



14872



BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Sc.(MLT)-2023/B.Sc.(MLT)-2024

Course Name – Laboratory Automation

Course Code - BMLTS303

(Semester III)

Library
Brainware University
398, Ramkrishnapur Road, Barasat
Kolkata, West Bengal-700125

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

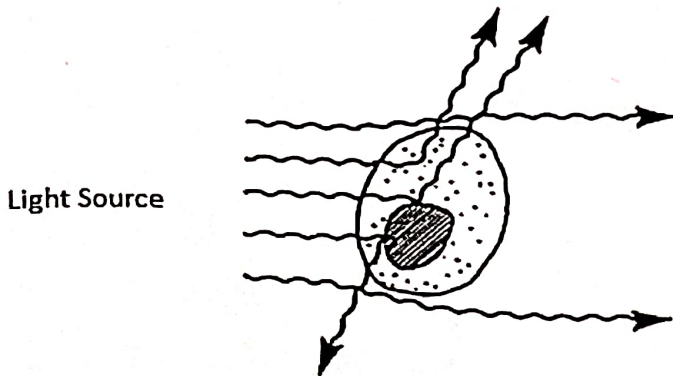
(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

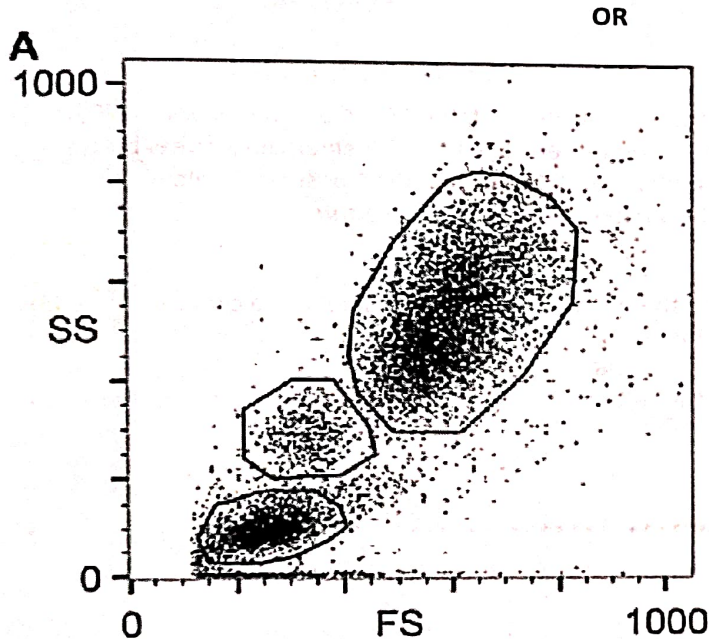
- (i) What does an out-of-control point on a Levey-Jennings chart indicate?
- a) The process is operating within acceptable limits. b) The process is producing consistent results.
c) The process may have a problem or variation. d) The process is perfect and needs no improvement.
- (ii) What is the primary purpose of discussing Levey-Jennings chart results with the quality control team
- a) To relate data to quality control procedures. b) To select appropriate statistical tests.
c) To identify out-of-control points. d) To calculate control limits.
- (iii) Relate the use of Bactek automation for selecting appropriate culture media in microbiology
- a) It ensures that the same media are used for all samples. b) It optimizes the choice of media based on sample type.
c) It discusses the historical development of culture media. d) It enhances operator safety during media preparation.
- (iv) Select the type of blood cells which are typically counted using impedance cell counters
- a) RBC b) WBC
c) platelets d) All of these
- (v) Cite the primary advantages of flow cytometry over traditional cell counting methods, such as manual microscopy
- a) Lower cost and faster results b) Higher accuracy and simpler operation
c) Greater sensitivity and specificity d) Smaller sample volume and improved resolution

4. Describe Random Access Analyzer (3)
5. Discuss the purpose of a blood smear examination in a clinical laboratory? (3)
6. (3)



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Predict and describe Forward Scatter(FSC) and Side Scatter(SSC) of light source radiated from that cell



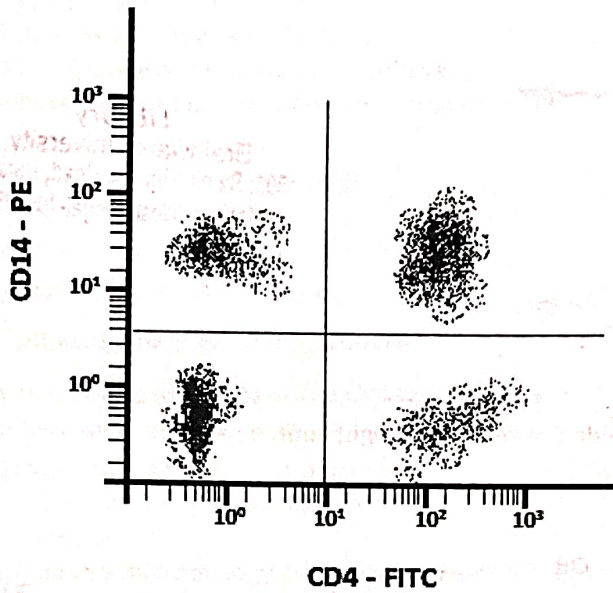
Predict lymphocytes, monocytes and granulocytes from this flowcytometry data. Justify the answer.

Group-C
(Long Answer Type Questions)

5 x 6=30

7. Explain the terms-accuracy, precision, standard deviation, sensitivity and specificity of test procedure. (5)
8. Describe the principle of glucose estimation using a glucometer, including the chemical reaction involved and how it provides a glucose reading. (5)

9. Evaluate the effectiveness of the quality assurance programs implemented in clinical laboratories for post-analytical processes. (5)
10. Explain 1 2s rule from Westgard multi rule chart (5)
11. (5)



A researcher want to isolate T-helper cell from a culture.He stained CD 4 biomarker with FITC fluorescent dye and CD 14 biomarker with PE fluorescent dye.Here,T- helper cell express both CD 14 and CD4.Conclude the result and identify the CD14 positive CD 4 positive T helper cell population from this FACS data describe the sample preparation procedure

12. Formulate recommendations for improving the overall efficiency and safety of a clinical laboratory based on a comprehensive evaluation. (5)

OR

Assess the potential risks associated with the release of incorrect laboratory results and their impact on patient care (5)
