Cosmo School

Work Sheet: 02

Biology (Chapter-14: Biotechnology)

Class: X

Name of the student: .....***Date:*** ...../...../.....

- The **cell** is the basic structural, functional and biological unit of all known organisms.
- The **nucleus** of a cell of organism contains genetic material **(DNA).**
- **Gene** is the part of **DNA** within the genome that codes for proteins.
- **Genetic engineering** or **Genetic modification** or **Genetic manipulation** or **Recombinant DNA technology** is the direct manipulation of the DNA of an organism using biotechnology.
- **Genetic engineering** based on recombination was pioneered in **1973** by American biochemists Stanley N. Cohen and Herbert W. Boyer, who were among the first to cut DNA into fragments, rejoin different fragments, and insert the new **genes** into *E. coli* bacteria, which then reproduced.
- **Recombinant DNA technology** is the joining together of **DNA** molecules from two different species. The recombined **DNA** molecule is inserted into a host organism to produce new genetic combinations that are of value to science, medicine, agriculture, and industry.
- **Mutations** are changes in the **genetic** sequence, and they are a main cause of diversity among organisms.
- **Any change** that occurs in a gene through mutation or in any other way is called **genetic modification.**

Q. What is genetically modified organism? 1

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- **Transgenic organism** refers to those organisms where one or more than one **gene** taking from different types of species have been inserted to the genome of those organisms.

Q. How is transgenic organism produced? 2

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❖ **Escherichia coli:**

- *Escherichia coli* or *E. coli* lives in the alimentary canal of human being.
- *E. coli* has plasmids besides bacterial DNA.
- Plasmid is a circular DNA which is able to divide itself.

Q. Why is *E. coli* used in Genetic engineering? 2

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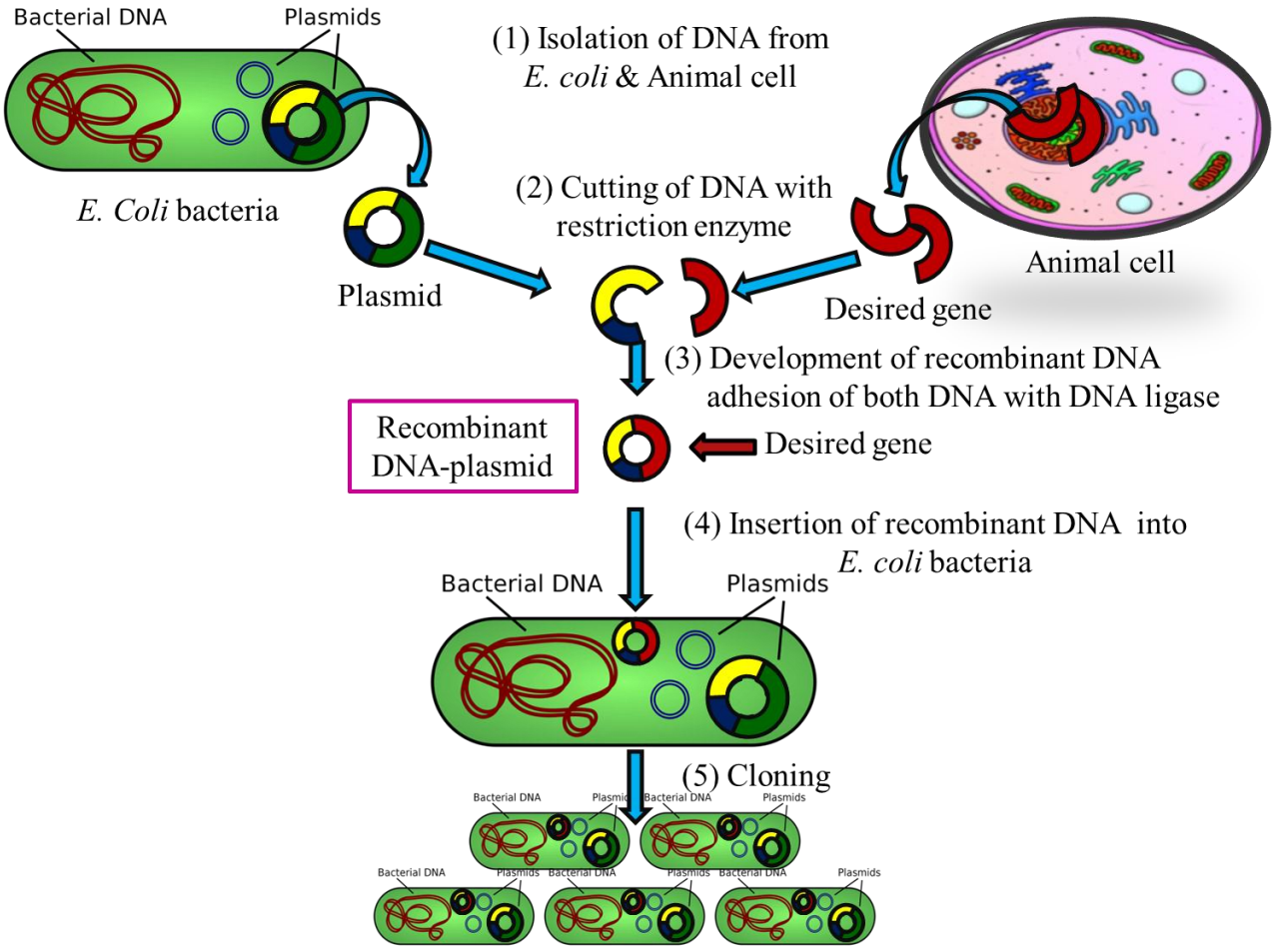
❖ Following figure indicates Genetic engineering or Recombinant DNA technology:



❖ Answer the following questions from the above figure.

Q. What is plasmid?

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Q. What is recombinant DNA?

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Q. What is cloning?

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Q. Describe the process that the above figure indicates.

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