

**Uva Wellassa University**  
**Faculty of Animal Science & Export Agriculture**  
**BSc in Tea Technology & Value Addition**



**End Semester Examination July / August 2016**  
**Year III Semester I**

**Tea Resource Economics (TEA 341 – 2)**

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**Instructions**

Answer **all** questions

No. of questions : Two (02)

No. of pages :

Total marks allocated : 40%

Time : One Hour (01hr)

**Index No.:** .....

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**PART I – STRUCTURED**

1.

a. Define the followings;

i. Isoquant (10 Marks)

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ii. Marginal Rate of Technical Substitution (10 Marks)

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iii. Isocost curve (10 Marks)

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iv. Least Cost Combination (10 Marks)

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b. All the combinations of  $x_1$  and  $x_2$  given below produce 100 bushels of corn.

Calculate the  $MRTS_{x_1x_2}$  and the  $MRTS_{x_2x_1}$  at each midpoint (10 Marks)

Combination	Units of $x_1$	Units of $x_2$	$MRTS_{x_1x_2}$	$MRTS_{x_2x_1}$
A	10	1		
B	5	2		
C	3	3		
D	2	4		
E	1.5	5		

c. For the production function  $y = 3x_1 + 2x_2$ , find;

i. The MPP of  $x_1$  (5 Marks)

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ii. The MPP of  $x_2$  (5 Marks)

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iii. The MRTS of  $x_1$  for  $x_2$  (5 Marks)

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d.

i. Using the following data derive an equation for iso-cost curve  
TC = 10 000     $P_L = \text{Rs.}10$      $P_K = \text{Rs.}20$

Where TC = Total Cost,  $P_L$  = Price of Labor,  $P_K$  = Price of Capital

(5 Marks)

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ii. Draw the iso-cost curve using the above data (5 Marks)

iii. If the  $MRTS_{L,K} = 0.5$ , what is your decision on the input combinations? (5 Marks)

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e. The average product of the labor ( $AP_L$ ) is given by the equation.

$$AP_L = 600 + 2000L - L^2$$

i. What is the equation for total product ( $TP_L$ )? (4 Marks)

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ii. What is the equation for marginal product ( $MP_L$ )? (4 Marks)

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iii. At which level of labor usage  $AP_L = MP_L$  (4 Marks)

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iv. Determine the level of labor usage when  $MP_L$  maximize (4 Marks)

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v. Derive an equation for elasticity of production (4 Marks)

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2.

a.

- i. Write down two (02) factors that affect for each estate labour supply and estate labour demand. (10 Marks)

Estate labour supply

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Estate labour demand

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- ii. State the three (03) strategies available to overcome the labour imbalance in tea plantation. (7.5 Marks)

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- iii. Using the information given in the following table, calculate the Labour Productivity Index of a tea estate and comment on the result.

(15 Marks)

Estate	Estate Revenue Expenditure (Rs)	Estate Production (MT kg)	No. of Workers	No. of Working Days	NSA (Rs/Kg)
A	149,660,665	540,352	400	320	400
B	132,586,260	450,385	350	280	400

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iv. Write down the three (03) factors that influence the efficiency of work force in estates. (7.5 Marks)

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v. Write down four (04) measures that improve the labour productivity in estates. (10 Marks)

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- vi. Write down four (04) measures that improve the labour productivity in estates (10 Marks)

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- b. Sri Lankan tea industry is struggling with the high cost of production to compete with other tea producing countries. Therefore it is essential to minimize the cost of processing and cultivation in tea plantations.

- i. Define the followings. (5 Marks)

Recurrent Expenditure

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Capital Expenditure

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- ii. List Four (04) factors that affect for the cost of production in a tea estate. (10 Marks)

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- iii. Give two (02) factors for each that affects cost of harvesting and cost of weed management in a tea estate. (5 Marks)

Cost of harvesting

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Cost of weed management

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- iv. A breakdown of the cost of production of a tea estate (Rs/ha/yr) is given in the following table. Estimate the following financial efficiency measures.

Operation	Labour Requirement	Labour Cost	Material Cost
Plucking	210	144,375	NA
Fertilizer application and Foliar mix application	15	10,313	10,587
Weeding	25	17,190	810
Pest and Disease Control	5	3,438	562
Pruning and sanitary cleaning	18	12,500	NA
Soil conservation and Shade Management	10	6,875	NA

(NA – Not Available)

- Consider :      Rent for building      – Rs. 16,000  
                          Average productivity      – 4200 kg of MT/ha/yr  
                          Made tea price              – Rs. 70 per kg of MT

Fixed Ratio

(5 Marks)

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Gross Ratio

(5 Marks)

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Break Even Productivity

(10 Marks)

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