2018

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 fluorescence microscope exposes a specimen to UV, violet or blue light and forms an image of the object with the resulting _____ light.

(b) Scanning electron microscopy is mostly used to reveal _____.

(c) _____ cuvettes should not be used in case of UV spectroscopy.

(d) In case of microbial media, MSM stands for _____.

(e) Nessler's reagent is used to detect the presence of _____ in a sample.

(f) The interior of a glass electrode in pH meter is filled with _____ solution.

(g) The size of the label in a standard herbarium sheet is _____.

2. Briefly write on the following : 2×4=8

(a) Lux meter

(b) Fixatives

(c) Paper chromatography

(d) Indicator solutions

3. Write notes on any *three* of the following : 5×3=15

(a) Working principle and applications of UV-Vis spectrophotometer

(b) Bacteriological incubators

(c) Somogyi's reagent

(d) Preparation of the stain acetocarmine

(e) Mounting media

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

(a) What do you mean by microscopy? Briefly write about the working principles and applications of electron and fluorescence microscope. 2+(4+4)=10

Or

What is sterilization? Why is sterilization necessary in microbiological works? Briefly write about the different bacterial culture media and their sterilization process. 2+2+6=10

(b) What do you mean by thin-layer chromatography? How does it differ from paper chromatography? Briefly write about the principle, application and limitations of thin-layer chromatography. 2+2+6=10

Or

Write notes on the following : 5+5=10

(i) Principles and applications of autoclave and centrifuge

(ii) Application of camera lucida

(c) Briefly write about the field and herbarium techniques associated with botanical samples. Write a special note about the preservation of succulent and xerophytic plants. 5+5=10

Or

Write about the following : 5+5=10

(i) The method of preparation of molar, ppm and percentage solutions

(ii) Biological applications of digital camera

★ ★ ★