

ATOMIC ENERGY EDUCATION SOCIETY, MUMBAI

WORKSHEET -

BIOTECHNOLOGY AND ITS PROCESSES

SUBJECT: BIOLOGY

CLASS XII

NAME: _____ ROLL NO: _____ DATE: _____

MAXIMUM MARKS : 40

MARKS OBTAINED _____

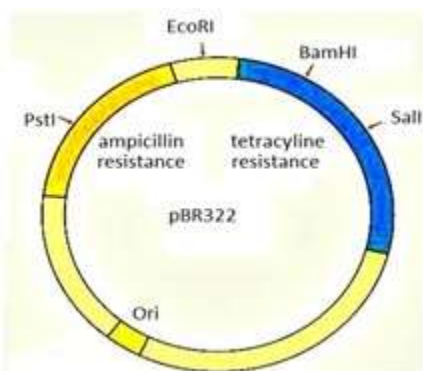
YOUR ANSWERS SHOULD BE BRIEF AND RELEVANT.

ONE MARK QUESTIONS:

1. Name the enzyme commonly used to dissolve bacterial cell wall.
2. What are plasmids?
3. What is meant by Ori?
4. What are bioreactors?
5. What is the function of DNA ligase?

TWO MARK QUESTIONS

6. Explain the contribution of *thermos aquaticus* in the amplification of a gene of interest.
- 7.



- (a) Identify the selectable markers in the diagram of *E.coli* vector shown above.
 - (b) How is the coding sequence of α -galactosidase considered a better marker than the ones identified by you in the diagram? Explain.
8. What are recombinant proteins? How do bioreactors help in their production?
 9. How is DNA isolated in purified form from a bacterial cell?

10. Why and how can bacteria be made competent?

THREE MARK QUESTIONS

11. List in proper sequence the process involved in recombinant DNA (rDNA) technology.

12. Suggest and describe a technique to obtain multiple copies of a gene of interest *in vitro*.

13. (a) List the three steps involved in Polymerase Chain Reaction(PCR).

(b) Name the source organism of Taq polymerase. Explain the specific role of this enzyme in PCR.

14. What are bioreactors? List five growth conditions that a bioreactor provides for obtaining the desired product.

15. Why a recombinant protein so called? How can it be harvested on a large scale? Write two precautions to maintain a higher yield?

FIVE MARK QUESTIONS

16. (a)Why are engineered vectors preferred?

(b) A vector is engineered with three features, which facilitate its cloning within the host cell. List the three features and explain each one of them.

17. Draw a labelled diagram of a sparged stirred-tank bioreactor. Explain its functioning.
