

# Magnetic Effect of Current

## Chapter 13

**Assessment Technique:** Diagram based worksheet

**Objectives:** To enable the student to

- Learn the statement of Fleming's right hand rule for finding the direction of the induced current.
- Get familiar with this rule for finding the direction of induced emf in a given situation.
- Clearly differentiate between the physical situations in which this rule and the situations, in which Fleming's left hand rule, are to be used.

**Assessment Time:** 20 minutes

**Assessment Task:** Individual Worksheet *(Figure 13.18 on page 235 of NCERT Textbook may be drawn on the worksheet)*

**Procedure:** The teacher may

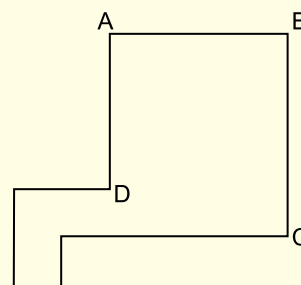
- Discuss the statement of Fleming's right hand rule.
- Describe the 'easy way' to remember this rule.
- Illustrate the use of this rule in some simple situations.
- Emphasize the difference between the physical situations, in which this rule and the situations, in which Fleming's left hand rule are to be used.
- Ask the students to use this rule for finding the direction of the induced emf/current in some given situations.
- Help the students to realize that when any two of the three (mutually perpendicular) directions are given we can use this rule for finding the third unknown direction.
  - (a) direction of movement of the conductor
  - (b) direction of magnetic field
  - (c) direction of induced current/emf

**Assessment Parameter:** One mark for each correct answer.

### Student Worksheet

**Instructions:** Answer the questions given below:

1. A rectangular coil, ABCD is lying in the plane of the page as shown. A bar magnet, with its north pole pointing towards the page, is moved along a direction perpendicular to the plane of the page. What is the direction of the induced current in the coil?



2. A bar magnet, held with its north and south poles along the east, west direction/ respectively (in the plane of the page) is rapidly moved towards a circular coil held with its plane perpendicular to the plane of the page. What can we say about the direction of the induced current in the circular coil?
3. For the set up shown here what can we say about the relative directions of deflection of the galvanometer needle when the key is (a) just plugged in (b) taken out after having been kept plugged in for some time?  
(Draw Fig. 13.17 in NCERT Text Book–page 235)
4. What can we say about the direction of the magnetic field for the situation corresponding to the 'right hand' shown here? (Draw Fig. 13.18 in NCERT Text Book–page 235)
5. What can we say about the direction of movement of the conductor, corresponding to the 'right hand' shown here? (Draw Fig. 13.18 in NCERT Text Book–page 235)

**Suggested Remediation:**

- Some students may fail to apply Fleming's rules correctly and may mix-up the right hand and the left hand rules.

The teacher may help the student to.

- Clearly identify the difference between the physical situations in which the 'right hand rule' and the situations in which the 'left hand rule,' are to be used.
- Get practice in using Fleming's rules.
- Know the 'easy way' of remembering Fleming's rules.



# Source of Energy

# Chapter 14

**Assessment Technique :** Seminar

**Objectives:** To enable the students to

- Learn some topics by self-study and collaboration
- Understand how to collect and present data
- Develop confidence to present a topic before an audience
- Realize the need to adopt non-conventional and renewable sources of energy
- Explain how to assess the practical adaptability of a particular source of energy.

**Task :**

## Group Work

**Approximate Time :** 3-4 days for preparation and 10 minutes for presentation by each group

**Procedure:**

- A Seminar can be conducted in the class to cover a chapter. The chapter to be taught can be divided into different sections. The class will be divided into groups of students. Each group will be allotted a topic and each student, within a group, will be assigned a subtopic.
- **For example:** The Chapter ‘Sources of Energy’ will be divided into 8 topics including introduction and recapitulation. The students will be advised to put special emphasis on the environmental consequences of using a particular source of energy and on its sustainability i.e. how long will it last. The teacher may divide a class of 40 students into 8 groups. Each group will be allotted a topic as under:

Group	Topic
A	Assessing a good source of energy
B	Conventional sources of energy: Fossil Fuels
C	Conventional sources of energy: Thermal Power Plants and Hydro Power Plants
D	Using conventional sources of energy more effectively- Biomass
E	Using conventional sources of energy more effectively- Wind Energy
F	Non-conventional Sources of Energy - Solar Energy
G	Non-conventional Sources of Energy - Energy from Sea (Tidal energy, wave energy and ocean thermal energy)
H	Non-conventional Sources of Energy - Geothermal and Nuclear energy



- The teacher will divide each topic into 4-8 subtopics depending upon its complexity and each subtopic will be assigned to a student of every group. The student, in the group, may get any other specific task to be performed in preparing the presentation. Necessary guidance will be given to every group for making the presentations. The areas of assessment would be shared with the students beforehand.
- The teacher could choose a coordinator from each group who would facilitate the working in each group, ensuring that there is contribution from each participant. A maximum of 10 minutes may be given to every group to make a presentation.
- The whole class can participate in this seminar.

**Student Activity:**

- Study the topic allotted to you.
- Prepare the topic by using charts / diagrams / blackboard or make a power point presentation (if facilities are available)
- After the presentation, the student presenter will have to answer two questions put to him by the audience.

**Time Allotted:** 4-5 periods, 3 hours to 4 hours (including assessment by the teacher)

**Criteria for Assessment:**

- The criteria for assessment will be shared with the students before the seminar begins. The students can be assessed on the basis of the format given below:

S. N.	Name of the Student	Group	Individual Performance	Viva *1	Presentation **2	Content and relevance to the topic ***2	Total (5)
1.	A						
2.	B						
3.	C						
4.	D						
5.	E						
Remarks if any							

*	— Response to Teacher's Question = ½ mark — Response to audience question = ½ mark
**	— Innovative Introduction = ½ mark — Clarity and articulation or delivery ½ mark — Use of Visuals = 1 mark
***	— Comprehension of concept = ½ mark — Integration of different points into a proper sequence (Holistic Approach) = 1 mark — Conclusion = 1 mark





**Suggested Remediation:**

- A few students may not perform well during the presentation. The teacher should identify the reason and guide the students accordingly.
- The students may also be given an alternate activity (Questionnaire based on the presentation made by other groups)

**Source of Energy****Chapter 14****Assessment Technique :** Individual Worksheet**Objectives:** To enable the students to

- Recognize various available sources of energy.
- Understand the criteria that should be followed to select the right source of energy.
- Learn the various terms related to use of energy by man

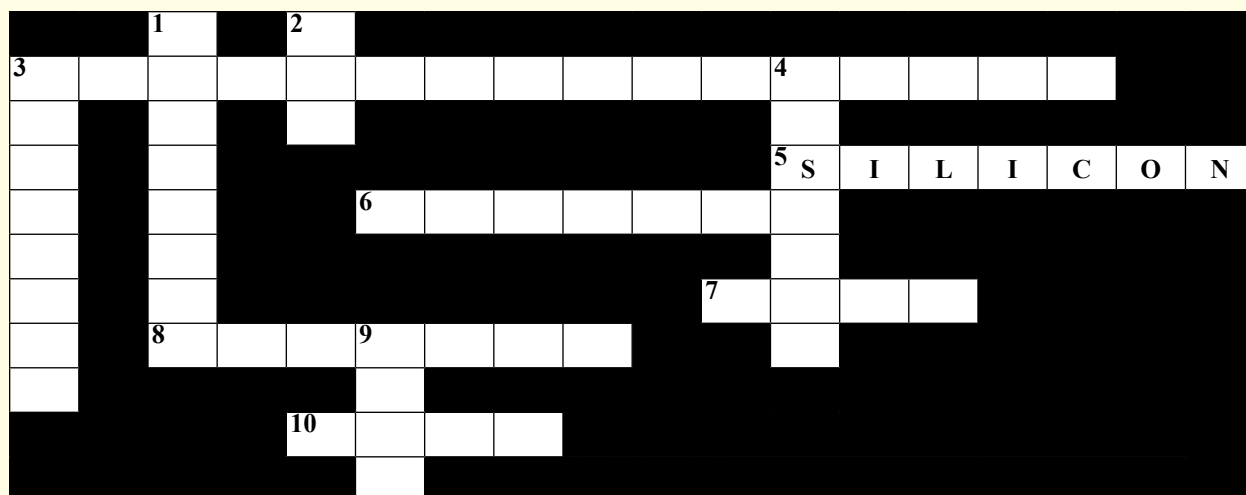
**Task :****Individual Work****Approximate Time :** 15 Minutes**Procedure:**

- The students are given a worksheet that has a crossword puzzle and clues to complete the crossword.
- The students shall read the given clues carefully and fill up the blocks with appropriate word/term.

**Student Worksheet****Time : 15 minutes**

**Instruction:** Read the clues given below and fill up the blocks with appropriate word/term to complete the crossword puzzle given below: One 'word' has been done for you.





### The Clues

#### Across:

- 3 This principle is useful in solar cooker but can be harmful on earth (5, 5, 6)
- 5 Element used to make solar cells
- 6 A black surface \_\_\_\_\_ heat.
- 7 This fossil fuel made industrial revolution possible
- 8 A green house gas
- 10 High rise structures constructed on rivers to produce hydro electricity.

#### Down:

1. Its construction, on River Ganga, was opposed
2. Clean Fuel (abbreviation)
3. Bio-gas is commonly called
4. Nuclear power generation is based on this process
9. This energy is converted to electrical energy in a thermal power plant

#### Criteria for Assessment:

Marks for each correct word added in the puzzle =  $\frac{1}{2}$  (Total Marks:  $\frac{1}{2} \times 10 = 5$ )

#### Suggested Remediation:

The teacher may guide the students

- about the different source of energy
- about the advantages/disadvantages of different sources of energy.
- to make suitable 'clues' for designing similar cross-word puzzles.
- A few students may not be able to guess the correct terms/names. The teacher may help them by giving hints in the form of pictures.
- If the students have not learned the characteristics, or, if this activity is given before the chapter is discussed in class, then the students may be allowed to use the text book.



## Our Environment

## Chapter 15

**Assessment Technique :** Questionnaire based on Field Visit

A field visit helps to develop the interest of a student in out-of-school activities and learning. Such visits enable the students to understand various biological concepts as they operate in natural surroundings and real-life situations. Extended learning techniques like field visits help to build a concrete learning platform for the students.

**Objectives:** To enable the students to

- Recall the various components of an ecosystem
- Identify the producers and consumers in an area
- Explain the factors due to which the area can be classified as a natural or an artificial ecosystem.
- Understand how food chains operate in an ecosystem.
- Appreciate the role of each organism in a food chain for sustaining the ecosystem.

**Task :**

### Individual Work

**Approximate Time:** 3-4 Hours

**Procedure:**

1. A trip may be organized to a garden/zoo/park/field after suitably briefing the students.
2. The students shall observe the area and make a list of the various factors/components/organisms observed.
3. Students may be encouraged to seek clarifications while making observations in their notebook. They can also be encouraged to read the information on the boards installed in these areas.
4. The students may click photographs.
5. The students must be reminded categorically not to cause damage to the plants or tease or feed the animals
6. The students would be expected to answer a questionnaire after they come back.



## Student Worksheet

**Time:** 15 minutes

**Instructions:** Answer the following questions based on your observations of the area that you have visited.

**Questionnaire:**

1. Name four biotic and four abiotic components observed in this area.

Biotic Components	Abiotic Components

2. Will this place be called a natural ecosystem or an artificial ecosystem? Give reasons for your answer.
3. List four producers and four consumers present in this area.

Producers	Consumers

4. Construct one food chain that operates in this area. Identify the producers, primary consumers, secondary consumers and tertiary consumers (if any) in the food chain.

Food Chain:			
Producer	Primary consumer	Secondary consumer	Tertiary consumer

5. Write any two points of environmental concern that have arisen in the area due to human intervention.



**Criteria for Assessment:****Response to questionnaire:** Each correct answer 2 marksTotal:  $2 \times 5 = 10$  marks**Suggested Remediation:**

- The field trip can instead also be to a sanctuary / reserve forest / forest / river / sea beach.
- Sometimes students are not able to go on a field trip. They may be shown a short documentary of any of the areas of 'field visit' or they may be asked to gather literature about a wild life park or sanctuary. A similar questionnaire may be used for the students.
- A few students may not be able to give correct answers. They may be assigned a 'buddy' (a student who has answered the questionnaire well). The students and his/her buddy may be given the description of an area by the teacher and then asked to answer a similar questionnaire.
- If the number of students who are unable to answer a question, is more, then the teacher may explain the related concept again. The concept may also be taken up as a topic for 'class discussion'.

**Our Environment****Chapter 15****Assessment Technique :** Wall Magazine/ Bulletin Board**Objectives:** To help the students to :

- Realize the need to conserve and preserve the environment
- Explain various issues related to the environment
- Understand how man's activities are harming the ecological balance
- Appreciate the role of various communities and organizations towards protection of the environment.

**Task :** Group Work**Approximate time given to each group :** 7 - 10 Days (Preparation)

1-2 Hours (Presentation)

**Procedure:**

1. The class is divided into groups of 4-7 students.
2. Various issues / topics related to Environment are allotted to these groups to prepare a Wall magazine or Bulletin Board.





3. The time-frame for completion of work and display is conveyed to the students. (The teacher may allot a space in the desired area (classroom, laboratory, corridors etc.) for display.
4. **Suggested topics for wall magazine/Bulletin Board:** Sustainable Ecosystems, Components of ecosystems, Global Warming, Climate Change, Food chains and food webs, artificial ecosystems, Biological Magnification  
**Or variations like:** Carbon Foot-prints- how to reduce them, organic farming, Vanmanotsava, Green house Effect, Save Tiger, Let us not be a Dodo, The magic 3- Reduce, Reuse, Recycle; Water- the elixir of life, Benefits of being a vegetarian, can be given to the students.
5. The students will collect information/ pictures/ photographs or any other illustrations/ relevant material from different sources and make a presentation in the form of a Wall magazine or a Bulletin Board.

#### Criteria for Assessment:

The Wall magazine /Bulletin Board may be assessed according to the following criterion:

- Information (Content)
- Presentation
- Besides this, each student may be asked questions individually by the teacher to assess his/her understanding and level of contribution (Viva).

Marking may be done in the following manner:

S. N.	Name of the Student	Group	Topic	Presenta- tion (1½)	Content (1½ )	Viva (2)	Total (5)

#### Note:

- To ensure effective participation, the teacher may find out the work done on the project by each member of the group and observe the same.
- To ensure cooperation, the teacher may monitor from time to time.
- To ensure quality work, the teacher may convey some ideas to the students for preparing the wall magazine (Collage, an array of photographs, newspaper cuttings, cartoons or drawings).

#### Suggested Remediation:

- Some students may not be able to participate effectively in this activity.
- The teacher may identify the specific reasons and help the students accordingly; for example, if a student is not able to collect the relevant material, the teacher may provide guidance by providing names of books, websites & other material.
- If the wall magazine has not been displayed in the right manner, the teacher may assign a 'buddy' i.e. a student from a group that has done well, or an art teacher who may enhance the presentation skills of the students.



# Our Environment

# Chapter 15

**Assessment Technique :** Individual Worksheet

**Objectives:** To enable the students to

- Recognize various food chains and food webs operating around them
- Differentiate between terrestrial and marine food chains
- Understand how and why the organisms are classified on the basis of their role in food chain and in an ecosystem.

**Task** **Individual Worksheet**

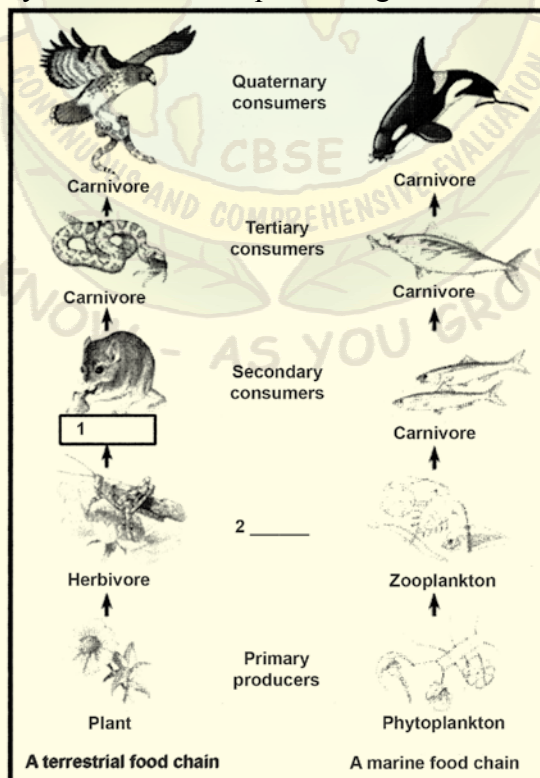
**Procedure:** Times : 15 min

- The students are given a worksheet that has a pictorial representation of a terrestrial food chain and a marine chain.
- The students may observe the pictorial representation of the food chains and answer the questions that follow.

**Time:** 15 minutes

**MM = 5**

**Instructions:** Given below is the pictorial representation of a terrestrial food chain and a marine chain. Observe them carefully and answer the questions given in the worksheet.



1. Fill in the blank in the terrestrial food chain (Blank no. 1). Why is the rat given this term?  
\_\_\_\_\_
2. Can the rat come at a lower position in the terrestrial food chain? Give reasons for your answer.  
\_\_\_\_\_
3. Fill up the blank no. 2. Write one common feature of all organisms that are placed at this level in a food chain.  
\_\_\_\_\_
4. What will be the fate of this terrestrial food chain if all the rats were removed?  
\_\_\_\_\_
5. Will the food chains be affected if the animals at the top carnivore level were removed? Give reasons for your answer.  
\_\_\_\_\_

**Criteria for Assessment:**

Marks for each correct answer =1 (Total Marks:  $1 \times 5 = 5$ )

**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 where the 'situation' and the 'consequence' are placed in a jumbled fashion. The student may be asked to match the 'situation' with its correct consequence.



# Management of Natural Resources

## Chapter 16

**Assessment Technique:** Preparing an Action Plan (group work)

**Objectives:** To enable the students to

- Learn the ways in which use of natural resources can be managed and regulated effectively
- Define the tasks for sustainable use of resources
- Realise the need for conservation and preservation of natural resources

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

**Approximate Time :** 3-4 days for preparation and 10 minutes for presentation by each group

**Procedure:**

- The class will be divided into groups of students. Each group shall play the role of representatives of an NGO working for the environment. The task given to each group shall be defined in the following manner:
- Common instructions for the students-
- ‘You are representatives of on NGO working for protection of the environment. You have been sent to an area where there are various issues related to environmental degradation. Prepare an ‘Action Plan’ about how you shall work to minimize the harmful effects on the environment’
- The specific topics/issues that may be given to each group are:

Group	Topics / Issues
A	You have been sent to an area that has recently been declared a ‘Wildlife sanctuary’. As a result of poaching, a number of wild animals are listed in the endangered category. The people from surrounding villages leave their cattle in that area to graze and also cut trees.
B	You have been asked to go to an area where a large number of species are facing the danger of extinction due to invasion of alien species that have been introduced by the locals for short-term benefits.
C	The area where you have to work has experienced a remarkable downfall in the production and sale of fish. Only recently, a dam was built on the river that formed the life-line of that group of villages.
D	The area defined for you to work is a ‘landfill’ on the outskirts of a city. That area has become unfit for human habitation due to foul smell and increase in mosquito population.



E	You have been sent to an area that faces acute water shortage even though that area receives a lot of rain for 3 months. The ground water levels are receding and there has been a shift in the climate from wet to arid.
F	The area where you have been asked to function is an area where farming is the main occupation. Most of the surrounding forest area has been cleared to grow plants. That area is facing a number of problems like: change in chemical nature of the soil, increase in cases where lions and tigers have become man-eaters, decrease in productivity from farms.
G	You are asked, to go to an area which is in the Himalayan belt. The temperature is rapidly increasing and as a result the glaciers in that area are melting. The produce of apple and other similar fruits from the orchards has decreased rapidly.
H	You are asked to go to area which is in the desert belt. The government wants to help the local population to discover alternative ways of livelihood as farming alone cannot sustain the population in that area.

Every Action Plan will be prepared according to the following guidelines (to be given by the teacher)

- Name of the NGO
- Reason for forming this NGO
- Major Challenges/Tasks
- How to ensure sustainable development in the area
- Use / Misuse of natural resources in that area
- Major issues related to the environment
- Role of Government
- Role of citizens
- Environmental Law

The teacher could choose a coordinator from each group who would facilitate the working in each group ensuring that there is contribution from each participant. A maximum of 10 minutes may be given to every group to present the Action Plan.

The whole class can participate in this activity.

**Time Allotted:** 4-5 periods, 3 hours to 4 hours (including assessment by the teacher)

#### Criteria for Assessment:

The criteria for assessment will be shared with the students before the seminar begins. The students will be assessed on the basis of the format given below:





S. N.	Name of the Student	Group/ Name of the NGO	Individual Performance (1)	Viva *(1)	Presentation **(1)	Content and relevance to the topic **(2)	Total (5)
1.	A						
2.	B						
3.	C						
4.	D						
5.	E						
6.	F						
Remarks if any							

*	— Response to Teacher’s Question = ½ mark — Response to audience question ½ mark
**	— Innovative Introduction = ½ mark — Clarity and articulation or delivery = ½ mark
***	— Comprehension of concept= 1 mark — Integration of different points into a proper sequence (Holistic Approach) = ½ mark — Conclusion= ½ mark

### Suggested Remediation:

- A few students may not perform well during the presentation of the ‘Action Plan’. The teacher should identify the reason and guide the students accordingly.
- The students may also be given an alternate activity (Questionnaire based on the presentation made by other groups)

## Management of Natural Resources

## Chapter 16

**Assessment Technique:** Project Work

**Topic of the Project:** Learning from the past for Sustainable Management of Natural Resources

### Introduction:

Since the beginning of civilization, man has been dependent on Natural resources to sustain himself. He devised many methods to use these resources to ensure their sustainability and availability for generations. However, the availability of these natural resources in their pristine



forms is becoming difficult and so we need to rethink and rebuild strategies to conserve and preserve our natural resources. The project- “Learning from the past for sustainable management of natural resources” will enable the students to find out and relearn the methods of conservation and preservation of natural resources.

**Objectives:** The students shall

- Find out the ancient methods that were being used for conservation and preservation of natural resources.
- Compare the methods of utilization of natural resources in the past, present with how they should be used in future.
- Gain knowledge about the ancient architecture, methods of agriculture, building of dams and practices to increase energy efficiency.
- Suggest methods for more sustainable utilization of natural resources.

**Task:** Group Work

**Approximate Time:** One week for preparation and 10 minutes for Presentation

**Procedure:**

- The class is divided into groups of 4-7 students.
- Various issues / topics related to Management of Natural resources are given to the students as subtopics of their project.
- The time-frame for completion of work is conveyed to the students.
- The teacher may allot/ suggest a ‘buddy/ mentor’ (Teacher of a related subject, scientist, Municipal corporation member, gardener, ecologist, architect) depending upon the topic allotted to the student.
- Suggested sub-topics for Project:
  - Rain water harvesting,
  - Water conservation,
  - Reduce Reuse Recycle,
  - King Ashoka-the environmentalist
  - Conservation practices in the Bishnoi Community
  - Water conservation practices in Rajasthan.
  - Environment friendly techniques in Mughal Architecture.
  - Utilisation practices that are forest-friendly
  - Dams in ancient India



- The students shall prepare the project under the following headings:
  - Introduction
  - Relevance to today's scenario
  - Need for conservation and preservation
  - Ancient practices (w.r.t. sub topic only)
  - Data collection
  - Data Interpretation
  - Result and its Interpretation
  - Bibliography

Students shall also collect information/ pictures/ photographs or any other illustrations/ relevant material from different sources.

#### Criteria for Assessment:

The Project may be assessed according to the following criterion:

- Information (Content)
- Data Collection and Interpretation
- Result and its Interpretation
- Besides this, each student may be asked questions individually by the teacher to assess his/her understanding and level of contribution (Viva).

Marking may be done in the following manner:

S. N.	Name of the Student	Group	Topic	Information (Content) (1)	Data Collection and Interpretation (1)	Result and its Interpretation (2)	Viva (1)	Total (5)

#### Suggested Remediation:

- Some students may not be sufficiently active in the 'Project Work'. The teacher may assign them smaller subtopics for which they may work independently.
- Since strengthening 'student learning' is the main objective, so the students who are not performing well in this activity may be given alternate worksheets or even an 'Open book test' where most of the questions are 'application based'.



## Management of Natural Resources

## Chapter 16

### Assessment Technique : Symposium on Biodiversity

- A symposium is defined as a meeting or conference for the public discussion of some topic especially one in which the participants form an audience and make presentations.
- **Biodiversity** is the variation of life forms within a given ecosystem, biome or on the entire Earth. Biodiversity is often used as a measure of the health of biological systems. The biodiversity found on Earth today consists of many millions of distinct biological species. The year 2010 has been declared as the International Year of Biodiversity.

### Objectives: To enable the students to

- Understand that maintaining biodiversity is an important aspect in conservation and preservation of the environment.
- Realise that loss of biodiversity may lead to loss of ecological stability
- Appreciate the fact that every organism plays an important role in the food chains and food webs.
- Research to find out the effect the removal of a species from an area will have on the ecosystem of that place.

### Task: Group Work

### Approximate Time: 2-3 Minutes for each presentation

### Procedure:

- The class may be divided into groups (3-4 students in each group)
- Each group has to make a presentation on the topic- Biodiversity.
- The basic format and assessment technique shall be shared with the students before the presentations begin.
- Time allotted for preparation: one week
- **Basic format:** Each group shall follow the following basic format for the presentation—
  - o Introduction
  - o Importance of Biodiversity
  - o Mention name of and describe one Biodiversity 'hotspot'.
  - o One example where loss of biodiversity has affected the ecosystem of the area.
  - o Conclusion



- o Each presentation must be accompanied by audio and/or visual aids (charts, posters, Power Point presentation, slide-show, video, speech, animal sounds etc.)

### Criteria for Assessment:

(To be shared with the students before the symposium begins) The students will be assessed on the basis of the format given below:

S. N.	Name of the Student	Group	Presentation *(2)	Content and relevance to the topic **(2)	Viva ***(1)	Total(5)
1.	A					
2.	B					
3.	C					
4.	D					
Remarks if any						

*	<ul style="list-style-type: none"> <li>— Innovative Introduction = 1/2 mark</li> <li>— Construction of an extensive &amp; thorough knowledge base in all problem aspects = 1/2 mark</li> <li>— Use of Visuals/audio = 1 mark</li> </ul>
**	<ul style="list-style-type: none"> <li>— Comprehension of concept = 1/2 mark</li> <li>— Integration of different points into a proper sequence (Holistic Approach) = 1 mark</li> <li>— Conclusion = 1/2mark</li> </ul>
***	<ul style="list-style-type: none"> <li>— Response to Teacher's Question = 1/2 mark</li> <li>— Response to audience question = 1/2 mark</li> </ul>

### Suggested Remediation:

- A symposium helps to bring together information of one important topic delivered by different speakers. A student besides improving his/her skills in speaking, collaboration, data collection and presentation, also becomes aware of the importance of biodiversity.
- Such activities should not be used to assess learning but should be a means to facilitate learning, i.e. for learning, therefore the teacher must ensure that opportunity for improvement is given to a student if he/she is not able to perform well.
- A few students may not perform well during the presentation. The teacher should identify the reason and guide the students accordingly.
- The students may also be given an alternate activity (Questionnaire based on the presentation made by other groups).





## Class Work / Home Work Assessment

**Assessment Technique:** Class Work / Home Work Assignment

**Objectives:** To help the learners to :

- Take active part and interest in Class Work / Home Work.
- Inculcate the habit of regularity and neatness in doing assigned tasks.
- Reinforce learning through additional tasks.
- Inculcate the habit of self learning and extended learning.

**General Guidelines:**

***Class Work:***

The Class Work includes the tasks assigned by the teacher to the students in the Class during the lesson or at the end of teaching period and may include:

- o Worksheet to be completed as recapitulation of the topic
- o Practice of formulae, chemical equations, numericals, diagrams etc.
- o Oral questions being asked from individual students during the lesson
- o Practice of graphs, diagrams, ray diagrams, circuit diagrams, data etc.
- o Any group work / activity.

*Parameters of Assessment may include:*

- Correctness of the task performed
- Time take / regularity of the task performed
- Neatness of work

Detailed record of students' response and achievement in Class Work may be maintained in a register for assessment purpose.

***Home Work:***

The Home Work includes the tasks / assignments to be done by the students at home and may include:

- o Practice questions meant for reinforcement of learning. (These questions may be designed in such a way that students are not able to copy answers directly from the prescribed textbooks).
- o Questions based on application of Classroom learning to real life situations.



- o Questions based on enhancement of skills related to drawing diagrams, solving numericals, writing of formulae and chemical equations etc.
- o Tasks related to rectification of mistakes / errors.

*Areas of Assessment may include:*

- Regularity in submission of work
- Completeness and neatness of work
- Overall quality of answers

The notebooks of the students may be corrected once or twice in each of the two terms and the detailed records be maintained. The marks allocation to different parameters of assessment may be decided by individual schools / teachers.

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## Field Visit

**Assessment Technique:** Questionnaire

**Objectives:** To enable the students to

- develop interest in out-of-school activities and learning
- broaden their understanding of science concepts and principles
- enhance knowledge through extended learning
- appreciate interrelation between classroom learning and everyday life application
- connect classroom learning to life outside the school.

**Approximate Time:** 5-6 Hours

**Procedure:** Suggestive steps to be followed:

**Before the Visit:** The teacher may

- o plan the visit well in advance. The plan may be discussed with school authorities, authorities of the place of visit, parents and students. Some of the suggested places for visit may include Science Park Centre, Zoological Park, Science Museum, A Factory, A Laboratory etc.
- o brief the children on where they would be going.
- o clearly spell out the do's and don'ts to be followed during the trip.
- o instruct students to carry notebook, pen, crayons and any other item necessary for the trip.



- o keep teacher pupil ratio of 1:20 during the trip for better learning.
- o visit the place beforehand.
- o prepare a questionnaire in advance to assess the students after the trip.
- o inform the students that they will be assessed on the basis of a questionnaire following the trip.

**During the visit:**

Students should be encouraged to take notes, sketch pictures, ask questions or make collection of material that would help them later.

**After the visit:**

One day after the visit, the students may be given the questionnaire in the classroom. Their responses may be analyzed and appreciated. Assessment may be carried out on the basis of response to the items include in the questionnaire. The questionnaire may be designed in advance.

**Suggested Field Visit:****Visit to a Thermal Power Plant**

The said activity may be organized to visit a Thermal Power Plant. The authorities of the plant may be contacted in advance and details of the visit may be discussed and decided. A guided visit will certainly help the students know and learn more.

The students will understand about how electricity is generated in the plant and what resources are used for this purpose. Different sections of the plant and working of different sections / parts of plant may be explained by personnel working in the organization. Students may also be encouraged to think about the other ways of producing electricity and the kind of natural resources used in other plants.

**Questionnaire**

**Time:** 20 minutes

**Max. Marks:** 10

**Instructions:** Answer the following questions on the basis of your observations and understanding during the visit.

1. Name the power plant you visited, Where is it located ?
2. Name the natural resource used for generation of energy in this plant.
3. What kind of energy transformations take place in this power plant ?
4. How is the turbine made to rotate in this power plant ?
5. What kind of waste is generated in this power plant ?
6. How is this waste disposed off ?



7. What is the power generation capacity of this plant ?
8. State one advantage of power generation by this method.
9. State one disadvantage of power generation by this method.
10. Name any one other kind of Power Plant in which another kind of natural resource is used.

**Assessment Criterion:** One mark for every correct answer.

## Popular Science Book Review

**Assessment Technique:** Book Review

**Objectives:** To help the learners to

- inculcate the habit of book reading
- develop interest in popular Science Literature
- enhance knowledge through extended learning
- relate learning of Science to everyday life.
- strengthen science concepts through simple explanations
- appreciate interrelationship between Science Technology and Society
- develop a scientific and objective attitude

**Approximate Time:** 15-20 days

**Procedure:** Students may be asked to read a popular science book preferably during vacations and write a book review on the same.

A suggestive list of popular Science books related to different fields may be given to students. Some of the popular Science book publishers may include Vigyan Prasar, National Book Trust, NCERT, National Institute of Science Communication and Information Resources (NISCAIR) and Homi Bhabha Centre for Science Education (HBCSE).

- A suggestive format of book review report may also be given to students in advance.

**Assessment Parameters:**

- |                             |         |
|-----------------------------|---------|
| ● Language Used             | 2 marks |
| ● Clarity of thought        | 2 marks |
| ● Content                   | 2 marks |
| ● Quality of Presentation   | 2 marks |
| ● Overall quality of report | 2 marks |



**Suggestive Format of Book Review:**

- (a) **General:** This section may include name of the book, author, publisher, price and number of pages etc.
- (b) **Brief Introduction:** It may focus on title of the book (interesting or not) purpose of the book, concept / subconcepts covered, overall conceptualisation.
- (c) **Progression of the Chapters:** It may highlight logical sequence, clarity of concepts, richness of contents and suitability of content.
- (d) **Presentation:** It may include language used (reader friendly or not) use of examples, data, co-relation with daily life situations, illustrations, coverage (its attractiveness) and overall simplicity or otherwise of the approach followed in the book.
- (e) **Printing:** It may focus on quality of paper used, colours used, illustrations / diagrams / photographs, font size and font type.
- (f) **Overall Impression:** This section may highlight whether the book
- provides enrichment and basis understanding of the topics / contents discussed in it.
  - is inspirational in nature.
  - reading was an enjoyable experience
  - helps to get a scientific / logical explanation of some 'myth' or 'superstition' relates to applications in everyday life.
  - relates to applications in everyday life.
  - deserves to be recommended to others.

The above suggested format may be changed or modified depending upon the need or requirement.

**Few Suggested Science Popular Books:**

- |  |   |                                      |
|--|---|--------------------------------------|
| ● Inventions that made history           | – | Publication Division, Govt. of India |
| ● Science and Everyday life              | – | Vigyan Prasar                        |
| ● Artificial Intelligence                | – | NISCAIR                              |
| ● Seeing is not always believing         | – | Vigyan Prasar                        |
| ● Life: From cell to cell                | – | NISCAIR                              |
| ● Inventors who revolutionized our lives | – | National Book Trust (NBT)            |
| ● The Human Machines                     | – | NBT                                  |
| ● You and your health                    | – | NBT                                  |
| ● Heart disease and the layman           | – | NBT                                  |
| ● Kyon Aur Kaise                         | – | Vigyan Prasar                        |





## SI Units

**Assessment Technique:** Individual Worksheet

**Objectives:** To help the students to

- learn SI Units of different physical quantities
- understand how SI Units of different physical quantities are obtained from their definitions
- recognise that one SI Unit may represent more than one physical quantity.

**Task:** Individual

**Approximate Time:** 10 minutes

**Procedure:** The teacher may

- familiarize the students with SI Units of different physical quantities
- explain how the SI Units of different physical quantities are obtained from their definitions
- provide sufficient practice to students to correlate given SI Units with their corresponding physical quantities
- give examples to explain that the same SI Units can represent more than one physical quantity.

**Assessment Parameters:** One mark for every correct answer.

### Student Worksheet

**Instructions:** Fill in the blanks in the following—

1. The SI Unit of potential difference is

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2. The SI Unit of power of a lens is

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3. The SI Unit of focal length is

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4. The SI Unit of electric current is

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5. The SI Unit of electric energy is

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6. Watt is the SI Unit of

---

7. Dioptre is the SI Unit of

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8. An example of a physical quantity having no unit is

---

9. Ohm is the SI Unit of

---

10. Two physical quantities having Joule as their SI Unit are

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**Suggestive Remediation:**

- Knowledge and proper understanding of units of physical quantities is an important aspect of learning of Science. If some students are not able to learn the same. They may be helped to do the same by repeated practice.
- Derivation of units from fundamental definitions of different quantities may be explained clearly.

