



BRAINWARE UNIVERSITY

Term End Examination 2023-2024 Programme – B.Sc.(BT)-Hons-2020/B.Sc.(BT)-Hons-2021 Course Name – Bio Analytical Tools Course Code - BBTC601 (Semester VI)

Full Marks: 60 Time: 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

- 1. Choose the correct alternative from the following:
- (i) Select that which of the following is not the characteristic of null-detector type pH meter?
 - a) It can be battery operated

b) It has less accuracy

c) It is easy to maintain

- d) Its electronic circuits are simple
- (ii) MALDI is a technique that indicates
 - a) ionization

b) fractionation

c) proteolysis

- d) cell counting
- (iii) Which of the following cell organelles regulates the entry and exit of molecules to and from the cell?
 - a) Lysosomes

b) Golgi bodies

c) Cell membrane

- d) Mitochondria
- (iv) Which of the following microscope can not be used to see bacteria
 - a) Compound microscope

b) simple microscope

c) Electron microscope

- d) Stereoscope
- (v) Chromatography is a physical method that used to separate and analyse
 - a) Simple mixtures

b) Complex mixtures

c) Viscous mixtures

- d) Metals
- (vi) In which type of chromatography, the stationary phase held in a narrow tube and the mobile phase is forced through it under pressure?
 - a) Column chromatography

b) Planar chromatography

c) Liquid chromatography

- d) Gas chromatography
- (vii) Which of the following types of chromatography involves the separation of substances in a mixture over a 0.2mm thick layer of an adsorbent?
 - a) partition

b) Column

c) Thin layer

d) Paper

(viii)	In Thin layer chromatography, the stationary phrobile phase is made of	hase is made of and the		
	a) Solid, liquid	b) gas, gas		
	c) Liquid, gas	d) Solid, gas		
(ix)	Gel-filtration chromatography separates on the basis of			
	a) size and shape using porous beads packed in a column	b) size using porous beads packed in	a column	
	c) shape using porous beads packed in a column	d) none of these		
(x)	The presence of DNA band expressed by			
	a) BPB	b) CBB		
	c) EtBr	d) MB		
(xi)	The principle of absorption fluorimetry is based			
(xii)	 a) Absorption of light by a sample c) Refraction of light by a sample State the factor that primarily influences the rate centrifugation 	b) Emission of light by a sample d) Reflection of light by a sample te of sedimentation during		
	a) Density	b) Shape		
	c) Mass	d) Charge		
(xiii)	In absorption spectroscopy, which property of a	substance is typically measured		
	a) Emission intensity	b) Refractive index		
,	c) Absorbance	d) Conductivity		
(XIV	Before use, a pH meter must be calibrated using	3		
	a) Distilled water	b) Sodium chloride solution		
(xv)	 c) Buffer solutions In equilibrium density gradient centrifugation we equal density to the medium? 	d) Acidic solutions hen molecules reach a region with		
	a) They continue moving to the bottomc) They stop moving	b) They settle at the top d) They reverse direction		
	Grou			
(Short Answer Type Questions)			3 x 5=15	
2. Explain in brief cell fractination technique.3. Define Thin layer chromatography involves using a thin layer of adsorbent material coated on a glass or plastic plate as the stationary phase			(3) (3)	
4. Explain the significance of cell fractionation techniques in studying cellular processes and provide examples of experiments where cell fractionation has been employed.			(3)	
5. Explain about the biosensors			(3)	
6. Explain in brief the process of affinity chromatography. OR			(3)	
D	escribe paper chromatography.	•	(3)	
	Group	D-C		
	(Long Answer Typ		5 x 6=30	
7. How does transmission electron microscopy work?			(E\	
8. 1	Discuss the method to be used to improve contrag	st when performing light	(5) (5)	
 Evaluate and explain the components of a scanning electron microscope for the visualization of topography of a specimen. 			(5)	
10. [O. Explain the Rayleigh scattering process and why is blue light scattered more strongly than (5)			

- 11. Evaluate the relationship between absorbance and concentration in the Beer-Lambert law? (5)
- 12. Differentiate between a light microscope and a transmission electron microscope, and how (5) does it affect image production?

OR

Evaluate the key difference between electronic, rotational, and vibrational transitions in molecular spectroscopy? (5)
