B. Sc. (Sem. VI) Examination

July - 2022

Bio-Analytical Techniques

Faculty Code : 003
Subject Code : 2016012

Time : $2\frac{1}{2}$ Hours]   [Total Marks : **70**

1   (a)   Answer the following questions :   **4**

    (1)   Which isotope of Carbon is widely used in research for biological sciences?

    (2)   Which light sources are used in UV-visible spectrophotometer?

    (3)   Which wavelength is considered as Infrared region of spectrum?

    (4)   Define: lamda maximum.

    (b)   Answer the following questions : (any **one**)   **2**

    (1)   State the name of detector system used in IR and state its working.

    (2)   Enlist the applications of Mass spectroscopy in biological field.

    (c)   Answer the following questions : (any **one**)   **3**

    (1)   Write a detailed note on GLP and state its significance.

    (2)   Enlist the applications of NMR in biological field.

    (d)   Answer the following questions : (any **one**)   **5**

    (1)   Discuss in detail principal components and working of Atomic Absorption spectrometer.

    (2)   Write a detail note on components, working and applications of UV-visible spectrophotometer.

2 **(a)** Answer the following questions : 4

    (1) Enlist the applications of FPLC.

    (2) Which gases are used in GC?

    (3) Enlist the names of matrices used for Size exclusion chromatography.

    (4) What is chromatogram?

(b) Answer the following questions : (any **one**) 2

    (1) Discuss the working of HPLC

    (2) Enlist the applications of GC.

(c) Answer the following questions : (any **one**) 3

    (1) Discuss the Paper chromatography citing suitable example.

    (2) Discuss the concept of LC-MS.

(d) Answer the following question : (any **one**) 5

    (1) Write a detailed note on principle and working of Size exclusion chromatography.

    (2) Write a detailed note on principle and components of HPLC.

3 **(a)** Answer the following questions : 4

    (1) State the basic principle of Electrophoresis.

    (2) How electric current is provided during Agarose gel electrophoresis?

    (3) When mixture of DNA and RNA is run on Agarose gel, which molecule will move faster?

    (4) Which chemical is used to stain the protein in PAGE?

(b) Answer the following questions : (any **one**) 2

    (1) Enlist two applications of Flow cytometry.

    (2) State the drawback of Autoradiography.

(c) Answer the following questions : (any **one**) 3

    (1) Enlist the applications of Biosensors.

    (2) Write a detailed note on principle and working of Capillary electrophoresis.

(d) Answer the following questions : (any **one**) **5**

   (1) State the principle of Native PAGE and discuss its applications citing suitable example.

   (2) Discuss the Flow cytometry in detail.

4 (a) Answer the following questions : **4**

   (1) Define: Primer

   (2) Which macromolecule is studied by Western Blotting?

   (3) Which fluorescent chemical is used in Pyrosequencing method?

   (4) What is STR?

(b) Answer the following questions : (any **one**) **2**

   (1) Enlist the applications of PCR technology in agriculture field.

   (2) Discuss in brief application of VNTR in forensic sciences.

(c) Answer the following questions : (any **one**) **3**

   (1) Write a detail note on RFLP in terms of its principle and applications.

   (2) Enlist the rules for Primer designing.

(d) Answer the following questions : (any **one**) **5**

   (1) Discuss Maxam and Gilbert' s method of DNA sequencing in detail.

   (2) Discuss Southern blotting in terms of its principle and applications.

5 (a) Answer the following questions : **4**

   (1) What is TrEMBL?

   (2) Enlist the name of primary database (minimum two)

   (3) What is the full form of NCBI?

   (4) Enlist the names of protein database.

(b) Answer the following questions : (any **one**)   **2**

     (1) State the contribution of Bioinformatics in the field of agriculture.

     (2) Write a brief note on DBMS.

(c) Answer the following questions : (any **one**)   **3**

     (1) Which types of information can be obtained from DBGET?

     (2) What is primary database? State its significance in brief.

(d) Answer the following questions : (any **one**)   **5**

     (1) Discuss the role of Bioinformatics in the field of proteomics citing suitable example.

     (2) Write a detail note on BLAST in terms of its types and applications.

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