DQ-003-2016042 Seat No. _____

B. Sc. (Biotechnology) (Sem. VI) (CBCS) (W.E.F. 2019) Examination

April – 2022

BT - 602 : Analytical Techniques in Biotechnology

(New Course)

Faculty Code : 003

Subject Code : 2016042

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

Instructions : (1) All questions are compulsory.

(2) Right side figures indicate marks of the question.

1 (A) Objective type question : **4**

(i) Give the application of Geiger Muller Counters.

(ii) Write effect on mass number in β – decay.

(iii) Define probe.

(iv) Detine Scintillation.

(B) Answer in brief : (Any **One** out of Two) **2**

(i) Write briefly on half life.

(ii) Differentiate α and β – decay.

(C) Answer in detail : (Any **One** out of Two) **3**

(i) Discuss application of radioactivity.

(ii) Explain health hazards associated with radioactivity.

(D) Write a note on : (Any **One** out of Two) **5**

(i) Give the detail account of Quantitative biochemical measurements.

(ii) Give principle and methods of autoradiography.

2 (A) Objective type question : **4**

(i) Write one application of differential centrifugation.

(ii) Give the role of ammonium persulfate in PAGE.

(iii) Define isoelectric point.

(iv) What is stacking gel?

(B) Answer in brief : (Any **One** out of Two) **2**

(i) Write purpose of Isoelectric focusing.

(ii) What do you understand by Sedimentation?

(C) Answer in detail : (Any **One** out of Two) **3**

(i) Differentiate Zonal and Isopycnic centrifugation.

(ii) Write principle of Agarose electrophoresis.

(D) Write a note on : (Any **One** out of Two) **5**

(i) Describe the centrifugation in detail.

(ii) Give the detail account of PAGE.

3 (A) Objective type question : **4**

(i) Which electromagnetic radiation having maximum wavelength?

(ii) Write one application of X-rays diffraction.

(iii) Mid-IR region mainly consists of _____ cm^{-1}.

(iv) Absorption depends on path length - True/False.

(B) Answer in brief : (Any **One** out of Two) **2**

(i) Give the use of microtitre plate.

(ii) Discuss Bragg's law.

(C) Answer in detail : (Any **One** out of Two) **3**

(i) Give the principle of Beer-Lamberts law.

(ii) Enlist the properties of electromagnetic radiation.

(D) Write a note on : (Any **One** out of Two) **5**

(i) Write principle and application of NMR.

(ii) Give the detail account of Raman spectroscopy

4 (A) Objective type question : **4**

(i) Partition coefficient is the basis for separation in Gas chromatography - True/False

(ii) The pattern on the paper in Paper chromatography is called _____

(iii) In Column chromatography, the stationary phase is made of _____ and the mobile phase is made of _____

(iv) Gas chromatography can be performed in column -True/False

(B) Answer in brief : (Any **One** out of Two) **2**

(i) Explain the stationary and supporting phase in chromatography.

(ii) Write properties of solvent system used in chromatography.

(C) Answer in detail : (Any **One** out of Two) **3**

(i) Write on size exclusion chromatography.

(ii) What are the difference between GC and GLC?

(D) Write a note on : (Any **One** out of Two) **5**

(i) Discuss about HPLC in detail.

(ii) Explain principle, instrumentation and application of TLC.

5 (A) Objective type question : **4**

(i) Nature of quantum dot are - Inorganic/Organic.

(ii) Nanomembrane having pore size range _____ nm

(iii) Define Bioreceptor.

(iv) Define base peak in mass spectroscopy.

(B) Answer in brief : (Any **One** out of Two) **2**

(i) Discuss application of Biosensor.

(ii) How nanotechnology works?

(C) Answer in detail : (Any **One** out of Two) **3**

(i) Write application of nanotechnology.

(ii) Explain application of Biosensor.

(D) Write a note on : (Any **One** out of Two) **5**

(i) Describe principle and different types of biosensors

(ii) Explain the principle and instrumentation of Mass spectroscopy.
