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PG-003-001622 Seat No. _____

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

July - 2018

Biotechnology : BT - 602

(Analytical Technique in Biotechnology)

(New Course)

Faculty Code : 003

Subject Code : 001622

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 Answer all question : **20**

(i) What is the use of Geiger-muller counter?

(ii) Which type of centrifugation is used to separate cells and viruses from broth?

(iii) How atomic number of element related to stability of nucleus?

(iv) The pattern on paper in chromatography is called _____

(v) Which is most common type of gel used for separation of DNA molecule?

(vi) Write the role of SDS?

(vii) Two protein having same charge but difference mass have to separate, which technique is most suitable for this?

(viii) Define partition coefficient?

(ix) In mass spectrometer, the sample that has to be analyzed is bombarded with which of the particle?

(x) Which technique is used for studying crystal structure of solids ?

(xi) Which would be best to separate a protein that binds strongly to its substrate?

(xii) Which technique is best for the separation of volatile mixtures?

(xiii) The difference between absorption and emission wavelength is called _____

(xiv) Define molar extinction coefficient?

(xv) Which is the most common type of mass analyzer?

(xvi) Which biosensor detects analyte by measuring change in current?

(xvii) Write an example of cation exchanger?

(xviii) The target molecule of ligand avidin is _____

(xix) What is full form of WIPO in IPR?

(xx) Which size range is considered as nanoparticle?

2 (A) Answer any **three** out of six : **2×3=6**

(i) Briefly write about radioactive decay?

(ii) Write definition and use of isoelectric focusing?

(iii) Write principle of electrophoresis?

(iv) Write difference between Refraction and Diffraction?

(v) What is R_f value?

(vi) Write few application of Biosensor?

(B) Answer any **three** out of six : **3×3=9**

(i) Write the various safety guide line when working with radioactive isotopes?

(ii) Give the brief about RCF and RPM?

(iii) Write the properties of electromagnetic radiation?

(iv) Briefly explain Bragg's Law?

(v) How enzyme based glucose biosensor work?

(vi) Write about importance of IPR in daily life?

(C) Answer any **two** out of five : **2×5=10**

(i) Write about measurement method of radioactivity?

(ii) Give the detail of all basic components of centrifuge?

(iii) With well diagram discuss the working principle of X-rays diffraction?

(iv) Explain principle and method of Thin Layer Chromatography (TLC)

(v) Define Patent? Discuss the various criteria to grant the patent.

3 (A) Answer any **three** out of six : **3×2=6**

(i) Write about health hazard associated with radioactivity.

(ii) What is two dimensional electrophoresis?

(iii) Explain effect of polarity of solvent on absorption maxima in UV-spectroscopy?

(iv) What is electrospray ionization?

(v) Write short notes on ion exchanger?

(vi) Write the important characteristics of Biosensor?

(B) Answer any **three** out of six : **3×3=9**

(i) Write few importance of analytical technique in molecular and biochemical studies?

(ii) States about isopycnic centrifugation?

(iii) What are criteria to analyze an infrared spectrum?

(iv) What is difference between normal phase and reverse phase partition chromatography?

(v) Discuss about size exclusion chromatography?

(vi) Write the principle of potentiometer?

(C) Answer any **two** out of five : **2×5=10**

(i) Give the detail account autoradiography?

(ii) Write the working principle and method of SDS-PAGE?

(iii) Explain the Lambert-Beer law in detail?

(iv) With well diagram explain the working principle of HPLC?

(v) Specify the various application of nanotechnology in detail?