



**ML-222**

**003-001420**

Seat No. \_\_\_\_\_

**Second Year B. Sc. (Sem. IV) (CBCS) Examination**

**April / May - 2012**

**MB. P - 401 : Microbiology**

*(Analytical Techniques And Bioinformatics)*

**Faculty Code : 003**

**Subject Code : 001420**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

- Instructions:**
1. All questions are compulsory
  2. The paper is divided in two sections
  3. There is no separate OMR sheet will be provided for Section I
  4. Figures on right indicate marks

**Section – I**

**1 Answer the following MCQ**

**20**

1. Which of the following is used as reference compound in NMR?
  - a. Methane
  - b. Tetra Methyl Silane
  - c. Ethyl alcohol
  - d. None of the above
2. ISO is abbreviated for
  - a. International Organization for Standardization
  - b. International Standardization Organization
  - c. International Organization of Standardization
  - d. Internal Standard Operations
3. As per Beer's law absorbance is
  - a. Directly proportional to path length
  - b. Inversely proportional to concentration
  - c. Inversely proportional to path length
  - d. Directly proportional to concentration

4. Infrared radiation causes \_\_\_\_\_ in matter.
  - a. Ionization
  - b. Absorptive
  - c. Bending & Stretching
  - d. All of the above
5. Which of the following chromatography is based on biological specificity?
  - a. Ion exchange chromatography
  - b. Reverse Phase Chromatography
  - c. Partition Chromatography
  - d. None of the above
6. In which of the following chromatography guard column is used?
  - a. Gas Chromatography
  - b. Affinity Chromatography
  - c. HPLC
  - d. All of the above
7. \_\_\_\_\_ is added as source of free radicals in Polymerization of PAGE.
  - a. Acrylamide
  - b. Bis acrylamide
  - c. Ammonium persulfate
  - d. TEMED
8. Which of the following causes frictional resistance in electrophoresis?
  - a. High Molecular Weight
  - b. Viscosity
  - c. High Voltage
  - d. All of the above
9. Which of the following technique is used to study the gene expression
  - a. Southern blotting
  - b. Northern blotting
  - c. Western blotting
  - d. Eastern blotting
10. pH biosensor is based on the following technique
  - a. Amperometric sensor
  - b. Potentiometric sensor
  - c. Thermometric sensor
  - d. Photometric sensor
11. Which of the following is not required for PCR?
  - a. Taq DNA polymerase
  - b.  $Mg^{2+}$  ions
  - c. Topoisomerase
  - d. dNTPs

12. In which of the following method of DNA sequencing DNA polymerase enzyme is not used?
- Sanger's method
  - Maxam Gilbert's Method
  - Primer Walking
  - LMPCR
13. Which of the following was found in 1<sup>st</sup> generation computers?
- Transistors
  - Valves
  - Integrated Circuits
  - Vacuum Tubes
14. 1 GB = \_\_\_\_\_ KB
- 1000
  - $10^6$
  - $1024 * 1024$
  - 2048
15. \_\_\_\_\_ is an example of optical storage device?
- CD ROM
  - Hard Disk
  - RAM
  - Pen Drive
16. Which of the following is not a type of computer network?
- LAN
  - PAN
  - WAN
  - MAN
17. What is not the feature of FASTA file format?
- It contains the accession number
  - It begins with the symbol ">"
  - It begins with the symbol "%"
  - It contains the comment line
18. What is EST?
- EMBL Sequence Tag
  - Expressed Similarity Tag
  - Expressed Sequence Tag
  - Early Sequence Translation
19. According to SMILES nomenclature, the symbol "N" defines...
- $N_2$
  - $NH_3$
  - $NH_4$
  - $NO_2$

20. What is TrEMBL?

- a. Primary protein sequence database
- b. Secondary protein sequence database
- c. Primary protein structure database
- d. Secondary protein structure database

Section – II

- 2 (A) Answer specifically (Any 3) 3x2=6
1. What are GLP rules?
  2. Write two applications of NMR Spectroscopy.
  3. How TLC is better than paper chromatography?
  4. Write in brief about RAPD.
  5. What is software? Enlist various types of software.
  6. What is the difference between gap opening penalty and gap extension penalty?
- (B) Answer Specifically (Any 3) 3x3=9
1. Discuss various applications of radioactive isotopes in biology.
  2. Discuss Pulse Field Gel Electrophoresis.
  3. Describe various components of Biosensors.
  4. What are the advantages of Computer?
  5. What is Smith Waterman algorithm?
  6. Describe in brief Restriction Fragment Length Polymorphism.
- (C) Write short notes (Any 2) 2x5=10
1. Explain the importance of quality management in industries.
  2. Describe in detail HPLC.
  3. Write an essay on PCR.
  4. How multimedia is useful in current era?
  5. Describe: BLAST and FASTA.
- 3 (A) Answer specifically (Any 3) 3x2=6
1. Define: Total Quality Management
  2. What is an isocratic elution?
  3. What is an electroendosmosis?
  4. Write the principle of FISH.
  5. Enlist various functions performed by operating system.
  6. What are the goals of databases?
- (B) Answer Specifically (Any 3) 3x3=9
1. Discuss the principle of Atomic Emission Spectroscopy.
  2. Write an essay on Affinity chromatography.
  3. How IEF is carried out?
  4. Write an essay on Blotting technique which is used for DNA.
  5. Discuss: various component parts of Control panel.
  6. Write in brief on SMILES nomenclature.
- (C) Write short notes (Any 2) 2x5=10
1. Discuss the principle and working of colorimeter and spectrophotometer.
  2. Give an elaborate account on SDS- PAGE.
  3. Discuss in detail various Techniques used for DNA Sequencing.
  4. Write an essay on various input devices used in computer.
  5. Describe in detail role of bioinformatics in Drug designing.