



JB-003-1016012

Seat No. _____

B. Sc. (Sem. VI) (CBCS) Examination

August - 2019

Microbiology : MB - 602

(Analytical Techniques & Bioinformatics) (New Course)

Faculty Code : 003

Subject Code : 1016012

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

[Total Marks : 70

- Instructions :** (1) All questions are Compulsory.
(2) Figures on right indicates total marks of the question.
(3) Draw neat Diagrams wherever necessary.

- 1 (a) Answer the following : 4
(1) ISO is abbreviated for _____.
(2) State Beer's Law.
(3) Give a name of radioactive isotope used in Biology.
(4) Give the name of detector system used in IR.
- (b) Answer in brief : (any **one**) 2
(1) What are GLP rules ?
(2) Write two applications of NMR spectroscopy.
- (c) Answer in detail : (any **one**) 3
(1) Discuss various applications of radioactive isotopes in biology.
(2) Applications of IR spectroscopy.
- (d) Write note on : (any **one**) 5
(1) Discuss the principle and working of colorimeter and spectrophotometer.
(2) Discuss the principle and Application of Atomic Emission Spectroscopy with diagram.

- 2 (a) Answer the following : 4
- (1) In gas chromatography, the basis for separation of the components of the volatile material is the difference in _____.
 - (2) Give is the function of guard column.
 - (3) Thin layer chromatography is _____ chromatography.
 - (4) Define chromatogram.
- (b) Answer in brief : (any one) 2
- (1) Explain principle of paper Chromatography.
 - (2) Explain principle of thin layer Chromatography.
- (c) Answer in detail : (any one) 3
- (1) Discuss principle of Affinity Chromatography with its applications.
 - (2) Discuss principle of Partition Chromatography with its applications.
- (d) Write note on : (any one) 5
- (1) Discuss principle of HPLC with its applications and diagram.
 - (2) Discuss principle of GC with its applications and diagram.
- 3 (a) Answer the following : 4
- (1) In SDS-PAGE, the protein sample is first treated with a _____ and then with _____ detergent followed by fractionation by electrophoresis.
 - (2) Function of β -Mercaptoethanol in electrophoresis.
 - (3) Give an example of a biosensor.
 - (4) Paper electrophoresis is used in separation of _____.
- (b) Answer in brief : (any one) 2
- (1) What is Autoradiography ? State its use.
 - (2) What is Flow cytometry ? State its use.

- (c) Answer in detail : (any **one**) 3
- (1) Factors affecting electrophoretic mobility.
 - (2) Discuss capillary electrophoresis.
- (d) Write note on : (any **one**) 5
- (1) SDS-PAGE.
 - (2) Pulsed-field gel electrophoresis.
- 4 (a) Answer the following : 4
- (1) The first step of PCR is _____.
 - (2) Full form of VNTR.
 - (3) Full form of STR.
 - (4) Thalassemic trait can be detected by _____ technique.
- (b) Answer in brief : (any **one**) 2
- (1) RFLP.
 - (2) Discuss Primer design for PCR.
- (c) Answer in detail : (any **one**) 3
- (1) Discuss FISH.
 - (2) Enlist Blotting technique and discuss any one.
- (d) Write note on : (any **one**) 5
- (1) Chemical synthesis of DNA.
 - (2) PCR.
- 5 (a) Answer the following : 4
- (1) What is EST ?
 - (2) What is TrEMBL ?
 - (3) What is SRS ?
 - (4) Feature of FASTA file format.
- (b) Answer in brief : (any **one**) 2
- (1) Define gap penalty and enlist its types.
 - (2) Define Bioinformatics and write its importance in microbiology.

- (c) Answer in detail : (any **one**) **3**
- (1) Discuss any one sequence database and any one structure database.
 - (2) Give the details such as full form, Website and Country of origin of information retrieval systems given below.
 - (a) Entrez
 - (b) SRS
 - (c) DBGET
- (d) Write note on : (any **one**) **5**
- (1) Describe : BLAST and FASTA.
 - (2) Construction of Phylogenetic tree using computer.
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