

**B.Sc. BIOTECHNOLOGY
SIXTH SEMESTER
GENOMICS AND PROTEOMICS
BBT-602**
[USE OMR SHEET FOR OBJECTIVE PART]

**SET
B**

Duration: 3 hrs.

Full Marks: 70

(Objective)

Time: 30 mins.

Marks: 20

Choose the correct answer from the following:

1 × 20 = 20

1. "Chemical Sequencing" is another name of:
a. Sanger's Sequencing
b. Automated Sequencing
c. Maxam-Gilbert Sequencing
d. Pyrosequencing
2. 'Single track system', i.e. the use of four different fluorochromes in a single test tube occurs in:
a. Automated DNA Sequencing
b. Pyrosequencing
c. Sanger's Sequencing
d. None of the above
3. Denaturing agents are:
a. Reagents
b. Chemicals
c. Detergents
d. All of the above
4. Solubilities of proteins depends on:
a. pH
b. Ionic strength
c. Temperature
d. All of the above
5. Following is a type of super-secondary structure:
a. α -helix
b. β -pleated sheets
c. β Turns
d. β -meander
6. At isoelectric point, the net charge on amino acid is:
a. Positive
b. Negative
c. Zero
d. None of the above
7. The study of the full complement of proteins expressed by a genome is called:
a. Proteome
b. Proteomics
c. Genomics
d. Protein formation
8. In 2D-PAGE, the cathode end of the IPG strip is dipped in:
a. Triethanol amine
b. Sodium hydroxide
c. Phosphoric acid
d. Either a or b
9. Genomics is a term coined by:
a. John Dalton
b. Robert Boyle
c. Thomas Raderick
d. None of the above
10. Spectroscopy is the study of:
a. Electromagnetic radiation
b. Matter
c. Both a and b
d. None of the above

11. The study of whole genome of an organism is defined as:
 - a. Functional genomics
 - b. Comparative genomics
 - c. Structural genomics
 - d. Genomics
12. Chain termination in Sanger's Sequencing occurs because of the:
 - a. Deoxynucleotides
 - b. Dideoxynucleotides
 - c. Ribonucleotides
 - d. None of the above
13. 'Ensembl' is maintained by:
 - a. European Bioinformatics Institute
 - b. Wellcome Trust Sanger's Institute
 - c. National Centre for Biotechnology Information
 - d. Both a and b
14. Detergents can disrupt:
 - a. Hydrophilic interactions
 - b. Hydrophobic interactions
 - c. Hydrogen bonding
 - d. Van der waal forces
15. Isoelectric precipitation occurs at:
 - a. pH
 - b. pI
 - c. Both a and b
 - d. None of the above
16. The term 'proteome' was first coined by:
 - a. Marc Wilkins
 - b. Carry Mulis
 - c. Austin Butler
 - d. None of the above
17. Ampholytes carry:
 - a. Positive charge
 - b. Negative charge
 - c. Both a and b
 - d. None of the above
18. During IEF, following is used for reduction of disulfide bonds:
 - a. SDS
 - b. β -mercaptoethanol
 - c. DTT
 - d. None of the above
19. When a protein solution is treated with alkaline CuSO_4 reagent, the peptide bonds present in the protein interact with copper ions and form..... coloured Biuret Complex.
 - a. Blue
 - b. Purple
 - c. Yellow
 - d. Violet
20. Structural genomics includes:
 - a. Linkage analysis
 - b. Molecular cytogenetics
 - c. Physical mapping
 - d. All of the above

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(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

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| 1. What are Maxam & Gilbert and Sangers method of DNA sequencing. Elaborate. | 10 |
| 2. Write short note on:
a) VISTA
b) Pyrosequencing | 5+5=10 |
| 3. Explain SDS PAGE and NATIVE PAGE. What is Edman's degradation? Elaborate. | 10 |
| 4. Write short note on:
a) Van der waal interactions
b) Hydrophobic interactions | 5+5=10 |
| 5. Explain mass spectrometry based method for protein identification with proper diagram. | 10 |
| 6. How you will explain 2D-PAGE technique. Explain through sample preparation, solubilization, reduction, resolution and reproducibility of 2D-PAGE. | 10 |
| 7. Give the genome information of some selected model organisms and their databases. | 10 |
| 8. Explain the process of determination of size through sedimentation analysis. Elaborate gel filtration chromatography. | 5+5=10 |

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