, posture of the body			d.	Sensation of feeling full, control of involuntary muscles, hearing, sight		

**Criteria for Assessment:** For every correct answer  $\frac{1}{2}$ ,

Total:  $\frac{1}{2} \times 10 = 5$  Marks

### Suggested Remediation :

- The questions which are generally not answered by majority of the students indicate that students need help in both, the content and the skill.
- Teacher may cover this particular content once again and may use the assessment skill often, formally or informally to help students develop reflexes to answer such questions correctly. The students may be asked to answer similar questions after a few days.

## Control and Coordination

## Chapter 7

**Assessment Technique:** Worksheet

**Objectives:** To help the students to:

- Identify the various steps involved in movement of information through a neuron
- Recognise the parts of a neuron involved in transmission of a nerve impulse

**Task :** **Individual work sheet**

**Approximate Time : 15 minutes**

**Procedure:**

The student is given a worksheet that has a diagrammatic representation of a nerve cell. Certain steps related to the movement of information through neurons are given in a tabular form. They have not been placed in the correct order. The student shall allot the number to each step to put them in correct sequence.

