

BIOC 122/BFBT 113 LABORATORY BIOTECHNIQUES 1

SECTION A30 MARKS (ANSWER ALL QUESTIONS)

Question 1

- a. Explain why it is important to fix a specimen before viewing it under a light microscope (1 mark)
- b. Why is it important to dehydrate cells before examining them under an electron microscope? (1 mark)
- c. Name the device that is used to create thin sections of specimens for electron microscopy (1 mark)
- d. What colour are gram-positive and gram-negative cells, respectively, after the Gram stain procedure? (2 marks)
- e. Differentiate between simple and differential staining (2 marks)

Question 2

State two applications of each of the following types of compound light microscopes

- a. Phase contrast (2 marks)
- b. Dark field (2 marks)
- c. Fluorescence (2 marks)

Question 3

- a. Explain four factors to consider when choosing a buffer for a particular biological reaction or biological sites (3 marks)
- b. State the importance of buffers in pharmaceuticals industries (3 marks)

Question 4

State three uses of High-pressure liquid chromatography (HPLC) (3 marks)

Question 5

State the importance of having accurate pH control (3 marks)

Question 6

State three principles of safe storage of chemicals in laboratories (3 marks)

Question 7

- a. State four types of radiations which Geiger-Muller counter does not detect (4 marks)
- b. Name any four types of Scintillation Counter commonly used (4 marks)

Question 8

Outline the sequential steps followed when performing in vivo autoradiography

(4 marks)

SECTION B (ANSWER ANY TWO QUESTIONS)

Question 8

Discuss in details chemical storage under the following subheadings

- a. Principles of safe storage (9 marks)
- b. Storage facilities (6 marks)

Question 9

- a. Describe the steps involved in preparation of specimens for Transmission Electron Microscopy (TEM) and Scanning Electron Microscopy (SEM) (8 marks)
- b. Describe the mechanism of SEM (7 marks)

Question 10

Explain in details various steps conducted during DNA electrophoresis (15 marks)