JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- MARCH-2023

COURSE CODE (CREDITS): 18MS1BT313 (3) MAX. MARKS: 15

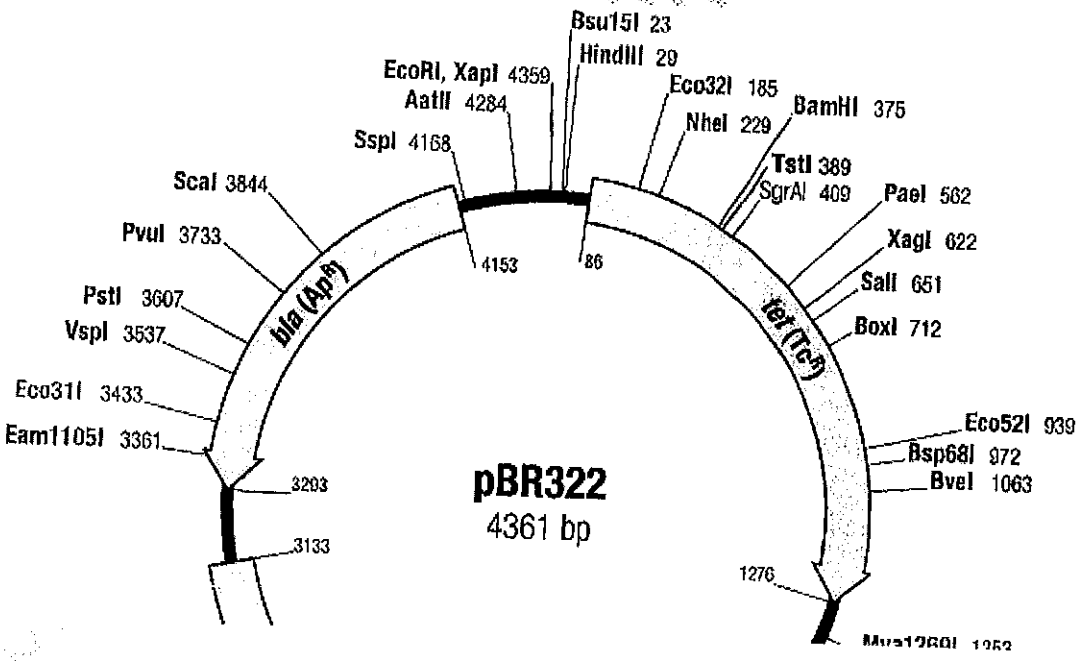
COURSE NAME: RECOMBINANT DNA TECHNOLOGY

COURSE INSTRUCTORS: Dr. Rahul Shrivastava MAX. TIME: 1 Hour

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q1. You are provided with diagram of a pBR322 vector Calculate the size of restriction digestion fragments obtained in each case. (all calculations must be done in fair copy itself) **[1+1+1+1+2=6]**

a. Size of gene for tetracycline (*tet*) resistance.
b. Number and size of products obtained when the ***tet* gene** is digested with **BamHI**
c. Number and size of products obtained when the ***tet* gene** is digested with **BamHI** and **SalI.**
d. Number and size of products obtained when the ***tet* gene** is digested with **BamHI** and **HindIII**
e. Sketch a well labeled agarose gel showing different bands obtained when the gene / digested product(s) would be run from a, b, c, and d.



Q2. A DNA fragment of 750 bps has 29 Adenine bases per 100 molecules. Calculate the amount of Cytosine molecules in the DNA fragment. **[2]**

Q3. Can bacterial cells of *Mycobacterium tuberculosis* and *Escherichia coli* be transformed by a plasmid using the same transformation method? Compare and elaborate the methods used in each case, with reason for your answer. **[4]**

Q4. Write a note on components of a plasmid, and role of each component. **[3]**