

3 (Sem-3) BOT M 2

2019

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.

(2)

- (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. $6+4=10$