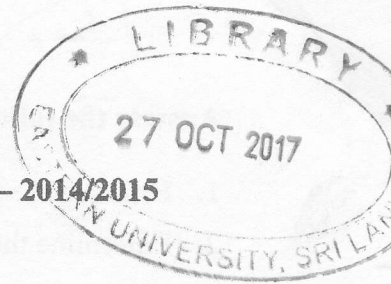


EASTERN UNIVERSITY, SRILANKA
Third Year First Semester Examination in Agriculture – 2014/2015
(Jan/Feb – 2017)



AE 3101 – Postharvest Technology
Practical Examination (Proper / Repeat)

Time: Two hours

Answer all questions

01. (i) A sample of 250 g of wet paddy with a moisture content of 34% is has been given to you. How will you determine the Equilibrium Moisture Content (EMC) under ambient conditions? Describe the procedure of determining the EMC value of paddy under ambient conditions.
- (ii) Another student was given an option to find out the EMC using a solar dryer. Comment on the drying rate of paddy in the solar dryer comparing with ambient conditions.
- (iii) How will you determine the relative humidity of the drying air in the solar dryer using a wet and dry bulb thermometer? (give the procedure in detail)
- (iv) Draw rough sketches of graphs for the drying rate under these two drying conditions.

(4x25 = 100 Marks)

02. Data obtained by two groups of students during the drying and milling process of parboiled and raw rice are given below in the table.

Item	Parboiled rice	Raw rice
Weight of sample (g)	545	545
Initial moisture content (%)	39	25
Final moisture content after drying (%)	13.7	13.0
Drying duration (hours)	18	11
Weight of brown rice (g)	441	438
Weight of bran (g)	46.3	57.6
Weight of broken rice (g)	100.2	187.4

Answer the following questions based on the data given in the Table.

1. Estimate the total rice yield of parboiled and raw rice.
2. Determine the head rice yield of parboiled and raw rice.
3. Determine the percentage of broken rice of parboiled and raw rice.
4. Determine the polishing degree of parboiled and raw rice.
5. Determine the milling recovery of parboiled and raw rice.
6. Determine the drying rate of parboiled and raw rice
7. Comment on the differences in head rice yield obtained for parboiled and raw rice.
8. Comment on the differences in broken rice percentage obtained for parboiled and raw rice.
9. Comment on the differences in drying rate of parboiled and raw rice.
10. What are your recommendations for acceptable head rice yield?

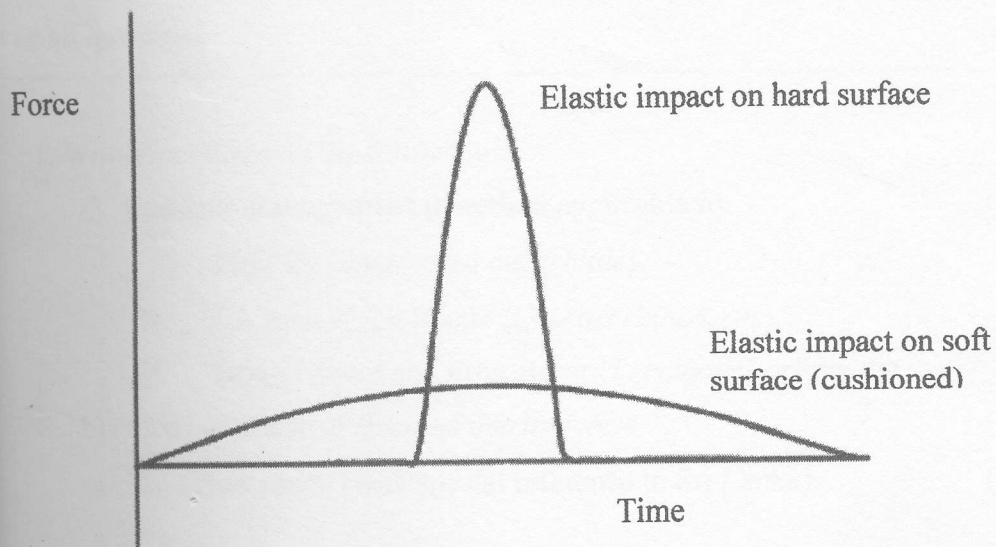
(10x10 = 100 Marks)

03. Following observations were made by a group of students during the parboiling experiment. Justify the reasons for the observations.

- (i) The moisture content of the grains was found to be higher during steaming than the observed during soaking.
- (ii) Water absorption was greater for hot water soaking than cold water soaking.
- (iii) The grains were swelling rapidly during the steaming process.
- (iv) Less bran was removed from parboiled samples than from raw rice during milling.
- (v) Increased milling recovery with soaking time

(5x20 = 100 Marks)

- (a) During a damage measurement experiment, the following typical impact curves for an apple striking on hard and soft surfaces with a high coefficient of restitution are given below. Explain the mechanics of fruit damage during the idealized impulses on these two flat surfaces.



(50 Marks)

- (b) How will you determine the harvest maturity of the following fruit in the laboratory?

1. Lime
2. Banana
3. Papaya
4. Tomato
5. Mango

(5x10 = 50 Marks)