

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester : III (New)	Term : I	Academic Year : 2013-14
Course No. : BOT 234	Title : Crop Physiology	
Credits : 3(2+1)		
Day & Date : Wednesday, 23.10.2013	Time : 9.00 to 12.00	Total Marks : 80

- Note :**
1. Solve **ANY EIGHT** questions from **SECTION "A"**.
 2. All questions from **SECTION "B"** are compulsory.
 3. All questions carry equal marks.
 4. Draw neat diagrams wherever necessary.

SECTION "A"

- Q.1 Define crop physiology. Explain importance of crop physiology in Agriculture.
- Q.2 Define growth. Explain monocarpic and polycarpic species with examples and give the formulae of CGR, RGR, NAR and HI.
- Q.3 Define water potential. Explain their components in relation of water potential with DPD.
- Q.4 Define transpiration and give advantages of transpiration. Explain mechanism of opening and closing of stomata with starch sugar inter conversion hypothesis.
- Q.5 Define imbibitions. Explain active and passive absorption of water and state factors affecting the rate of absorption of water.
- Q.6 Define photosynthesis. Explain dark reaction process in C₃ plants with significance of photosynthesis.
- Q.7 Define respiration. Explain in brief account of glycolysis process and give the significance of respiration.
- Q.8 Define nutriophysiology. Give Mengel's classification of plant nutrients.
- Q.9 Write short notes: (Any Four).
- 1) Source and sink relationship
 - 2) Photorespiration
 - 3) Hormonal regulation of fruit ripening
 - 4) Senescence
 - 5) Photoperiodism
- Q.10 Differentiate between (Any Four).
- 1) C₃ and C₄ plants
 - 2) Transpiration and Guttation
 - 3) Auxins and Gibberellens
 - 4) Apoplastic and symplastic movements
 - 5) Photosynthesis and respiration.

SECTION "B"

- Q.11 Define the following terms.
- 1) Abscission
 - 2) Phytochrome
 - 3) Vernalization
 - 4) Phloem loading
 - 5) Plasmolysis
 - 6) Hydroponics
 - 7) Water use efficiency
 - 8) Plant growth regulators

(P.T.O.)

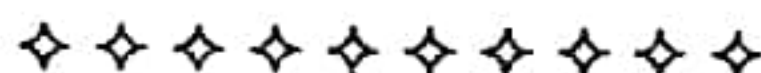
Q.12 Match the pairs.

“A”

- 1) IAA
- 2) Stroma
- 3) Parthenocarpy
- 4) Soil less culture
- 5) Zn
- 6) Florigen
- 7) Hatch and Slack
- 8) Stephan Hales

“B”

- a) Seed less fruit
- b) C₄ pathway
- c) Minor element
- d) Father of plant physiology
- e) Dark reaction
- f) Natural auxin
- g) Hydroponics
- h) Flowering hormone



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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD PUNE SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester	: III (New)	Term	: I	Academic Year	: 2012-13
Course No.	: BOT 234	Title	: Crop Physiology		
Credits	: 3(2+1)				
Day & Date	: Thursday, 25.10.2012	Time	: 9.00 to 12.00	Total Marks	: 80

- Note :
1. Solve ANY EIGHT questions from SECTION "A".
 2. All questions from SECTION "B" are compulsory.
 3. All questions carry equal marks.
 4. Draw neat diagrams wherever necessary.

SECTION "A"

- Q.1 Define crop physiology. Explain in brief the scope and importance of crop physiology in Agriculture.
- Q.2 Define plant hormones, enlist its types and write in brief the physiological role of Auxin and Cytokinin.
- Q.3 What is transpiration? Illustrate its types and explain in brief factors that affect the rate of transpiration.
- Q.4 Write in detail about the mechanisms of absorption of water.
- Q.5 Define respiration. Give the reactions of Kreb's cycle.
- Q.6 Write short notes on (Any Four)
- 1) Photorespiration
 - 2) Translocation of solutes
 - 3) Functions of mineral elements
 - 4) Drought
 - 5) Dormancy
- Q.7 Define growth. How the growth is measured? Explain the factors affecting growth.
- Q.8 Give criteria of essentiality of mineral element and classification of it. Give deficiency symptoms of Copper and Boron.
- Q.9 Define photoperiodism and describe the classification of plants on the basis of photoperiodic response with examples.
- Q.10 Define ascent of sap, enlist different theories of ascent of sap and write in brief about the most acceptable theory.

SECTION "B"

- Q.11 Define the following terms.
- 1) NAR
 - 2) Field capacity
 - 3) Guttation
 - 4) Harvest Index
 - 5) Photosynthesis
 - 6) Quantasome
 - 7) Abscission
 - 8) Glycolysis

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Q.12 Comments on the following.

- 1) Photosynthesis is an oxidation reduction process.
- 2) Photorespiration is an waste full process.
- 3) Transpiration is an essential evil.
- 4) Mitochondria is an power house of cell.
- 5) Splitting of water molecule in non-cyclic photophosphorylation.
- 6) Why plant nutrient is called essential.
- 7) Study of crop physiology is essential for crop breeding programme.
- 8) All animal kingdom are depends on plant kingdom.

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B.Sc. (Agri.)

Semester	: III (New)	Term	: I	Academic Year	: 2011-12
Course No.	: BOT 234	Title	: Crop Physiology		
Credits	: 3(2+1)				
Day & Date	: Thursday, 22.09.2011	Time	: 9.00 to 12.00	Total Marks	: 80

- Note :**
1. Solve ANY EIGHT questions from SECTION "A".
 2. All questions from SECTION "B" are compulsory.
 3. All questions carry equal marks.
 4. Draw neat diagrams wherever necessary.

SECTION "A"

- Q.1 a) Define growth. (1)
b) Enlist different methods of measurement of growth. (2)
c) Explain Arc auxanometer method of measurement of growth. (5)
- Q.2 a) What is transpiration? (2)
b) Explain its types and factors affecting the transpiration. (6)
- Q.3 a) Define photosynthesis. (2)
b) Differentiate between C₃ and C₄ plants. (6)
- Q.4 a) What is translocation of solute? (2)
b) Explain source-sink concept of translocation of solutes. (6)
- Q.5 a) Write Mengel's classification of plant nutrients. (5)
b) Discuss the symptoms of Nitrogen deficiency in plants. (3)
- Q.6 Write short notes on (Any Two)
1) Antitranspirant
2) Determinate and indeterminate growth
3) Vernalization
- Q.7 a) What is plant growth regulator? (2)
b) Write the application of auxins in agriculture and horticulture. (6)
- Q.8 a) What is Photoperiodism? (2)
b) Explain classification of plants on the basis of photoperiodism. (6)
- Q.9 a) What is fruit ripening? (2)
b) What are the metamorphic changes takes place in ripening? (6)
- Q.10 a) What is senescence? (2)
b) Give its classification and significance. (6)

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SECTION "B"

Q.11* Define the terms

- | | |
|--------------------|-------------------------|
| 1) Plasmolysis | 5) Running water |
| 2) Harvest index | 6) Wilting co-efficient |
| 3) Respiration | 7) Crop physiology |
| 4) Turgor Pressure | 8) Guttation |

Q.12 a) Fill in the blanks.

- 1) Release of CO_2 in presence of light in respiration process is called as _____.
- 2) Water available to plant is _____ water.
- 3) In plants, _____ is special modified cell of epidermis meant for the absorption of water.
- 4) In low atmosphere pressure, the rate of transpiration is _____.

b) Spell out the abbreviations:

- 1) RGR
- 2) LAR
- 3) DPD
- 4) CAM

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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester : III (New)	Term : I	Academic Year : 2010-11
Course No. : BOT 234	Title : Crop Physiology	
Credits : 3(2+1)		
Day & Date : Saturday, 16.10.2010	Time : 9.00 to 12.00	Total Marks : 80

- Note :**
1. Solve ANY FIVE questions from SECTION "A".
 2. All questions from SECTION "B" are compulsory.
 3. All questions carry equal marks.
 4. Draw neat diagrams wherever necessary.

SECTION "A"

- Q.1 Define the term Crop Physiology. Give importance and scope of Crop Physiology in relation to crop productivity.
- Q.2 What are the phases of growth? Explain pattern of plant growth.
- Q.3 What is transpiration? Give significance of transpiration.
- Q.4 What is photosynthesis? Explain factors affecting photosynthesis.
- Q.5 What is photoperiodism? Explain classification of plants on the basis of photoperiodism.
- Q.6 What is fruit ripening? Describe hormonal regulation of fruit ripening.
- Q.7 Write short notes on
- 1) Vernalization
 - 2) Climacteric and non climacteric fruits.

SECTION "B"

- Q.8 Define the followings.
- 1) Growth
 - 2) Photoperiodism
 - 3) Senescence
 - 4) Abscission
 - 5) Diffusion
 - 6) Osmosis
 - 7) Turgor pressure
 - 8) Sink size
 - 9) Harvest index
 - 10) Crop growth rate (CGR)
- Q.9 a) Fill in the gaps.
- 1) Maize is _____ plant.
 - 2) Fruits fail to ripe in absence of _____.
 - 3) The osmotic pressure of pure water is _____.
 - 4) K is _____ element.
 - 5) Initiation of plasmolysis is called as _____ plasmolysis.

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b) Choose the correct answer.

- 1) Fruit ripening hormone is _____.
a) Kinetin b) Gibberellin c) Ethylene d) IAA
- 2) A long day plant is _____.
a) Xanthium b) Chrysanthemum c) Radish d) Tomato
- 3) Hormone responsible for vernalization is _____.
a) Florigen b) Caulocaline c) Abscissin d) Vernalin
- 4) Photo synthesis is most active in _____.
a) Sunlight b) Yellow light c) Red light d) Green light
- 5) In C_4 pathway the CO_2 reduction occurs in _____.
a) Palisade tissue b) Spongy tissue c) Bundle sheath d) Guard cell

Q.10 a) Match the followings:

"A"	"B"
1) Florigen	Monocarpic
2) ABA	Non climacteric fruit
3) Determinate	Flowering hormone
4) IAA	Natural auxin
5) Banana	Senescence

b) Expand the followings:

- 1) CAM 2) PAR 3) PWP 4) WUE 5) HI

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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester	: III (New)	Academic Year	: 2009-10
Course No.	: BOT 234	Title	: Crop Physiology
Credits	: 3(2+1)		
Day & Date	: Wednesday, 11.11.2009	Time	: 9.00 to 12.00
		Total Marks	: 80

- Note:**
1. Solve ANY FIVE questions from **SECTION "A"**.
 2. All questions from **SECTION "B"** are compulsory.
 3. All questions carry equal marks.
 4. Draw neat diagrams wherever necessary.

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SECTION "A"

- Q.1 Define hormone. Enlist the various types of plant hormones. Give the physiological role of gibberellins & cytokinins.
- Q.2 Write in detail the biochemical events of H.S.K. pathway of CO_2 fixation & discuss why C_4 plants are efficient over C_3 plants?
- Q.3 Discuss the Arnon's criteria of essentiality of plant nutrients & write the functions of N, P & K nutrients.
- Q.4 Define water potential. Describe the components of water potential & explain why water potential is negative in the plant system?
- Q.5 What is growth analysis? Explain the phases of growth & give the formulae for RGR, NAR & LAR.
- Q.6 Define ascent of sap & enlist three main groups of theories with subgroups in it. Give an account of transpiration pull theory in detail.
- Q.7 Write short notes (Any Four)
 - 1) Photorespiration
 - 2) CAM plants
 - 3) Phloem loading & unloading
 - 4) Florigen
 - 5) Emerson effect

SECTION "B"

- Q.8 Define the following terms.
 - (1) Plasmolysis
 - (2) Photoperiodism
 - (3) Morphogenesis
 - (4) Polycarpic
 - (5) Climacteric effect
 - (6) Abscission
 - (7) Glycolysis
 - (8) Diffusion pressure deficit
 - (9) Guttation
 - (10) Sink

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Q.9 Match the pairs.

"A"	"B"
(1) CO_2 fixation	(a) Chloroplast
(2) Glycolysis	(b) Mitochondria
(3) Glycolic acid	(c) C_2 cycle
(4) Determinate	(d) Monocarpic
(5) Hill	(e) Photolysis
(6) Warburg	(f) Reduction of photosynthates
(7) Stocking	(g) Root pressure theory
(8) Photo-oxidation	(h) Bleaching of chlorophyll molecule
(9) Carotenoids	(i) Expoxide
(10) Juvenile phase	(j) Vegetative growth

Q.10 Fill in the blanks.

- 1) O_2 released during photosynthesis comes from _____.
- 2) Initiation of plasmolysis is called _____.
- 3) _____ is the main enzyme responsible for CO_2 fixation in C_3 pathway.
- 4) _____ scientist proposed that photosynthesis consists of two phases.
- 5) During anaerobic respiration pyruvate is converted into ethanol or _____.
- 6) When two reproductive phases are separated by one vegetative phase such plants are called _____.
- 7) For detachment of any plant organ _____ hormone plays an active role.
- 8) Free energy of water _____ when solutes are dissolved in water.
- 9) _____ is physiological process which maintains the temperature of plant body.
- 10) _____ is the process responsible for quenching of free radicals.

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SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester : III (New)	Term : I	Academic Year : 2015-16
Course No. : BOT 234	Title : Crop Physiology	
Credits : 3(2+1)		
Day & Date : Wednesday, 28.10.2015	Time : 9.00 to 12.00	Total Marks : 80

- Note :**
1. Solve **ANY EIGHT** questions from **SECTION "A"**.
 2. All questions from **SECTION "B"** are compulsory.
 3. All questions carry equal marks.
 4. Draw neat diagrams wherever necessary.

SECTION "A"

- Q.1 Define Crop Physiology. Explain in brief the scope and importance of Crop Physiology in Agriculture.
- Q.2 Define growth. Explain determinate and indeterminate growth with examples and factors affecting growth
- Q.3 Define transpiration. Illustrate its types and give significance of transpiration.
- Q.4 Give criteria of essentiality of mineral elements and its classification.
- Q.5 Write short notes on (Any two).
1) Photoperiodism 2) Translocation 3) Harvest Index
- Q.6 What do you mean by plant growth regulators? Enlist its types and explain in brief physiological role of Auxin and Gibberlin.
- Q.7 Define respiration and write about reaction of Kreb's cycle with neat diagram.
- Q.8 Differentiate between (Any two).
1) C₃ plant and C₄ Plant 2) Photosynthesis and Respiration
3) Climacteric and Non climacteric fruit.
- Q.9 Define senescence. Explain the classification of senescence.
- Q.10 Define water potential. Explain their components in relation of water potential with DPD.

SECTION "B"

- Q.11 A) Define the following terms.
1) Photosynthesis 2) Imbibition
3) Photorespiration 4) Water use efficiency
B) Give examples of the following.
1) Monocarpic species 2) Short day plant
3) Climacteric fruit 4) CAM plant
- Q.12 A) Match the following pairs.

"A"	"B"
1) Vernalization	a) Rossete
2) Hatch and slack	b) Dark reaction
3) Stroma	c) C ₄ pathway
4) Potassium	d) Treatment with low temperature

 B) Give full form of the following.
 1) ATP 2) LAI
 3) NAR 4) CGR

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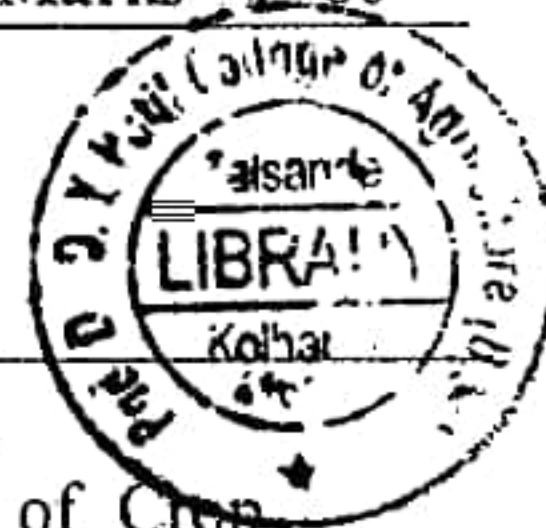


MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester : III (New)	Term : I	Academic Year : 2015-16
Course No. : BOT 234	Title : Crop Physiology	
Credits : 3(2+1)		
Day & Date : Wednesday, 28.10.2015	Time : 9.00 to 12.00	Total Marks : 80

- Note :**
1. Solve **ANY EIGHT** questions from **SECTION "A"**.
 2. All questions from **SECTION "B"** are compulsory.
 3. All questions carry equal marks.
 4. Draw neat diagrams wherever necessary.



SECTION "A"

- Q.1 Define Crop Physiology. Explain in brief the scope and importance of Crop Physiology in Agriculture.
- Q.2 Define growth. Explain determinate and indeterminate growth with examples and factors affecting growth
- Q.3 Define transpiration. Illustrate its types and give significance of transpiration.
- Q.4 Give criteria of essentiality of mineral elements and its classification.
- Q.5 Write short notes on (Any two).
 - 1) Photoperiodism
 - 2) Translocation
 - 3) Harvest Index
- Q.6 What do you mean by plant growth regulators? Enlist its types and explain in brief physiological role of Auxin and Gibberlin.
- Q.7 Define respiration and write about reaction of Kreb's cycle with neat diagram.
- Q.8 Differentiate between (Any two).
 - 1) C₃ plant and C₄ Plant
 - 2) Photosynthesis and Respiration
 - 3) Climacteric and Non climacteric fruit.
- Q.9 Define senescence. Explain the classification of senescence.
- Q.10 Define water potential. Explain their components in relation of water potential with DPD.

SECTION "B"

- Q.11 A) Define the following terms.
 - 1) Photosynthesis
 - 2) Imbibition
 - 3) Photorespiration
 - 4) Water use efficiency
- B) Give examples of the following.
 - 1) Monocarpic species
 - 2) Short day plant
 - 3) Climacteric fruit
 - 4) CAM plant

- Q.12 A) Match the following pairs.

"A"

"B"

- 1) Vernalization
- 2) Hatch and slack
- 3) Stroma
- 4) Potassium

- a) Rossete
- b) Dark reaction
- c) C₄ pathway
- d) Treatment with low temperature

- B) Give full form of the following.

1) ATP

2) LAI

3) NAD

4) GCB