

COURSE CODE (CREDITS): 20MS1BT214 (2)

MAX. MARKS: 35

COURSE NAME: GENOMICS & PROTEOMICS

COURSE INSTRUCTORS: DR JATA SHANKAR

MAX. TIME: 2 Hours

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*Note: (a) All questions are compulsory.*

*(b) Marks are indicated against each question in square brackets.*

*(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems*

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Q1. What is a DNA Chip? What are the important features of gene Chip making it a successful tool in whole genome expression profiling? CO I [3]

Q2. How to identify the differentially expressed proteins from lung cancer cells in comparison to the normal cells using a proteomics approach? Give the details of the time-of-flight equation associated with it. CO I [3]

Q3. What is protein modification? Explain with the example to identify the modified protein in the protein lysate and their associated functions. CO I [3]

Q4. Give the descriptive approach to describe the protein-protein interactions using the yeast two-hybrid model. CO I [3]

Q5. Demonstrate the protein-protein interaction on a chip with a suitable example. CO I [3]

Q6. Explain the efficacy of the drugs such as warfarin, codeine, and omeprazole depending on the genotype of the individuals. Describe the terms responder & non-responder in the pharmacogenomics. CO I [3]

Q7. Calculate the gene density of *Saccharomyces cerevisiae*. CO I [3]

Q8. Describe the mechanism of solid & liquid phase pyrosequencing (NGS) and compare it with Sanger's sequencing. CO I [4]

Q2. Notes on; CO I [Each 2]

- a. Define Biomarker
- b. Chromatogram & Pyrogram
- c. Lipidomic
- d. *Human Genome*
- e. Central Dogma