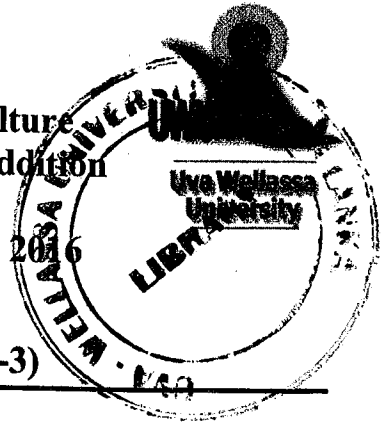


**Uva Wellassa University**  
**Faculty of Animal Science and Export Agriculture**  
**B.Sc. in Palm & Latex Technology and Value Addition**

**End Semester Examination January/February 2016**  
**Year III Semester II**

**Rubber Processing Technology II (PLT 345-3)**



**Instructions**

Answer **all** questions

No. of questions : Essay (04)

No. of pages : Three (03)

Time : Two hours (02 hrs)

Total marks allocated : 60%

**Index No:**

**PART II: ESSAY**

**Question 01.**

- 1.1 Describe a common method by which water insoluble powders is prepared for addition to the stabilized natural rubber latex .  

(04 Marks)
- 1.2 Suggest process parameters and their effect on the efficiency of the said method.  

(03 Marks)
- 1.3 Explain briefly a test method you would use to determine the stability of the above preparation.  

(04 Marks)
- 1.4 Describe with the aid of a flow chart, the manufacture of a small article produced by a dipping process using compounded natural rubber latex.  

(04 Marks)

**Question 02.**

2.1 Explain briefly the ZnO thickening related to natural rubber latex .

(03 Marks)

2.2 A typical compound formula for catheter is given below.

Component	Wet (parts)
60% NR latex	167
10% KOH solution	2.00
20% Potassium laurate solution	0.5
50% Sulphur dispersion	1.0
50% Zinc diethyl dithiocarbamate dispersion	0.8
50% Zinc dibutyl dithiocarbamate dispersion	0.1
50% Phenolic antioxidant	0.8
50% Zinc oxide dispersion	0.8

Recipe for preparation for sulphur dispersion for the above compound is;

Material	Parts by Weight
Water	48
Dispersion agent	02
Sulphur	50

An average weight of a rubber content in a catheter is 25.0 g.

(a). Explain the function of potassium laurate solution.

(03 Marks)

(b). If the strength of sulphur dispersion is reduced to 25 % and same formula is used, what changes you would expect from the product?

(03 Marks)

(c). calculate the daily requirement of centrifuged latex in liters and ZnO in kg for a factory which produces ten thousands of items per day?

(03 Marks)

(d) Calculate the daily sulphur dispersion requirement in kgs.

(03 Marks)

**Question 03.**

3.1 Write a short note on pre-vulcanized natural rubber latex including its manufacturing process and process variables.

(04 Marks)

3.2 Propose a simple mechanism for sulphur pre-vulcanization of natural rubber latex.

(03 Marks)

3.3 Explain "chloroform test" as applied to the vulcanized natural rubber latex.

(04 Marks)

3.4 Explain how you would manufacture a cast product of your choice.

(04 Marks)

**Question 04.**

4.1 (a) What is a rubber blend?

(03 Marks)

(b) What are advantages of blending polymers?

(05 Marks)

4.2 The rubber products are made to perform well in their end uses. In order to achieve the end use requirements various compounding ingredients (Materials) are added into rubber in mixing. Give a list of these materials and discuss their contribution in the process and in improving the technical properties of the product that you make.

(07 Marks)

