MAN-003-001622 Seat No. _____

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

March / April - 2018

BT-602 : Analytical Techniques In Biotechnology

Faculty Code : 003
Subject Code : 001622

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

SECTION - I

1 Objective marks questions : **20**

(1) The study of all the small molecules in the cell is called _____.

(2) A _____ solution is one that resists a change in pH on the addition of either acid or base

(3) Detection limit is also called _____

(4) A _____ is able to provide an indirect measure of radioactivity because radiation has a property of ionization.

(5) The least penetrating of the three common types of nuclear radiation is the _____

(6) The wavelength of an absorption is 260 nm. In what part of the electromagnetic spectrum does this lie?

(7) In Ion exchange chromatography separates molecules according to their _____

(8) X-ray diffraction can only be applied to Solid and _____ materials.

(9) Nanotechnology is also called _____

(10) A patent lasts for _____ years.

(11) Full form of HPLC is _____

(12) An atom or molecule with an unpaired electron in the outer shell is called _____

(13) The distance travelled by light as it passes through a cuvette is called _____

(14) _____ spectroscopy provides valuable information about functional group.

(15) Prism in spectrophotometer works on the principle of _____

(16) _____ is used as free radical source in the PAGE.

(17) The principle of IEF is separation of molecule based on _____.

(18) In normal phase chromatography, the stationary phase is made _____

(19) The UV-Visible spectrophotometer works on the principle of _____

(20) The separation technique of charged molecules under the influence of electric current is called _____

SECTION - II

2 (a) Write any **three** out of six : **6**

(1) Define fluorescence

(2) What is half life of radioisotope

(3) State Beer lambert law

(4) What is proteomics ?

(5) What is importance of sensitivity in analytical technique?

(6) Write two applications of IEF.

(b) Write any **three** out of six : **9**

(1) Discuss in short about basic components of centrifuge

(2) Principle and application of Scintillation counter

(3) Principle and applications of SDS PAGE

(4) Write properties of Agarose as support media in electrophoresis

(5) Name and state different buffers used in SDS PAGE

(6) Derive equation to establish relationship between RCF and RPM

(c) Write any **two** out of five : **10**

(1) What is radioactive decay? Discuss in short about types of radioactive decay.

(2) What is spectrophotometer? Discuss in detail about instrumentation and applications of UVVisible spectrophotometer.

(3) Enlist applications of radioactivity in biological science.

(4) What is electrophoresis? Write in detail about electrophoresis and its applications in biotechnology.

(5) What are difference between Atomic absorption spectrophotometer and Atomic emission spectrophotometer?

3 (a) Write any **three** out of six : **6**

(1) What is gradient elution with example?

(2) Write basic difference between HPLC and FPLC.

(3) Basic flow diagram of Biosensor.

(4) Principle and examples of Potentiometer.

(5) Applications of column chromatography.

(6) What is principle of autoradiography ?

(b) Writes any **three** out of six : **9**

(1) What is plate theory of chromatography?

(2) Derive Bragg equation. Discuss its importance in X-ray crystallography

(3) Principle and applications of Thin layer chromatography

(4) Properties of Mobile phase used in chromatography

(5) Principle and applications of nanotechnology

(6) Write a note on Pumps used in HPLC

(c) Write any **two** out of five : **10**

(1) Discuss in detail about principle and applications of GLC?

(2) What is mass spectrophotometer (MS)? Write in short about components and applications of MS in Biotechnology?

(3) What is NMR? Write principle and applications of NMR in biotechnology.

(4) What are ideal characteristics and applications. of Biosensor?

(5) What is IPR? State procedure and importance of IPR.
