

THE OPEN UNIVERSITY OF SRI LANKA
B. Sc / B. Ed DEGREE PROGRAMME -2011/12
BOTANY – LEVEL 4
BOU2200 / BOE4200: PLANT PHYSIOLOGY
ASSESSMENT TEST 111 (NO BOOK TEST 2)
DURATION: ONE (01) HOUR



REGISTRATION NO.

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DATE: 4th April 2012

TIME: 4.15 PM – 5.15 PM*

PLEASE ANSWER ALL THE QUESTIONS

Duration: 1 Hour

INSTRUCTIONS: This paper contains 35 questions. 1st – 14th and 30th - 35th are multiple choice questions and you are required to write the number of the best suited answer for each multiple choice question in the box given in front. Questions 15th - 29th require short written answers.

1. Growth is the process of
 - a. meiotic and mitotic division of cells
 - b. Expression of genes and protein synthesis
 - c. Enlargement of cell and vacuole
 - d. Increase in the amount of protoplasm

1

2. Relative growth rate is
 - a. Leaf Area Ratio + Net Assimilation rate
 - b. Leaf Area Ratio / Net Assimilation rate
 - c. Leaf Area Ratio X Net Assimilation rate
 - d. Leaf Area Ratio - Net Assimilation rate

2

3. In which of the following plant regions do gibberellins most stimulate the growth?
 - a. Heartwood
 - b. Stem internodes
 - c. Stem apex
 - d. Tap root

3

4. Abscission of leaves adapts trees to
 - a. Manufacture gibberellins
 - b. Reduce production of cytokinin in leaves
 - c. Accelerate transpiration rate
 - d. Attract insects

4

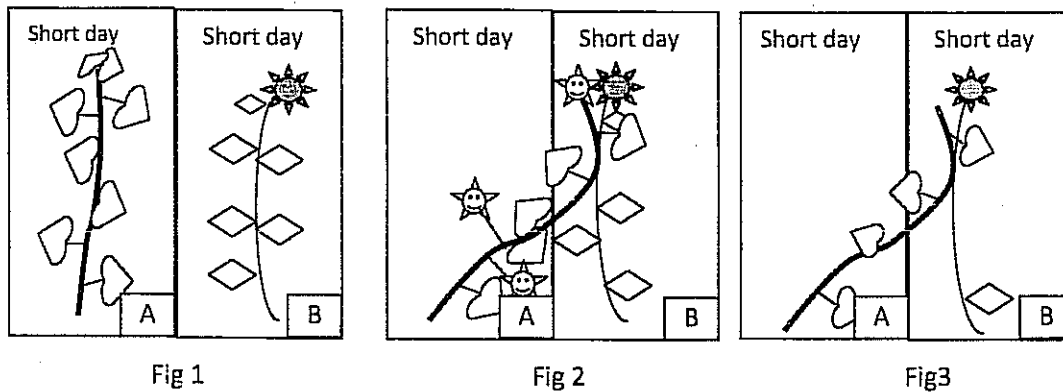
5. For which one of the following processes is an appropriate photo-period necessary?
- The onset of pollination
 - Onset of vernalization
 - The onset of flowering
 - Osmosis

5

6. To which of the following choices can many plant movements be attributed?
- Gibberellins
 - Combination of turgor and growth difference
 - Kinetin
 - Auxin, kinetin and contractile substances

6

Plant flowering is dependent upon light period in many species. Plant A and B are sensitive to photo-period for flower induction. Following 4 questions are based on the given diagram.



7. Plant A and B are
- Short day plant and long day plant respectively
 - long day plant and short day plant respectively
 - short day plants
 - short day plant and short day plant respectively

7

8. As indicated in fig 2, plant A flowered when grafted with plant B by,
- destroying the inhibitor produced in A
 - transmitting hormone synthesized in B to A to induce flowering
 - sending nervous impulse simulating flowers
 - supplying plant A with pigment phytochrome by B

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9. What is the correct statement on the P_r/P_{fr} ratio of the plant A and B?

- a. $P_r/P_{fr} = 1$
- b. $P_r/P_{fr} > 1$
- c. $P_r/P_{fr} \infty 1$
- d. $P_r/P_{fr} < 1$

9

10. After flower induction in B, leaves of the plant B were removed. Then it was grafted into plant A as shown in Fig 3. Most probable reason for observation in Fig 3 would be

- a. Reduce transpiration in B
- b. Plant B cannot perceive photoperiod and induce the flowering signal
- c. Inhibition of photosynthesis in B
- d. Transmission of flowering inhibitors by the stem of B

10

11. Which of the following is not a function of auxin?

- a. Callus formation
- b. Phototropism
- c. Nasal movement
- d. Initiation of lateral roots

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12. Ethylene production is stimulated by

- a. High water content
- b. High concentration of IAA
- c. Fruit development
- d. Vernalization

12

13. Which of the following gives the best match between the precursor of Gibberellic acid (GA) and its sites of biosynthesis?

- a. NAA , developing seed
- b. Co enzyme A, seed
- c. Phosphoglycerate, developing fruit
- d. Alpha ketoglutamate, developing fruit

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14. Which of the following best describes the role of Brassinosteroids

- a. Involved in regulation of stomatal aperture, dormancy and flowering
- b. Involved in dormancy, fruit ripening and flowering
- c. Inhibit root growth, stimulate shoot growth and ethylene production
- d. Enhance root growth, ethylene production and fruit ripening

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Registration number:.....

Fill up the following table with the most appropriate word chosen from the list of key words given. Please note that only one key word must be written for a function and more than one word will nullify (0) your answer.

Key words: Gibberellins, Kinetin, IAA, Abscissic acid, ethephone

Physiological function	Relevant hormone
15. Transition of mature <i>Hedera helix</i> to juvenile plant	
16. Parthenocarpic fruit development	
17. Braking seed dormancy	
18. Used in malt extraction	
19. Phototropic movement of stem apex	
20. Delay senescence of leaves	
21. Promote formation of chloroplast from etioplasts	
22. Enhance nutrient accumulation in specific tissues	
23. Increase duration of flow of latex in <i>Hevea</i>	
24. Promote leaf yellowing in prior to harvesting in Tobacco	
25. Increase number of fruits in cucumber	
26. Root induction in plant tissue culture	
27. Counteract the effect of GA on seed germination	
28. Promote the growth of upper side of the petiole than its lower side bending leaf down	
29. Regulate the stomatal dynamic under water stress	

30. Tropic movement is

- a. growth of plant in response to direction and strength of the stimuli
- b. a growth movement in response to external stimuli and direction of the stimuli
- c. a growth movement of whole plant towards the stimulus
- d. bending of plant outward the sunlight

30

31. The mechanism by which phototropism of stems occurs are

- a. Photo-oxidation of auxin in the lighted side of the stem
- b. Inhibition of auxin production in the lighted side of the stem
- c. Higher production of auxin in the shaded side of the stem
- d. Lateral distribution of the auxin towards the shaded side

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32. Which of the following organelle is involved in gravitropism

- a. Golgi
- b. Microbodies
- c. Chloroplast
- d. Amyloplast

32

33. Which of the following statement describes nastic movement

- a. Movement of *Chlamidomonas* sp away from direct sunlight
- b. Rotational growth of stem apex along a support
- c. Downward orientation of leaves of *Phyllanthus* sp at night
- d. Leaf rolling in grass due to turgor loss

33

34. Vernalization is

- a. Induction of germination by heat
- b. Induction of flowering by cold treatment to plant
- c. Induction of flowering by warm temperature
- d. Induction of new sprout after winter

34

35. Physiological drought is caused by

- a. Salinity stress
- b. Heat stress
- c. Cold stress
- d. Air pollution

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