

5/H-62 (v) (Syllabus-2015)

2 0 1 7

(October)

BOTANY

(Honours)

(Plant Physiology and Biochemistry)

(BOTH-501)

Marks : 56

Time : 3 hours

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

Answer Question No. **1** which is compulsory and
other **four**, selecting **one** from each Section

1. Write short notes on the following : $4 \times 4 = 16$

- (a) Micronutrients and macronutrients
- (b) Role of cyclic electron transport in ATP synthesis
- (c) Role of day length in photoperiodism
- (d) Chiral centre and its significance

(2)

SECTION—I

2. Write short notes on the following : 5+5=10
- (a) Criteria of essentiality of mineral elements
 - (b) Water potential and its importance in maintaining cellular turgor
3. (a) Differentiate between symport and antiport mechanisms of mineral transport. 5
- (b) Describe the symptoms of deficiency of phosphorous and magnesium in plants. $2\frac{1}{2}+2\frac{1}{2}=5$

SECTION—II

4. Write a detailed account on the process of CO_2 fixation in C_3 plants. How does CO_2 fixation in C_4 plants differ from that in C_3 plants? 6+4=10
5. With the help of suitable reactions, describe the mechanism of biological nitrogen fixation. 10

SECTION—III

6. What is seed dormancy? Write a detailed account on the mechanisms involved in breakage of dormancy in seeds. 3+7=10

8D/275

(Continued)

(3)

7. Write short notes on the following : 5+5=10
- (a) Physiological effects of auxins
 - (b) Physiology of senescence

SECTION—IV

8. (a) With the help of suitable examples, illustrate the EC-based nomenclature of enzymes according to IUBMB. 6
- (b) Discuss the significance of the second law of thermodynamics in biological systems. 4
9. Describe in detail the hierarchy in protein structure. 10

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(Honours)

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Marks : 56

Time : 3 hours

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for the questions*

Answer Question No. **1** which is compulsory and
other **four**, selecting **one** from each Section

1. Write notes on the following : 4×4=16

(a) Criteria of essentiality of minerals

(b) Kranz anatomy

(c) Types of leaf senescence

(d) First law of thermodynamics

SECTION—I

2. Write notes on the following : 5+5=10
- (a) Mechanism of active absorption of minerals
 - (b) Water potential and its significance
3. Differentiate between macronutrients and micronutrients. Give an account of properties and deficiency symptoms of macronutrients. 2+8=10

SECTION—II

4. Describe the following : 5+5=10
- (a) Structure of chloroplast
 - (b) Non-cyclic photophosphorylation
5. Write explanatory notes on the following : 5+5=10
- (a) Glycolysis
 - (b) Photorespiration

SECTION—III

6. Write notes on the following : 5+5=10
- (a) Vernalization and its role in plants
 - (b) Phytochrome and its significance
7. Write notes on the following : 5+5=10
- (a) Physiological effects of gibberellins
 - (b) Causes of seed dormancy

SECTION—IV

8. (a) Describe in detail the structure of polysaccharides. 5
- (b) Classify amino acids based on R group. 5
9. Write notes on the following : 5+5=10
- (a) Vitamins as coenzymes
 - (b) Kinetics of enzyme catalysis

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2019

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BOTANY

(Honours)

[BOTH-501(T)]

(Plant Physiology and Biochemistry)

Marks : 56

Time : 3 hours

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

Answer Question No. 1 which is compulsory and
four questions, selecting **one** from each Section

1. Write notes on the following : $4 \times 4 = 16$

- (a) Deficiency symptoms of magnesium and potassium
- (b) GOGAT system in ammonia assimilation
- (c) Significance of critical day length in photoperiodic flowering
- (d) Chiral carbon and its significance in classifying D and L sugars

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(Turn Over)

(2)

SECTION—I

2. Write short notes on the following : 5+5=10
- (a) Differences between symport and antiport mechanism of mineral transport
 - (b) Protein-Lecithin theory
3. Describe the physiological functions and deficiency symptoms of five micro-nutrients. 10

SECTION—II

4. (a) Give a general account of PSI and PSII. 5
- (b) Discuss why C₄ pathway of photosynthesis involves spatial separation of carbon fixation and Calvin cycle. 5
5. Give a diagrammatic representation of ETC in mitochondria. Explain how electron transport during respiration leads to generation of ATP. 3+7=10

SECTION—III

6. What are the causes of seed dormancy? Mention in brief how seed dormancy can be regulated. 5+5=10

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(Continued)

(3)

7. Write notes on the following : 5+5=10
- (a) Physiological changes during leaf senescence
 - (b) Physiological effects of gibberellins

SECTION—IV

8. Describe different levels of structural organisation of protein giving suitable diagrams. 10
9. Describe the characteristics of an enzyme active site. Explain the mechanism of enzyme action. 5+5=10

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2 0 1 7

(October)

BOTANY

(Honours)

(Ecology and Conservation Biology)

(BOTH-502)

Marks : 56

Time : 3 hours

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

Answer Question No. **1** which is compulsory and
four questions, selecting **one** from each Section

1. Write short notes on the following : $4 \times 4 = 16$

(a) Biomes and biosphere

(b) Survivorship curves

(c) Food chain

(d) Greenhouse effect

(2)

SECTION—I

2. What are ecological factors? Describe edaphic factors and their significances in plant distribution. $2+6+2=10$
3. What are ecological adaptations? Describe the ecological adaptations of hydrophytes and give suitable diagram wherever necessary. $2+6+2=10$

SECTION—II

4. Differentiate between primary succession and secondary succession. Discuss briefly the different stages of ecological succession in xeric conditions. $4+6=10$
5. What are population interactions? Give a general account of the various types of population interactions in nature. $2+8=10$

SECTION—III

6. Define ecological pyramids. Describe the pyramids of biomass and energy in a grassland ecosystem. $2+4+4=10$
7. What do you understand by biogeochemical cycle? Give an account of phosphorus cycle in nature. $2+8=10$

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(Continued)

(3)

SECTION—IV

8. What are the sources of water pollution? Discuss in detail the effects and control measures of water pollution. $3+4+3=10$
9. Differentiate between *ex situ* and *in situ* conservations. Write a brief account of a national park in India. $4+6=10$

8D—1200/278

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(October)

BOTANY

(Honours)

(**Ecology and Conservation Biology**)

(BOTH-502)

Marks : 56

Time : 3 hours

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

Answer Question No. **1** which is compulsory and
four questions, selecting **one** from each Section

1. Write short notes on the following : $4 \times 4 = 16$

- (a) Light as an ecological factor
- (b) Protocooperation and competition
- (c) Pyramid of numbers
- (d) Magnitude of vascular plant diversity in India

(2)

SECTION—I

2. What are physiographic factors? Describe the significance of slope and aspect of a mountain in population distribution of plants. $4+6=10$
3. Give a general account of the adaptations of xerophytic plants and draw suitable diagrams wherever necessary. $6+4=10$

SECTION—II

4. Define ecological succession. Give an account of different stages of secondary succession in an ecosystem. $2+8=10$
5. What are mortality and natality? Give an account of different types of survivorship curves. $4+6=10$

SECTION—III

6. Describe the flow of energy in an ecosystem by 'box-and-pipe' model. 10
7. What are the structural attributes of an ecosystem? Give an account of abiotic components of a terrestrial ecosystem. $2+8=10$

(Continued)

(3)

SECTION—IV

8. What causes ozone layer depletion? Discuss the impact of ozone depletion on climate change and state some remedial measures to abate its impact. $2+4+4=10$
9. What are biosphere reserves? How do they differ from national parks? Discuss various zones of a biosphere reserve and the levels of human activities in each zone. $2+2+6=10$

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2019

(October)

BOTANY

(Honours)

[BOTH-502 (T)]

(Ecology and Conservation Biology)

Marks : 56

Time : 3 hours

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

Answer Question No. 1 which is compulsory and
four questions, selecting **one** from each Section

1. Write notes on the following : 4×4=16
- (a) Difference between population and community
 - (b) Influence of natality and mortality on population growth
 - (c) Grazing food chain
 - (d) Cryopreservation

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(Turn Over)

SECTION—I

2. Describe the process of soil formation. 10
3. What are ecological adaptations? Describe the adaptation of hydrophytes and give suitable diagrams wherever necessary. 2+8=10

SECTION—II

4. What are population interactions? Give accounts of symbiosis and parasitism in plants with suitable examples. 2+4+4=10
5. Differentiate between primary and secondary successions. Describe the different stages of succession. 2+8=10

SECTION—III

6. What are ecological pyramids? Describe the different types of ecological pyramids. 1+9=10
7. What is biogeochemical cycle? Give an account of the phosphorus cycle in nature. 2+8=10

SECTION—IV

8. Define greenhouse effect. Discuss the impact of global warming and mention remedial measures to control global warming. 2+8=10
9. What is water pollution? Describe its sources, effects and abatement. 1+9=10
