JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- APRIL-2023

COURSE CODE (CREDITS): 18B11BI412 (3) MAX. MARKS: 25

COURSE NAME: GENETIC ENGINEERING AND GENOMICS

COURSE INSTRUCTORS: DR. JATA SHANKAR MAX. TIME: 1 Hour 30 Minutes

---

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

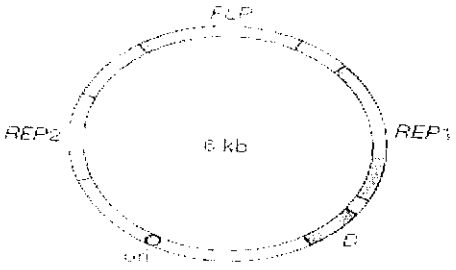
---

1. What is the genome size of *E. coli* and how many genes encoding proteins are estimated to be present in the *E. coli*? [3 marks] CO I

2. Draw a complete gene structure of a eukaryotic gene, with splicing sites? [3 marks]

3. Give the approximate no. of genes in *nuclear and mitochondrial* genome of human and estimated genome size of it? [3 marks] CO I

4. Development of cloning vectors for yeast was initially stimulated by the discovery of a plasmid that is present in most strains of *S. cerevisiae*. The 2 μm plasmid, as it is called, is one of only a very limited number of plasmids found in eukaryotic cells, What are the different Yeast Cloning vector available and how do you select markers? [3 marks] CO II



5. What are the different types of restriction endonuleases? What are the properties of DNA ligase? Show the recognition sites of *EcoRI*? [3 marks] CO I

6. Short notes on the following; [2.5 marks each] CO I & II

a. Sequence Alignment

b. Sanger sequencing?

c. ESTs

d. Physical mapping