

3 (Sem-3) BOT M 1

2 0 1 9

BOTANY

(Major)

Paper : 3:1

(Ecology, Plant Geography and Evolution)

Full Marks : 60

Time : 3 hours

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

1. Choose the correct answer of the following :

1×7=7

(a) The upper stratum of a deep lake/pond which is exposed to solar radiations is called

(i) hypolimnion

(ii) epilimnion

(iii) metalimnion

(iv) thermocline

(b) The plants which can endure large changes of temperature are called

(i) stenothermal

(ii) megathermal

(iii) eurythermal

(iv) mesothermal

(2)

(c) Among sciophytes, some species can tolerate higher light intensities. They are known as

- (i) heliophytes
- (ii) facultative sciophytes
- (iii) facultative heliophytes
- (iv) obligate sciophytes

(d) The edge of the forest at high altitude beyond which no tree can grow is called

- (i) alpine meadow
- (ii) snow line
- (iii) tree line
- (iv) elfin scrub

(e) The humus develops over forest soils having pH well above 5 is known as

- (i) mull humus
- (ii) mor humus
- (iii) moder humus
- (iv) humus plant

(3)

(f) Which of the following is a quantitative pollutant?

- (i) CO₂
- (ii) Pesticides
- (iii) Bacteria
- (iv) PAN

(g) The taxon occurs throughout the tropical areas of the world is known as

- (i) cosmopolitan
- (ii) circumpolar
- (iii) pantropical
- (iv) circumboreal

2. Write short notes on the following : 2×4=8

- (a) Microclimate
- (b) Species diversity index
- (c) Eutrophication
- (d) Reciprocal symbiosis

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

- (a) Population growth curves
- (b) The effect of plants on the physical environment of a place

- (c) Feedback mechanism of ecosystems
- (d) The five different quantitative characteristics of plant communities
- (e) Remedial measures for noise pollution

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

- (a) Describe the interaction between plants and animals. 10

Or

Name the types of hydrophytes. Describe their important ecological characters with examples from local flora. 2+8=10

- (b) Explain the types and causes of succession. 10

Or

Define pollutants. How does environment become polluted? 2+8=10

- (c) Define biome. Describe the different types of tropical forests of India with special reference to Assam. 2+8=10

Or

Explain the role of isolation in organic evolution. 10

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

★ ★ ★