SUB.CODE: 20PBT2E2A

REG.NO:

DHANALAKSHMI SRINIVASAN COLLEGE OF ARTS & SCIENCE FOR WOMEN (AUTONOMOUS)

(For Candidates admitted from 2020-2021onwards)

PG DEGREE EXAMINATIONS APRIL - 2021

M.Sc., - BIOTECHNOLOGY

ADVANCED INSTRUMENTATION FOR BIOTECHNOLOGY

Time: 3 Hrs **Max.Marks: 75**

PART - A

CHOOSE THE CORRECT ANSWER **(10X1=10)**

1. In 500 × g, what does g represent in accordance to centrifugation?
   a) Gravitational force
   b) Centrifugal force is 500 times greater than earthly gravitational force
   c) Centrifugal force is 500 times less than earthly gravitational force
   d) Centrifugal force is 500 times same as that of earthly gravitational force
2. Which of the following centrifugation is used to separate certain organelles from whole cell?
   a) Rate-zonal centrifugation b) Normal centrifugation
   c) Differential centrifugation d) Isopycnic centrifugation
3. Which force is involved in the Chromatography?
   a) Hydrogen bonding b) London force c) Electric static force d) All of the above
4. In which Chromatography s.p. is more polar than m.p.?
   a) Ion exchange b) Liquid liquid Chromatography
   c) Reversed chromatography d) None of the above
5. The speed of migration of ions in electric field depends upon
   a) Shape and size of molecule b) Magnitude of charge and shape of molecule
   c) Magnitude of charge shape and mass of molecule d) Magnitude of charge and mass of molecule
6. Which of the following statements is true about migration of biomolecules?
   a) The rate of migration is directly proportional to the resistance of medium
   b) Rate of migration is directly proportional to current
   c) Low voltage is used for separation of high mass molecules
   d) Rate of migration is inversely proportional to current
7. Which of the following spectroscopy techniques is associated with molecular emission?
   a) UV-Visible spectroscopy b) IR spectroscopy
   c) Fluorescence spectroscopy d) X-ray diffraction

8. Which of the following techniques would be most useful to identify as well as quantify the presence of a known impurity in a drug substance?

a) NMR b) MS c) IR d) HPLC

9. Which of the following factor is not responsible for the formation of a non-crystalline structure?

a) Atomic packing has open structure b) Primary bonds are absent

c) Formation of 1-dimensional chain molecule d) Strong secondary bond

10. Which of the following axis system is being satisfied by tetragonal crystal system?

a) $a = b = c, \alpha = \beta = \square = 90^o$ b) $a \neq b \neq c, \alpha = \beta = \square = 90^o$

c) $a = b \neq c, \alpha = \beta = \square = 90^o$ d) $a = b = c, \alpha \neq \beta = \square = 90^o$

PART- B

ANSWER ALL THE QUESTIONS **(5X7=35)**

11. a) Give an account on basic principles of sedimentation

(OR)

b) Differentiate between sedimentation velocity and equilibrium

12. a) Write short notes on Adsorption & Paper Chromatography along with its principle

(OR)

b) Explain brief about the GC-MS

13. a) Illustrate the 1D and 2D electrophoresis

(OR)

b) Explain about the Isoelectric focusing and Isotachophoresis

14. a) Difference between Colorimeter and Spectrophotometer

(OR)

b) List out the differences between Circular Dichorism and Optical Rotatory Dispersion

15. a) Discuss about the X-ray Diffraction

(OR)

b) Write short notes on the following:

1. Bragg equation
2. Reciprocal lattice
3. Miller indices

PART-C

ANSWER ANY THREE QUESTIONS **(3X10=30)**

16. Elaborate the types of centrifuges

17. Write short notes on the following:

1. HPLC
2. GC
3. GLC

18. Explain in detail about the Native and SDS-PAGE electrophoresis

19. Describe about the principles & applications of NMR & ESR techniques

20. Write detailed account on principle, instrumentation and applications of X-ray crystallography