



FIJI NATIONAL UNIVERSITY
College of Agriculture, Fisheries & Forestry
School of Agriculture Sciences & Forestry
Department of Crop Science
Bachelor of Science in Agriculture– Year 2
Supplementary Examination
Trimester 3 - 2019
CPH 501-Crop Physiology

Writing Time: 3:00 hours
Reading Time: extra 10 minutes allowed at the beginning of the exam
Total Marks: 100

INSTRUCTIONS:

1. This paper consists of THREE pages.
2. Please check to see that all your paper is complete.
3. Answer all questions in the Answer Booklet only.
4. No written or printed material and mobile phones are allowed in the examination hall.
5. Marks allocated for each section appears at the side of each question so allocate your time accordingly.
6. This paper is divided into Three Section

Section A: Objective questions	(30 Marks)
Section B: Short answer	(30 Marks)
Section C: Essay	(40 Marks)

Section A Objective questions**(30 Marks)****Section A 1: Fill in the blanks****(10 x 1 = 10 Marks)**

1. _____ growth some parts of a plants organs cease to grow at a certain size.
2. _____ increases cold resistance in plants.
3. Stored food materials of seeds are called _____.
4. _____ process maintains an optimum temperature for the leaves.
5. Plants respond specifically to changes in day length and is called _____.
6. The _____ Cycle is also known as Tricarboxylicacid Cycle.
7. During Photosynthesis, light energy is converted into _____.
8. The transport of sucrose through phloem is _____.
9. The chloroplast is divided by membranes called _____.
10. _____ nutrition is fertilizing certain crop plants through aerial spraying.

Section A 2: Choose the best answer**(10 x 1 = 10 Marks)**

11. Pure water has the maximum water potential _____.

<i>a</i> Zero	<i>b</i> One
<i>c</i> Less than One	<i>d</i> More than One
12. Seeds with high _____ would have higher respiration rates.

<i>a</i> Viabil ity	<i>b</i> Water content
<i>c</i> Vigour	<i>d</i> Dormancy
13. The roots and stems are _____.

<i>a</i> Apical organ	<i>b</i> Growth organ
<i>c</i> Determinate Organ	<i>d</i> Indeterminate organ
14. Water potential is calculated by _____.

<i>a</i> $\Psi_m + \Psi_s$	<i>b</i> $\Psi_m + \Psi_p$
<i>c</i> $\Psi_m + \Psi_s + \Psi_p$	<i>d</i> None of the above
15. _____ is the hormone which promotes the fruit ripening.

<i>a</i> Auxin	<i>b</i> Gibberellin
<i>c</i> Cytokinin	<i>d</i> Ethylene
16. Translocation of water and minerals takes place through _____.

<i>a</i> Apoplast	<i>b</i> Symplast
<i>c</i> Xylem	<i>d</i> Phloem
17. _____ maintains the cells turgor pressure.

<i>a</i> Air	<i>b</i> CO ₂
<i>c</i> Water	<i>d</i> None of the above
18. The respiration can be measured by _____.

<i>a</i> Respiratory coefficient	<i>b</i> respiration quotient
<i>c</i> Co-efficient of Respiration	<i>d</i> None of the above

19. The seeds stored in a state of high moisture content are called as _____ seeds.
a Viable stratified *b* Innate Dormant
c Vigorous calcitrant *d* Recalcitrant
20. Auxins stimulate cell elongation and root initiation.
a Photorespiration *b* Photosynthesis
c Phosphophotosystem *d* Photophosphorylation

Section A 3: Match the following**(10 x 1 = 10 Marks)****PART – A****PART-B**

- | | | |
|--------------------------|-----------|---------------------------------|
| 21. Harvestable maturity | A. | CAM Pathway |
| 22. Tetrazolium | B. | Carbon dioxide levels |
| 23. Apical meristem | C. | Chemical compounds for plants |
| 24. Stomata | D. | Degrade Glucose |
| 25. Transpiration | E. | Farmers decision |
| 26. Cotyledons | F. | Increase in length of plants |
| 27. Pineapple | G. | Living cells a red colour |
| 28. Glycolysis | H. | Loss of water |
| 29. Nutrients | I. | Occur in Mitochondria |
| 30. Phytochrome | J. | Pigment in Photoperiod |
| | K. | Regulate transpiration |
| | L. | Temporary food supply |
| | M. | Transport of water and minerals |

Section B: Short answer**(30 Marks)****Section B 1: Attempt any FIVE questions****(5 x 2 = 10 Marks)****Distinguish and generate suitable answers for the following:**

31. Endosperm & Cotyledon
32. Determinate & Indeterminate Growth
33. Apoplast & Symplast Transport
34. Vigor & Viability
35. Harvestable Maturity
36. Biological clock

Section B 2: Attempt any FOUR questions**(4 x 5 = 20 Marks)****Apply the knowledge and generate answers for the following with diagrams:**

37. Two types of Photosystems.
38. The Growth Curve in plant cells.
39. Write notes about 10 differences between Photosynthesis and Respiration
40. The concept of photoperiodism and biological clock.

41. Four seed viability testing methods with procedure.

Section C: Essay

(40 Marks)

Attempt any FOUR questions

(4 x 10 = 40 Marks)

Demonstrate and generate information on the following

- 42. The role of transpiration in crop productivity, with reference to stomata in transpiration.
- 43. The steps in seed germination process. The favorable factors which affect germination
- 44. The process and types of respiration based on organic substance to CO₂ and water.
- 45. Phloem Transport OR Phloem Loading and Unloading
- 46. C₂, C₃ cycle(Calvin cycle) & CAM pathway.

THE END

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