

UNIVERSITY OF KWAZULU-NATAL

SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES  
DISCIPLINE OF HORTICULTURAL SCIENCE  
EXAMINATION: NOVEMBER 2013  
SUBJECT, COURSE & CODE: POSTHARVEST TECHNOLOGY (AGPS 732)

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DURATION: 3 HOURS

TOTAL MARKS: 100

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**External Examiner: Dr. Mduduzi Ngcobo**  
**Internal Examiner: Dr. Samson Tesfay**

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**NOTE: THIS PAPER CONSISTS OF THREE (4) PAGES, PLEASE SEE THAT YOU HAVE THEM ALL.**

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1. In fruit production, good management practices mainly during preharvest, appropriate strategic agricultural cultural practices are vital in order to produce quality fruit with optimum yield. This has a carry-over effect in postharvest fruit quality. In contrast, explain the consequences in fruit quality due to inappropriate postharvest handling.

[10]

2. Discuss the concept of 'fruit maturity, maturity indices and harvesting' in the context of appropriate postharvest technology procedures, and fruit quality?

[10]

3. Discuss the significance of 'fruit pre-cooling' during postharvest fruit handling, associated with respiration, transpiration, ethylene production and marketable fruit percentage?

[10]

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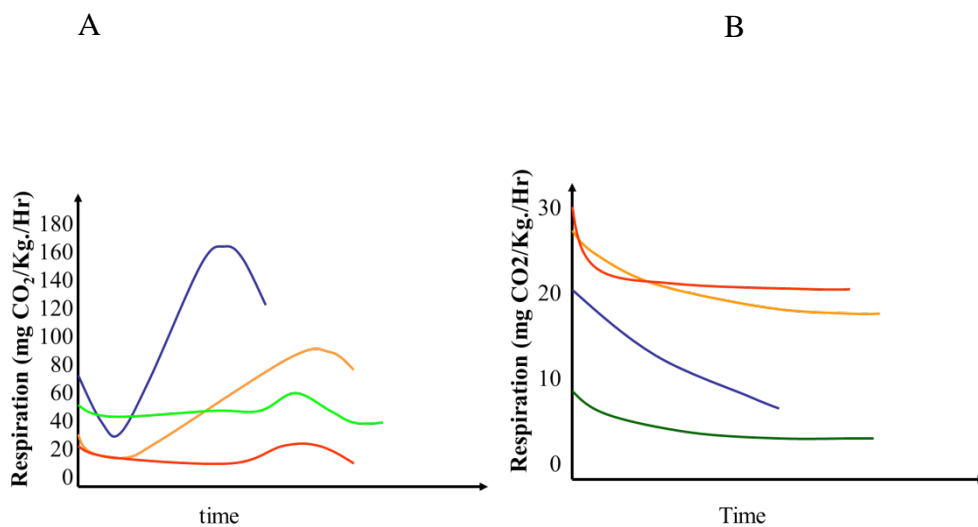
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4. Briefly elaborate the key physiological processes of fruit after harvest.

(Hint: Biological processes)

[10]

5. There are two types of fruit that ripen differently in their postharvest life (demonstrated below). Label and define the types of fruit.



[10]

6. It is clear that postharvest treatments aim to fruit preservation and eventually enhance fruit quality. The fruit has to go through the channel

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of physical as well as chemical treatments. Briefly discuss these treatments.

[10]

7. Explain the relationship between temperature and respiration that is described mathematically by van't Hoff's temperature quotient (Q<sub>10</sub>).

[10]

8. Calculate the relative postharvest fruit storage characteristics (Table 1).

Fill in the missed values (Q<sub>10</sub>, deterioration velocity, postharvest life, % life).

[10]

Temperature (°C)	Respiration mg CO <sub>2</sub> /kg/h	Assumed Q <sub>10</sub> *	velocity of deterioration	post-harvest life	% Loss
0	10		1	100	
10	20				
20	30				
30	40				
40	50				

9. South African avocado and citrus industries face huge postharvest fruit losses due to diseases. For example, 'anthracnose' causes significant damage to avocado industry while 'mould' does to citrus industry. Explain the infection types of the above mentioned diseases and suggest their control method. (Hint: human consumption)

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[10]

10. Illustrate the net chemical equation for respiration, and how do you incorporate these components into post-harvest storage technology?  
  
(Hint: controlled atmosphere (CA) and modified atmosphere packaging (MAP)).

[10]