

2013

BOTANY

(Major)

Paper : 3.2

(Instrumentation and Laboratory Techniques)

Full Marks : 60

Time : 2½ hours

The figures in the margin indicate full marks for the questions

Answer **all** questions

1. Answer the following as directed in 1 or 2 word(s) each : 1×7=7

- (a) Write the full form of TEM and SEM.
- (b) At 15 lb/inch² pressure, the approximate temperature inside an autoclave is —.
(Fill in the blank)
- (c) Which media will you use for culturing fungi?
- (d) Name the preservative that is used for preserving botanical specimens.

(e) Which instrument will you use to measure absorbance of a coloured solution at 480 nm?

(f) When 1 mole or gram-molecular weight is dissolved in 1 litre water, the resultant solution is a —.

(Fill in the blank)

(g) The instrument that is used for reducing the danger of infection while working with infectious microorganisms and for preventing contamination of sterile materials is known as —.

(Fill in the blank)

2. Define the following terms :

2×4=8

(a) Chromatography

(b) Digitization

(c) Sterilization

(d) Molal solution

3. Write brief notes on any *three* of the following :

5×3=15

(a) Nessler's reagent

(b) Preservation techniques for succulent and xerophytic plants

(c) Culture media

(d) Column chromatography

(e) Luxmeter

4. Answer the following questions : 10×3=30

- (a) Describe a fluorescence microscope giving its working principles. How does this microscope differ from electron microscope? What is image documentation? Describe the technique of image documentation. 4+2+1½+2½=10

Or

Briefly describe the principles and applications of pH meter, incubator and centrifuge. 10

- (b) What do you understand by partition coefficient? Describe Beer-Lambert law. Describe the paper chromatography technique that you will use to separate pigments from leaf extract. 3+4+3=10

Or

Define fixatives, stains and mounting media. Describe some of the important techniques of sterilization. 6+4=10

- (c) Describe the techniques that one can use for preserving canes and bamboos. How are those techniques different from herbarium techniques? 10

(4)

Or

Write short notes on the following :

- (i) Microscopy
- (ii) Spectroscopy
- (iii) Stains

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