

No. of Printed Pages : 8

Sl. No.

Question Booklet Code

A

21BTH1S1LP

**M.Sc. I Semester Degree Examination, April/May - 2023
Skill Enhancement Courses (SEC)**

BIOTECHNOLOGY

Instrumentation and Biotechniques

Time : 1 Hour

Maximum Marks : 30

INSTRUCTIONS TO CANDIDATES

1. The Question Paper will be given in the form of a Question Booklet. There will be four/two/one versions of Question Booklets with Question Booklet Code viz. **A, B, C & D / A & B / A**.
2. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your Question Booklet is un-numbered, please get it replaced by new Question Booklet with same Code.
3. Immediately after the commencement of the examination, the candidate should check that the Question Booklet supplied to him contains all the 30 questions in serial order. The Question Booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same Code. This is most important.
4. A blank sheet of paper is attached to the Question Booklet. This may be used for Rough Work.
5. **Please read carefully all the instructions on the top of the Answer Sheet before marking your answers.**
6. Each question is provided with four choices **(A), (B), (C)** and **(D)** having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using **Black Ball-Point Pen** in the OMR Answer Sheet.
7. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator.
8. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.
9. First fifteen minutes is provided to fill the general information of the Student. Eg. Student Name, Student ID, etc. in the OMR Answer Sheet.
10. Without the instruction of the Invigilator do not open the Question Paper Booklet Seal.

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P.T.O.

1. The most common type of gel used for DNA separation is :
 - (A) Agar
 - (B) Polyacrylamide
 - (C) Agarose
 - (D) All of the above

2. When is electrophoresis not used ?
 - (A) Separation of proteins
 - (B) Separation of amino acids
 - (C) Separation of Lipids
 - (D) Separation of nucleic acids

3. When excess water is added to acid, the concentration of H^+ ion will _____.
 - (A) Increase
 - (B) Decrease
 - (C) Remains same
 - (D) Depending upon type of acid

4. Carrier gas used in gas chromatography is _____.
 - (A) Carbon dioxide
 - (B) Oxygen
 - (C) Helium
 - (D) Methane

5. Chromatography that involves the separation of isomers :
 - (A) Thin layer chromatography
 - (B) Count current chromatography
 - (C) Chiral chromatography
 - (D) Affinity chromatography



6. The following factor does not influence electrophoretic mobility :
- (A) Molecular weight (B) Shape of molecule
(C) Size of molecule (D) Stereochemistry of molecule
7. In chromatography, the stationary phase can be _____ supported on a solid.
- (A) Solid or liquid (B) Liquid or gas
(C) Solid only (D) Liquid only
8. Serum protein polymorphism are demonstrated by :
- (A) HPLC (B) Centrifugation
(C) GC-MS (D) Electrophoresis
9. Electrophoresis was developed by :
- (A) Tswett (B) Tsvedberg
(C) Tiselius (D) Sanger
10. Which technique separates charged particles using electric field ?
- (A) Hydrolysis (B) Electrophoresis
(C) Protein synthesis (D) Protein denaturing
11. pH of 0.1 M NaCl solution is _____.
- (A) 7 (B) 7.5
(C) 8.0 (D) 0



12. Which part of the light microscope controls the intensity of light entering the viewing area ?
- (A) Coarse adjustment screw (B) Fine adjustment screw
(C) Diaphragm (D) Condenser lens
13. Function of resolving power of a microscope is _____.
- (A) Wavelength of light used
(B) Numerical aperture of lens system
(C) Refractive index
(D) Wavelength of light used and numerical aperture of lens system
14. Beer Lambert's law gives the relation between which of the following ?
- (A) Reflected radiation and concentration
(B) Scattered radiation and concentration
(C) Energy absorption and concentration
(D) Energy absorption and reflected radiation
15. Which fluorescent dye can be used for red fluorescence ?
- (A) Rhodamine (B) Fluorescein
(C) Carmine (D) DAPI
16. Which of the following cannot be used as an adsorbent in column adsorption chromatography ?
- (A) Magnesium oxide (B) Silica gel
(C) Activated alumina (D) Potassium permanganate

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17. Which type of microscope is especially useful for viewing thick structures such as biofilms ?
- (A) A transmission electron microscopes
 - (B) A scanning electron microscope
 - (C) A phase-contrast microscope
 - (D) A confocal scanning laser microscope
18. In an SDS-PAGE :
- (A) Protein are denatured by SDS
 - (B) Protein have the same charge to-mass ratio
 - (C) Smaller proteins migrate more rapidly
 - (D) All the above
19. In gas chromatography, the basis for separation of components of the volatile material is the difference in _____.
- (A) Partition Coefficients
 - (B) Conductivity
 - (C) Molecular Weight
 - (D) Molarity
20. Chromatography is a physical method that is used to separate and analyse _____.
- (A) Simple mixtures
 - (B) Complex mixtures
 - (C) Viscous mixtures
 - (D) Metals



21. The representation of Beer Lambert's law is given as $A = abc$. If 'b' represents distance, 'c' represents concentration and 'A' represents absorption, what does 'a' represent ?
- (A) Intensity (B) Transmittance
(C) Absorptivity (D) Admittance
22. 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
23. Which part of the compound microscope helps in gathering and focusing light rays on the specimen to be viewed ?
- (A) Eyepiece lens (B) Objective lens
(C) Condenser lens (D) Magnifying lens
24. Range of pH scale is :
- (A) 7 to 10 (B) 0 to 10
(C) 0 to 14 (D) 7 to 17
25. Beer's law states that the intensity of light decreases with respect to _____.
- (A) Concentration (B) Distance
(C) Composition (D) Volume



26. How are the cells sorted ?
- (A) By dilution plating until there are only single cell in each well of microtitre plate
 - (B) By the differential weight
 - (C) By electrostatic force
 - (D) By magnetic force
27. Ammonium sulphate is a :
- (A) Acidic Salt
 - (B) Basic Salt
 - (C) Neutral Salt
 - (D) Complex Salt
28. In electrophoresis, DNA will migrate towards :
- (A) Cathode or positive electrode
 - (B) Anode or negative electrode
 - (C) Cathode or negative electrode
 - (D) Anode or positive electrode
29. In-gel permeation chromatography, _____ is eluted first from the column.
- (A) Cations
 - (B) Anions
 - (C) Bigger molecules
 - (D) Smaller molecules
30. Ion exchange chromatography is based on the _____.
- (A) Electrostatic attraction
 - (B) Electrical mobility of ionic species
 - (C) Partition chromatography
 - (D) All the above

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SPACE FOR ROUGH WORK

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