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DQ-003-1016012 Seat No. _____

B. Sc. (Sem. VI) (CBCS) (W.E.F. 2016) Examination

April – 2022

MB-602 : Microbiology

(Analytical Techniques and Bioinformatics)

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 Entrez.

(B) SRS.

(C) DBGET

(D) Write note on : (Any **One**) **5**

(1) Describe: BLAST and FASTA.

(2) Construction of Phylogenetic tree using computer
