* P A - 0 0 3 - 1 0 1 6 0 4 2 *

PA-003-1016042 Seat No. _____

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

March / April - 2020

BT - 602 : Analytical Techniques In Biotechnology

(New Course)

Faculty Code : 003

Subject Code : 1016042

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

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

(1) The ability of each type of radiation to pass through matter is expressed in terms of _____

(2) In 1928, _____ and _____ developed a `particle detector' which is a gas filled counter use to detect 'ionising radiation'.

(3) _____ is the use of photographic film to detect radioactive materials.

(4) _____ is a type of energy realised by atoms in the form of electromagnetic waves or particles.

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

(1) What is Radiation?

(2) What is molecular biology?

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

(1) Describe GM Counter.

(2) Describe Scintillation.

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

(1) Laws of Radiation.

(2) Application of Radioactivity.

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

(1) Full form of SDS-PAGE is _____

(2) _____ is an electrophoretic technique for separating different molecules by differences in their isoelectric point.

(3) Fixed angle rotars are preferred for rate-zonal separations, because the distance between the outside of the meniscus and the outside of the bottom of the tube is long enough for separation to occur. TRUE/FALSE.

(4) In PAGE protein migrates by _____ to _____ ratio.

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

(1) Define : Electrophoresis.

(2) What is Electroendoosmosis?

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

(1) Basic principle of Electrophoresis.

(2) Basic principle of Centrifugation.

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

(1) SDS-PAGE

(2) Basic components of centrifuge.

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

(1) Visible light covers the range of wavelengths from _____ to _____ nm..

(2) The typical vibrational frequencies ranges from less than 10^{13}Hz to approximately 10^{14}Hz in the EM Spectrum. TRUE/FALSE.

(3) Which region of spectrum is associated with molecular vibration?

(4) Full form of NMR is _____

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

(1) State Beer Lamberts law.

(2) What is Diffraction ?

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

(1) Interaction of electromagnetic radiation with matter.

(2) Principle of NMR.

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

(1) Atomic absorption and Emission spectroscopy.

(2) UV-Visible light spectroscopy.

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

(1) HETP is an acronym for _____

(2) If adsorption is the basic separation phenomena in paper chromatography then paper molecules in the paper is considered as a stationary phase. TRUE/FALSE.

(3) Full form of UPLC is _____

(4) _____ chromatography seperates proteins solely on the basis of molecular size.

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

(1) What is Retention time?

(2) What is kD?

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

(1) Basic principle of chromatography.

(2) Gel Filtration chromatography.

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

(1) HPLC

(2) Classify the techniques of chromatography.

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

(1) Bioreceptor + _____ = Biosensors.

(2) Full form of IPR is _____

(3) _____ is an analytical technique that measures the mass-to-charge ratio of ions.

(4) For how many years patent last in India?

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

(1) Define : Biosensors.

(2) Define : Nanotechnology.

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

(1) Patenting.

(2) Application of biosensors.

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

(1) Mass spectroscopy.

(2) IPR