



# **BOARD OF SCHOOL EDUCATION HARYANA**

## **Lesson Plan**

**Class- XII**

**Subject: Biotechnology**

**Topic- Recombinant DNA Technology**

**Durartion-40 mins**

**1. Instructional objectives – After completion of the topic, students will be able to:**

- **Remembering**
  - **Recall the term RDT (Recombinant DNA technology).**
  - **Recognize the methods used in DNA isolation.**
- **Understanding**
  - **Explain the method of Recombinant DNA technology along with steps.**
  - **To define various application of RDT.**
- **Applying**
  - **Students will be able to use the concepts of DNA isolation method Practically in Lab.**
- **Analyzing**
  - **Students will be able to determine various methods of DNA transfer like Transformation, Transfection, Electroporation & Microinjection etc.**
- **Evaluating**
  - **Students will be able to judge the utility of plasmids in Bacterial cells & in RDT as well.**
- **Creating**
  - **Students will be able to isolate DNA from different types of cells ( Animal, Plants & Bacterial cells) by using different methods.**

**2. Instructional teaching AIDS :**

**White board / Smart board / Lab manual.**

**3. Previous Knowledge Testing**



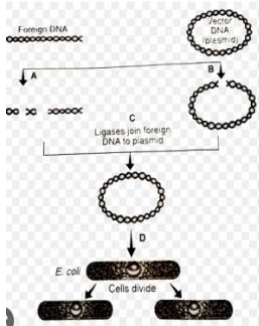
Sr.no	Pupil Teacher's Activity	Student's Response
1.	What do you mean by Bio-technology.	It is the use of different techniques in Biology.
2.	How will you define the term Biotechnology?	It is use of living organisms or their products for our beneficial use.
3.	What is RDT?	It is Recombinant DNA Technology.
4.	What is Plasmids?	It is extra-chromosomal technology

4. **Announcement of the Topics:** Well students today we will discuss about DDT & tools used in it.

5. **Preservation:**

Teaching point	Teacher's Activity	Student's Response	White board work
1. RDT - Introduction	RDT- It is recombinant DNA technology.  * It is also known as a process of Genetic Engineering	Student's will note down the full form of RDT & able to recall the term Genetic Engineering.	RDT:- It comprises the altering of genetic material outside an organism to obtain an organism to obtain enhanced & desired characteristics in living organism or as their production.
2. Various Tools used in RDT	* There are different enzymes which helps on RDT like Restriction Enzymes, Ligase & Plasmid can be used as Vector	Students will ask the functions of different enzymes used in RDT.  Note down the concepts	Restriction enzymes – it is also called molecular scissor, which can cut the DNA at specific sequence.  Ligase – it can join DNA fragments
3. Steps	There are	Students will	Steps involved in



<p><b>involved in RDT</b></p>	<p><b>different steps in this techniques starting from DNA isolation to DNA transfer using vector into Host cells.</b></p>	<p><b>able to enlist the steps used in RDT &amp; not down in their notebook.</b></p>	<p><b>RDT as follows:</b></p> <ol style="list-style-type: none"> <li><b>1. Isolation of DNA</b></li> <li><b>2. Fragments of DNA by using restriction enzymes.</b></li> <li><b>3. Isolation of desired DNA fragments.</b></li> <li><b>4. Ligation of DNA fragments into vector.</b></li> <li><b>5. Transferring the Recombinant DNA into Host cells.</b></li> <li><b>6. Culturing of Host cells in a culture medium at a large scale.</b></li> </ol>
<p><b>4. Diagrammatic presentation of RDT</b></p>	<p><b>( On white board )</b></p> <p><b>Lets draw a diagram of RDT</b></p> 	<p><b>Students will draw the diagram and able to define different steps.</b></p>	

**6. Recapitulation: Alright students let's recall the concepts that we have learnt so**



**far.**

- i. How will you define the term RDT?**
- ii. Name the enzymes used in recombinant DNA technology.**
- iii. Do you know what are plasmids?**
- iv. How can we use plasmids in RDT?**

**7. Homework:**

- i. Give a diagrammatic representation of different steps used in recombinant DNA technology.**
- ii. Define the term Restriction enzymes.**
- iii. Give names of different types of plasmids present in bacterial cells and their functions in bacterial cells.**