

COURSE CODE (CREDITS): 18B11BI412 (3)

MAX. MARKS: 35

COURSE NAME: GENETIC ENGINEERING AND GENOMICS

COURSE INSTRUCTORS: DR. JATA SHANKAR

MAX. TIME: 2 Hour

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

- Q1. Write on Pyrosequencing? What are the different applications of it? [3.5 marks] COII
- Q2. Differentiate between transcript, transcription, transcriptomics, transfer RNA and translation? [3.5 marks] COII
- Q3. Write on Illumina sequencing technology? How amplification and sequencing takes place in this method of sequencing? [3.5 marks] COII
- Q4. The approximate no. of gene encoding protein in human genome is 20,000; calculate the gene density? Also, major finding of human genome projects [3.5 marks] COII
- Q5. Draw the structure/important features of 2 μ m plasmid present in yeast cells? [3.5 marks] CO I
- Q6. Draw the structure of Ribose, Deoxyribose and Dideoxy-ribose sugar? [3.5 marks] COIII
- Q7. When a foreign (i.e., non-bacterial) gene is simply ligated into a standard vector and cloned in *E. coli*, it is very unlikely that a significant amount of recombinant protein will be synthesized, because it lacks signals. What are the important signals? [3.5 marks] CO I
- Q8. pUC8 is a cloning vector; what is the size of the vector, and what is the mechanism of selecting a recombinant vector?. Also, draw the structure pUC8 vector? [3 marks] CO II
- Q9. Describe in details to identify the differential regulated genes cancerous cells in comparison to control cells using DNA Microarray technology, and give the major features of DNAMicroarray technology? [3 marks] [CO II]
- Q10. What is the difference between exonuclease and endonucleases restriction enzymes? Write the restriction sites of *EcoRI* [3 marks] CO I