



INDIAN SCHOOL MUSCAT

CLASS : XII  
SUBJECT: BIOLOGY  
WORKSHEET : 12



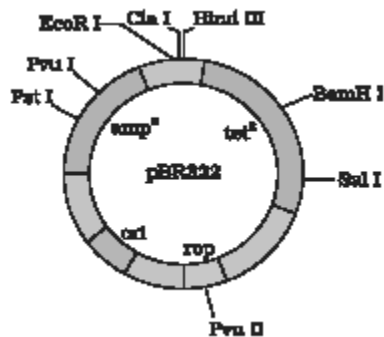
DATE :

TOPIC/SUB-TOPIC : **BIOTECHNOLOGY: PRINCIPLES AND PROCESSES**

- |    |                                                                                                                                                                                                 |   |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 1  | Name an enzyme catalysing the removal of nucleotides from the ends of DNA.                                                                                                                      | 1 |
| 2  | Write the Significance of 'heat shock' method in bacterial transformation.                                                                                                                      | 1 |
| 3  | Name two bacteria which are the sources of restriction endonuclease?                                                                                                                            | 1 |
| 4  | Identify the steps of PCR in which Taq polymerase is used.                                                                                                                                      | 1 |
| 5  | Define recombinant protein.                                                                                                                                                                     | 1 |
| 6  | What does 'competent' refer to in competent cells used in transformation experiments?<br>Describe the role of CaCl <sub>2</sub> in the preparation of competent cells?                          | 2 |
| 7  | What is the significance of adding proteases at the time of isolation of genetic material (DNA).<br>Name the enzyme used to digest the cell wall of fungi.                                      | 2 |
| 8  | What modification is done on the Ti plasmid of <i>Agrobacterium tumefaciens</i> to convert it into a cloning vector? Name the vector used to transfer gene of interest to animal cell.          | 2 |
| 9  | How does one visualise DNA on an agarose gel?                                                                                                                                                   | 3 |
| 10 | For selection of recombinants, insertional inactivation of antibiotic marker has been superceded by insertional inactivation of a marker gene coding for a chromogenic substrate. Give reasons. | 3 |
| 11 | Describe the role of <i>Agrobacterium tumefaciens</i> in transforming a plant cell.                                                                                                             | 3 |
| 12 | a) What are molecular scissors? Give one example.<br>b) Explain their role in recombinant DNA technology.                                                                                       | 3 |

13 Explain the importance of a) ori b) amp<sup>R</sup> and c) rop in the *E.coli* vector shown below

3



14 a) Mention the role of vectors in recombinant DNA technology. Give any *two* examples.

5

b) With the help of diagrammatic representation only, show the steps of rDNA technology.

