

**3 (Sem-3) BOT M 2**

**2 0 1 9**

**BOTANY**

**( Major )**

**Paper : 3·2**

**( Instrumentation and Laboratory Techniques )**

*Full Marks : 60*

*Time : 3 hours*

*The figures in the margin indicate full marks  
for the questions*

1. Fill in the blanks : 1×7=7

- (a) The procedure applied in laboratory to separate molecules on the basis of charge is \_\_\_\_\_ chromatography.
- (b) The stationary phase in paper chromatography is a \_\_\_\_\_.
- (c) \_\_\_\_\_ is the procedure followed by microbiologist to preserve overall morphology of bacterial cell.
- (d) In case of microbial media, MSM stands for \_\_\_\_\_.
- (e) \_\_\_\_\_ is the ability of lens to distinguish between small objects that are close together.

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- (f) \_\_\_\_\_ selectively stains lipids in a cell.
- (g) Spectrophotometer deals with visible light, \_\_\_\_\_ and near infrared light.

2. Write briefly on the following :  $2 \times 4 = 8$

- (a) Working principle of camera lucida
- (b) Laminar air flow chamber
- (c) Fungal culture media
- (d) Herbarium specimens

3. Write notes on any *three* of the following :  $5 \times 3 = 15$

- (a) Thin-layer chromatography
- (b) Phase-contrast microscope and its applications
- (c) Preparation of molal and ppm solutions
- (d) Differential staining
- (e) Plant microtechniques

4. Answer the following questions :  $10 \times 3 = 30$

- (a) What does digital imaging mean? Briefly write about the importance of digital image for monitoring plant health and biodiversity.  $2+4+4=10$

( 3 )

Or

What is fixation and staining? Briefly write about the different types of stains and fixatives used to study the anatomical details of herbaceous plants.

$2+2+3+3=10$

- (b) What is spectrophotometer? Explain the working principle of spectrophotometer employing Beer-Lambert law. Write briefly about the different types of spectrophotometer and their applications and limitations.  $2+3+5=10$

Or

Write notes on the following :  $5+5=10$

- (i) Principle and applications of incubators
- (ii) Advantages and disadvantages of column chromatography
- (c) Briefly write about the field and herbarium technique associated with annual and perennial herbs. Write an extraordinary note on specimen collection techniques adopted for aquatic plants.  $6+4=10$

( 4 )

*Or*

Write notes on the following :      5+5=10

(i) Types of indicator solutions and their applications

(ii) Somogyi and Nessler's reagents for biological applications

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