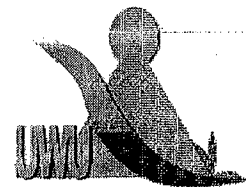


Uva Wellassa University, Sri Lanka
End Semester Examination – February/March 2012
SCT 495-2 Seminar

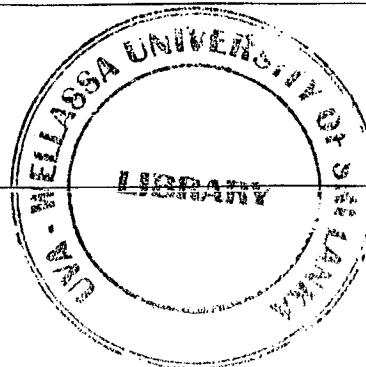


Time: Two (02) hours

Total fifteen (15) questions.

Part A- Answer all questions.

Part B- Answer five (05) questions only.



Part B

2.

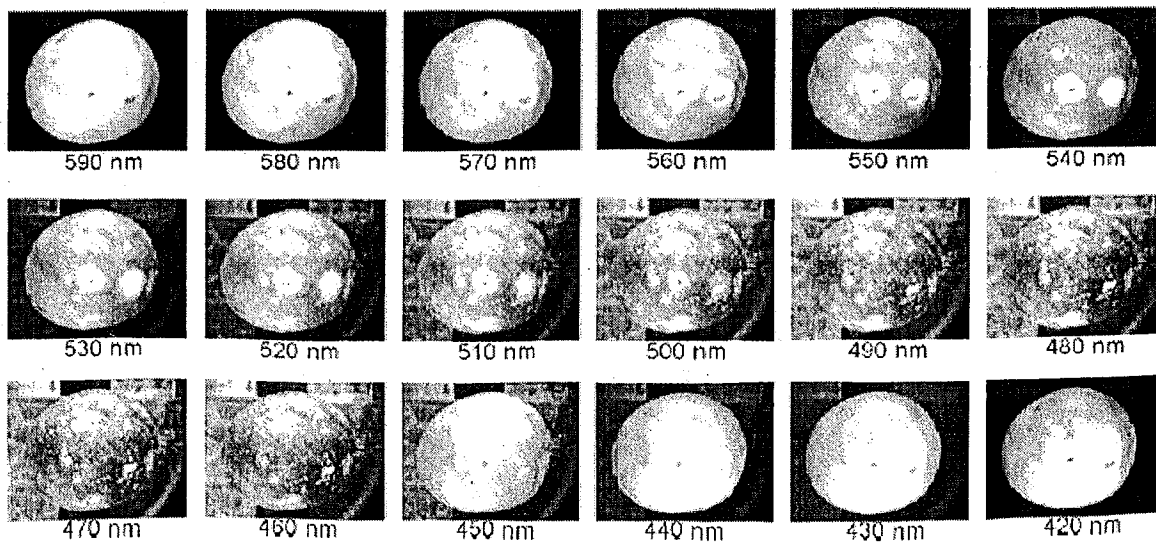
- i. Scientifically pears is named as(03 marks)
- ii. State three reasons for rejection of pears from the market. (06 marks)
- iii. Give three consequences of the cell rupturing of fresh pears during minimal processing. (06 marks)
- iv. Briefly explain a method to investigate the effect of UV-C light on survival of some microorganisms on fresh-cut pear slices. (15 marks)

3.

- i. Briefly explain what TLC- Bioautography assay is. (05 marks)
- ii. DT₁ is an anti bacterial compound isolated from a tropical plant "X".
 - a) State the major experimental steps involved in extracting the crude compound. (10 marks)
 - b) Design a bioassay to show the antibacterial activity of compound DT₁ (15 marks)

4.

- i. List three conventional external quality parameters for fresh fruits. (03 marks)
- ii. List three conventional internal quality parameters for fresh fruits. (03 marks)
- iii. Briefly explain the drawbacks of conventional quality parameters? (05 marks)
- iv. What do you mean by the term "hyperspectral imaging"? (06 marks)
- v. Briefly explain the benefits of hyperspectral imaging. (05 marks)
- vi. Explain the differences among the hyperspectral images of the oranges given in the following diagram. (08 marks)



- 5.
- i. Why modern agriculturists recommend applying in-vitro developed microbial biofertilizers rather than applying compost directly? (05 marks)
 - ii. State the importance of Plant Growth Promoting Microorganisms. (05 marks)
 - iii. Explain the experimental procedure of lettuce seed germination test to evaluate the phytotoxicity. (20 marks)
- 6.
- i. What is "nanotechnology"? (06 marks)
 - ii. List five applications of nanotechnology in the food and bioprocess industries. (05 marks)
 - iii. Briefly explain the benefits of any three methods you listed in above *ii*. (09 marks)
 - iv. Illustrate the activity of typical antimicrobial coating nanopackaging film. (10 marks)
- 7.
- i. What is "vase life"? (05 marks)
 - ii. List five vase life detecting parameters. (05 marks)
 - iii. Explain a vase life detecting procedure for vase life detection of cut lily flowers using computer vision images. (20 marks)
- 8.
- i. Why does kidney Bean (*Phaseolus vulgaris*) considered to be nutritious? (05 marks)
 - ii. List four anti nutritional compounds available in Kidney Bean. (06 marks)
 - iii. What are the assays available to detect any three anti nutritional compounds listed in *ii*, above? (06 marks)
 - iv. Explain any assay you mentioned in *iii*, above. (08 marks)
 - v. Explain the most suitable processing practice which reduces the anti nutritional compounds in kidney bean. (05 marks)
- 9.
- i. Briefly explain the major steps of direct gene transformation method. (10 marks)
 - ii. A research group in US is working on new corn variety (BN102) with low amounts of lysine and tryptophan. Assume that you are working as a member of research team studying the genome of corn variety BN102. Your research team wants to increase

the kernel lysine content of that plant through indirect transformation technique. Design an experiment to show how you achieve your goal.

(Note: you are provided with a wild type corn variety (C) which contains high amount of kernel lysine content)

(20 marks)

10. How Infrared Spectroscopy could be used in improving process control and quality in cheese manufacture. (30 marks)
11. Discuss the use of composite scaffolds for bone tissue engineering. (30 marks)
12. Discuss the use of magnetoelastic biosensor in detecting *Salmonella typhimurium* grown on tomato surfaces. (30 marks)
13. Discuss how fruit ripening stage affects various properties of *Lycopersicum esculentum*. (30 marks)
14. Briefly discuss the application of near-infrared spectroscopy (NIRS) in Citrus Fruit Quality Analysis. (30 marks)
15.
 - i. Why biotechnologists use japonica rice varieties for another culture rather than using indica rice varieties? (05 marks)
 - ii. Briefly explain how *in vitro* haploid rice plants can be generated. (10 marks)
 - iii. Briefly explain the benefits of haploids in rice cultivation. (15 marks)