

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. $2 + 4 + 4 = 10$

20A/100

(Continued)

(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. $6 + 4 = 10$

20A/100

(Turn Over)

(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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