



UNIVERSITY  
OF  
JOHANNESBURG

DEPARTMENT OF ECONOMICS AND ECONOMETRICS

## ECONOMICS 2B

FINAL ASSESSMENT: NOVEMBER 2017

APK & SOWETO CAMPUSES

**DATE: 23/11/2017**

ATTENDANCE SLIP
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**Initials:** .....

**Student number:** .....

**Cell number:**.....

- This paper consists of 15 pages.



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**SCHOOL OF ECONOMICS AND ECONOMETRICS**

## **ECONOMICS 2B**

**FINAL ASSESSMENT: NOVEMBER 2017**

**APK & SOWETO CAMPUSES**

**DATE:** 23/11/2017

**MARKS:** 100

**TIME:** 2 HOURS

**ASSESSORS:** Prof G van Zyl, Mr M Sekome, Me NP Nkosi

**MODERATOR:** Dr K Viljoen

SURNAME	
INITIALS	
STUDENT NUMBER	
CELL NUMBER	

### **Mark schedule**

	Mark		Mark		Mark		Mark
Q1		Q2		Q3		Q4	
1.1 [8]		2.1 [7]		3.1 [4]		4.1 [8]	
1.2 [5]		2.2 [2]		3.2 [2]		4.2 [6]	
1.3 [8]		2.3 [2]		3.3 [6]		4.3 [6]	
1.4 [5]		2.4 [2]		3.4 [2]			
1.5 [4]		2.5 [6]		3.5 [2]			
		2.6 [6]		3.6 [2]			
				3.7 [4]			
				3.8 [3]			

**Total mark :**

**Question 1: Optimisation, minimization and the input base****[30]**

1.1 A firm has two plants, Alco and Bidco. It costs the company R10000 per day to operate Alco and R15000 per day to operate Bidco. Each plant produces semi-raw products of high, medium, and low qualities. Alco produces 0.5 ton of high-grade semi-raw material, 1 ton of medium-grade semi-raw material and 3 tons of low-grade semi-raw material per day. Bidco produces 1 ton of each grade of semi-raw material per day. The company has contracted to provide local production firms with a minimum of 9 tons of high-grade semi-raw material, 12 tons of medium-grade semi-raw material, and 18 tons of low-grade semi-raw material per month. (8)

Task	Answers						
State the primal problem.							
List the equations of the constraints.							
Determine the feasible region and indicate by means of an appropriate figure.							
Indicate the solutions for the corner points.	<table><tr><th><u>Corner point</u></th><th><u>Combinations</u></th><th><u>Solution</u></th></tr><tr><td></td><td></td><td></td></tr></table>	<u>Corner point</u>	<u>Combinations</u>	<u>Solution</u>			
<u>Corner point</u>	<u>Combinations</u>	<u>Solution</u>					
What is the best solution?							

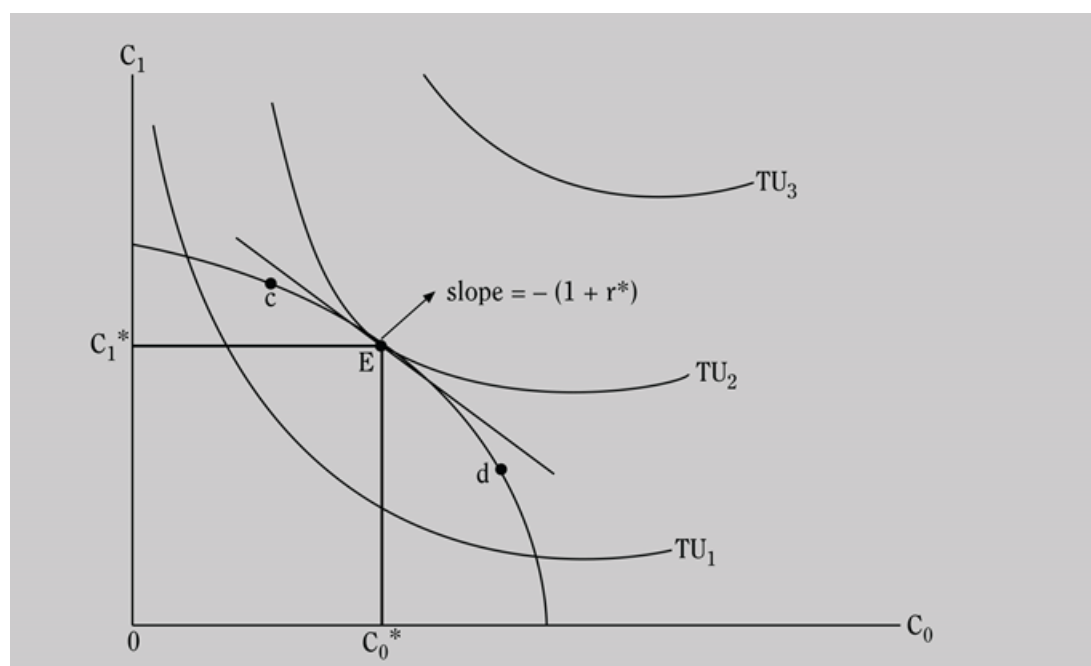
**1.2** Lowveld Timbers is a company that operates in a highly competitive market where logs for the furniture industry are produced. These logs are sold to the various manufacturing firms. There are about 12 similar firms to Lowveld Timbers in a radius of 100 km. The management of Lowveld Timbers is locked into a strategic process where decisions have to be made on possible capacity extensions in the near future. They have acquired the services of a strategist and in her report she has indicated the following: **(5)**

- (1) If Lowveld Timbers should expand and the other producers should also expand all firms (including Lowveld Timbers) will probably experience a decrease of about R5m in profits for the year.
- (2) If Lowveld Timbers should expand and the other firms in the market should not expand, Lowveld Timbers will probably increase its profits by R10m. The profit levels of the other firms will remain unchanged.
- (3) If the other firms increase capacity (and Lowveld Timbers refrains from expanding capacity), they would probably increase their profits by about R4m for the year while the profit position of Lowveld Timbers remains unchanged.
- (4) If no firm increases capacity in the industry, the profit position of all firms will remain unchanged.

Task	Answer
Draw the payoff matrix. (Plot the <b>R values</b> in the payoff matrix)	
Does Lowveld Timbers have a dominant strategy? If your answer is yes indicate the dominant strategy.	
Do the other firms have a dominant strategy? If your answer is yes indicate the dominant strategy.	
Is there Nash equilibrium. If your answer is yes, indicate the Nash solution(s)	
What is the solution of the game? Indicate the payoffs.	
Is there a prisoner's dilemma?	

1.3 Assume the following figure and ring the correct option.

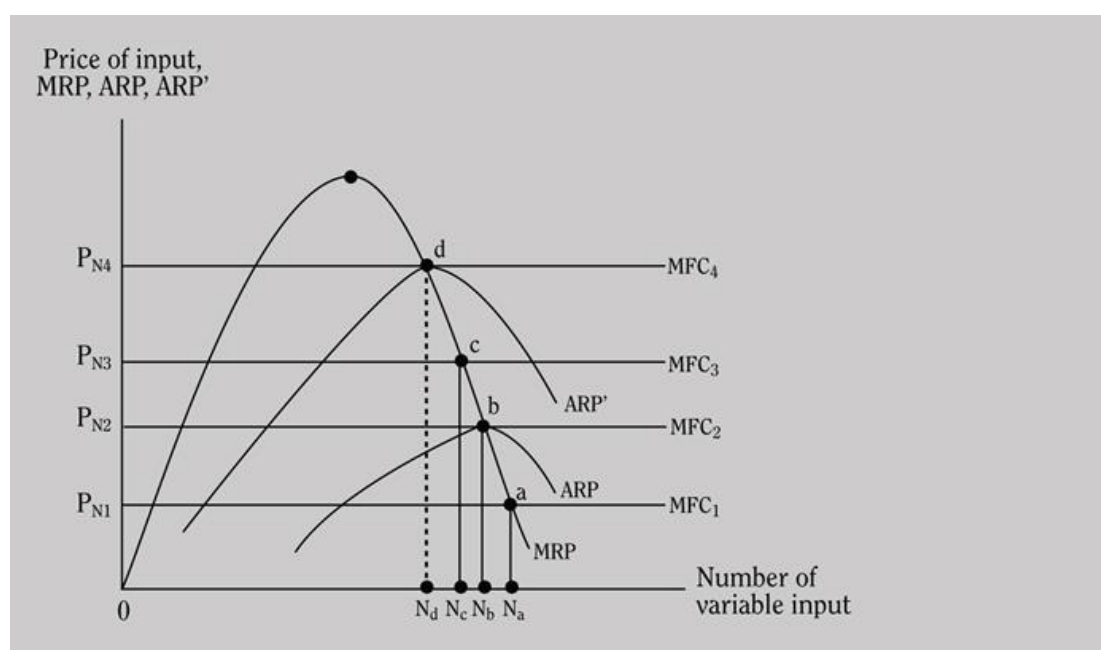
(8)



Curve  $TU_3$  represents the [highest or lowest level] of satisfaction for a society and it [is possible or not possible] to attain  $TU_3$  given the trade-off between current consumption and future consumption. The slope  $1+r$  indicates [the price of consumption today to the price of consumption tomorrow or price of future consumption to the price of consumption today]. It simply means that [reducing consumption by one unit today will permit consumption of  $1+r$  units tomorrow or increasing consumption by one unit today will permit less consumption of  $1+r$  units tomorrow]. At point E the rate of return ( $r$ ) is [positive or negative]. The rate of return at point d will be [higher or lower] compared to the rate of return at point E but the society's level of satisfaction will be [higher or lower] compared to point E.  $TU_1$  represents a [higher or lower] level of satisfaction for society.

1.4 Assume the following figure and answer the questions below.

(5)



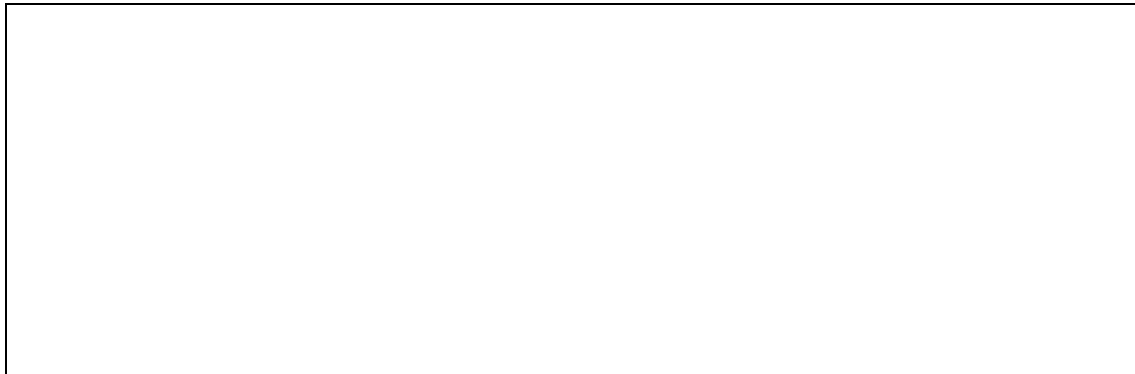
Task	Answer
Explain briefly why MFC is horizontal to the variable input-axis.	
Explain briefly how the MRP-values are determined.	
What is the equilibrium condition that the firm needs to apply when deciding on the number of the variable input to employ?	
Assume $P_{N1}$ . If the firm applies the equilibrium condition what is the profit/loss position for the firm. (economic profit or normal profit or economic loss)	
At what employment level and marginal factor cost level will the firm realize normal profits?	

1.5 Assume an isoquant map where capital is denoted on the vertical axis and labour on the horizontal axis. Answer the following questions. (4)

Question	Answer
What kind of capital/labour ratio would represent the technological defined least capital intensive alternative? (lowest or highest)	
What will happen to MRTS if more units of labour are employed? (increase or decrease)	
What will happen to the ratio of the marginal products if more units of capital are employed? (increase or decrease)	
The slope of the iso-cost line is equal to the ratio of the two input prices. How would you state this particular ratio in equation format?	

**Question 2: Consumer behaviour****[25]**

**2.1** Assume i) **Clothing** is measured on the horizontal-axis and **Food** on the vertical-axis and ii) the maximum affordable units of clothing and food are respectively 100 and 40 units iii) the price of product clothing is R25 per unit. Draw the budget line and show all this information on the figure. Use all the information to answer the questions that follow. **(7)**



Task	Answer
1. Write the equation for the slope of the consumer's budget line.	
2. Write the equation for the slope of an indifference curve.	
3. What is the income of the consumer?	
4. What is the price of food?	
5. What will the MRS ratio be at consumption equilibrium?	
6. What will the new equilibrium MRS ratio be if the price of clothing decreases to R10 per unit, ceteris paribus?	
7. What will happen to the slope of the budget line if the consumer's income increases? ( <b>increase</b> <u>or</u> <b>decrease</b> <u>or</u> <b>stay unchanged</b> )	
8. What will a rational consumer do if the weighted marginal utility of clothing is greater than the weighted marginal utility of food. ( <b>buy more of clothing</b> <u>or</u> <b>buy more of food</b> <u>or</u> <b>do not change the combination</b> )	

**2.2.** Graphically illustrate the effects of a change in consumers' tastes on consumption. (Use the consumer's budget line and indifference curves). **Clothing** is measured on the horizontal-axis and **Food** on the vertical-axis. (2)

Graphical illustration

**2.3** Assume the  $TR = R10000$ , the  $ea = 0.5$  and the  $ep = 2$ . What should happen to advertising spending in the following cases according to the Dorfman Steiner model? (2)

Question	Answer
a) What will advertising spending be?	
b) What will advertising spending be if $ea \uparrow$ to 1?	
c) With $ea$ now equal to 1, what will advertising spending be if $TR$ now $\uparrow$ to R12 000?	
d) With $ea \uparrow = 1$ , $TR = R12\ 000$ and $ep$ that $\uparrow$ to 4, what will advertising spending be?	



**2.4** Answer the following questions with regard to consumer behaviour. Indicate with an X whether the following statements are correct or incorrect. (2)

Statement	Correct	Incorrect
1. In the normal good case the income-consumption curve (IC curve) has a negative slope.		
2. The Engel curve is used to determine the cross-elasticity of goods and subsequent impact of income-consumption responses on development.		
3. Engels law states that an increase in demand is proportionally to an increase in income.		
4. A change in tastes is indicated by a movement of the indifference curve on the existing budget line.		

**2.5.** Policymakers in Zaria are considering the price and income elasticities of its consumers. Two kinds of products are traded namely necessities and luxuries. Indicate which of the following characteristics represent either the elastic, inelastic or the unitary elastic case for a price-consumption curve (PC curve). Also indicate what the slope of the PC-curve will be in each case. (6)

Characteristic	Mention (elastic or inelastic or unitary)	Slope of PC-curve (+ or - or 0 or $\alpha$ )
1. A decrease in the price of luxuries, ceteris paribus, will result in a higher total level of utility and the consumers will consume more luxuries and fewer necessities.		
2. A decrease in the price of luxuries, ceteris paribus, will result in a higher total level of utility and the consumers will consume more luxuries but the same amount of necessities.		
3. A decrease in the price of luxuries, ceteris paribus, will result in a higher total level of utility and the consumers will consume more of both kinds of products.		

**2.6** The following question deal with consumer behaviour as explained by the indifference curve approach. Assume that bread is measured on the vertical axis and rice is measured on the horizontal axis. Assume further that rice is a normal product. Answer the following questions by ringing the correct options in the paragraph below. (6)

A decrease in the price of rice, ceteris paribus, will result in a **[lower or unchanged or higher]** total level of utility. If this result in an increase in the consumption of rice and a decrease in the consumption of bread the slope of the PC curve will be **[positive or zero or negative]**. The expenditure on rice will **[increased or decreased]**. The price elasticity coefficient will be **[>1 or =1 or <1]**. The shape of the PC curve indicates that the demand for rice falls on the **[upper or lower or mid-point]** part of its demand curve. The cross-elasticity will be **[positive or negative]** indicating that the two products are **[complements or substitutes]**. In the price inelastic case, the PC curve is **[sloping upwards or sloping downwards or horizontal]** and the price elasticity coefficient will be **[>1 or =1 or <1]**. When the  $P_r$  decreases, the total expenditure on bread will **[increase or decrease]**. In this case, cross-elasticity will be **[positive or negative]** indicating that the two products concerned are **[complements or substitutes]**.

**Question 3: Economic efficiency****[30]**

**3.1** Prove that an equal allocation of resources amongst individuals is not necessarily efficient. Use an Edgeworth box diagram to illustrate and explain this, showing the efficient/optimal allocations of two goods (Luxuries and Necessities) amongst two individuals (Chris and Lindy). Also clearly name the line that joins these points. Name the horizontal-axis, Luxuries and the vertical axis, Necessities. Also name the origin on the left bottom as Op (origin for Chris) and the origin on your top right as Om (origin for Lindy). **(4)**



**3.2** Assume an Edgeworth box diagram where bikes are measured on the vertical axis and cars on the horizontal axis. Also assume that in terms of the distribution of these two sets of products the private sector consumers are measured in the lower left-hand corner and the public sector in the top right-hand corner. Indicate which of the following statements are correct / incorrect (mark with an X). **(2)**

Statement	Correct	Incorrect
1. A distribution of the two sets of products between the two sets of consumers is efficient when the indifference curves are tangent.		
2. Pareto optimality refers to a situation where the products are allocated in such a way that some consumers can be made better off without making someone else worse off.		
3. By moving from an inefficient distribution point in the Edgeworth Box diagram, at least one of the consumers will experience a higher level of utility while the other consumer will still experience the same level of utility.		
4. Distribution points on the contract curve are synonymous with Pareto optimality.		

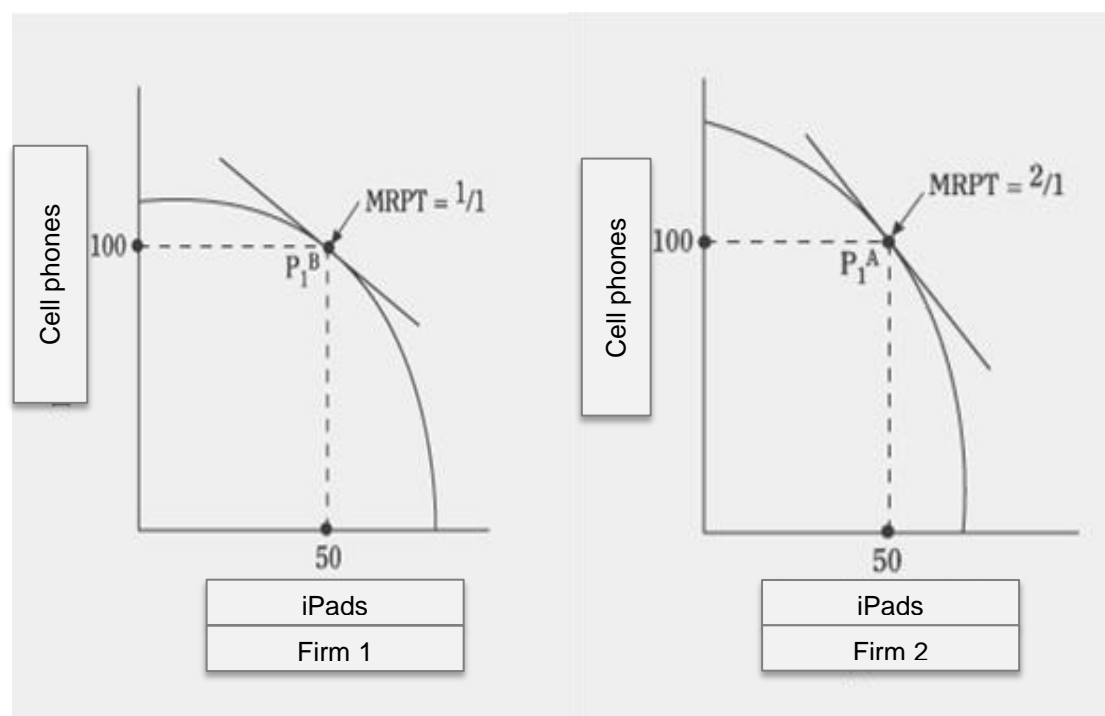
3.3 Provide the three efficiency points that fits the three rules that should simultaneously be adhered to if production is to be truly efficient in the table below. (6)

Rule	Efficiency point
1. How should each firm allocate its own available resources (K&L) to produce two products?	
2. How should production factors be allocated among firms?	
3. How do we choose the correct combination of outputs for each firm?	

3.4 The following paragraph deals with resource efficiency.in terms of Allocation rule 2. Ring the correct options. (2)

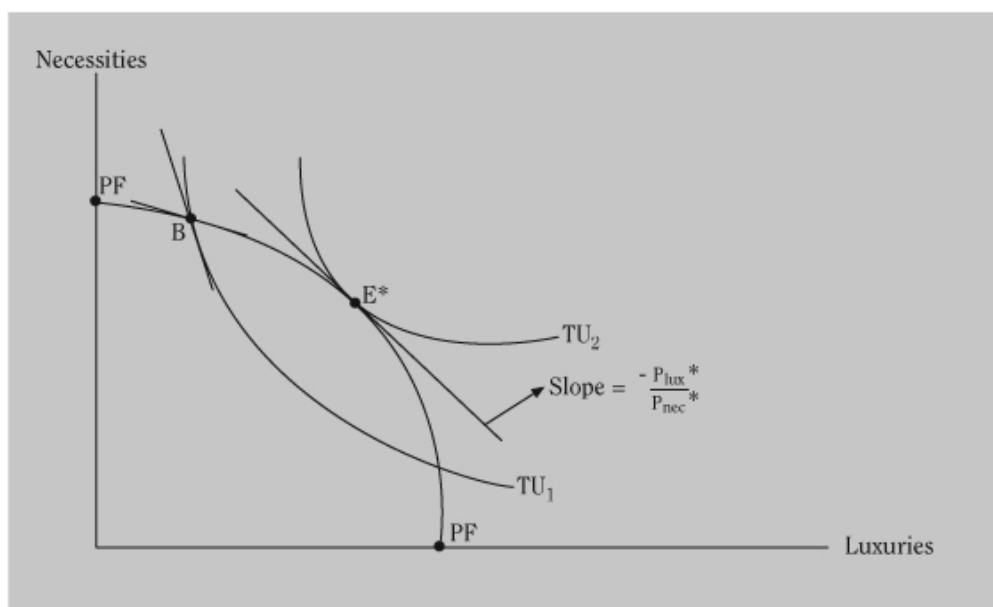
Allocation rule 2 states that for an efficient allocation of labour, the  $MP_L$  for firm 1 should be [higher than or lower than or equal to] the  $MP_L$  for firm 2. If the  $MP_L$  for firm 1 >  $MP_L$  for firm 2, labour must be shifted from [firm 1 or firm 2] to [firm 1 or firm2]. This reallocation of labour will [decrease or increase] firm 2's output and [decrease or increase] firm 1's output, which will [increase or decrease] the  $MP_L$  for firm 1.

3.5 Assume the following figure relating to Allocation rule 3. Ring the correct options in the paragraph.



According to the figure, productive efficiency can be improved by having firm 1 produce more [cell phones or iPads] and less [cell phones or iPads]. Firm 2 should produce more [cell phones or iPads] and less [cell phones or iPads]. (2)

3.6 The following figure deals with the inefficiencies of imperfect competition. Assume that luxuries are produced under monopoly conditions and that necessities are produced under conditions of perfect competition. (2)

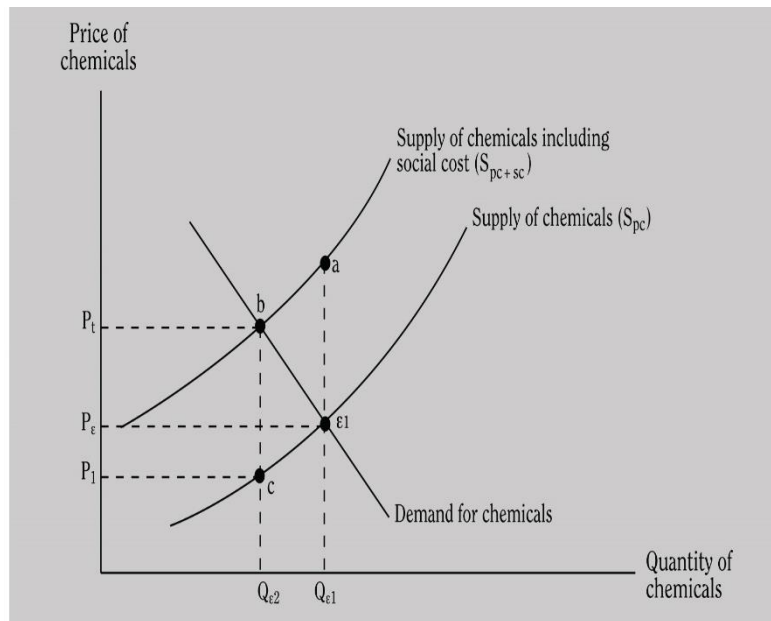


Question	Answer
1. The price ratio at point B will be [greater or smaller] than the price ratio at point E*	
2. In terms of luxuries, would the $MR_{LUX}$ be [greater than or smaller than or equal to] the $P_{LUX}$ ?	
3. At point B, the ratio of the marginal revenues will be [smaller than or greater than or equal to] the price ratio	
4. [Less or More] luxuries are produced at point B than is optimal.	

3.7 Assume an economy producing 2 goods namely Paper and Oil. Paper is measured on the vertical axis and Oil on the horizontal axis. The production of Paper produces no externalities, but the production of Oil causes air pollution. (4)

For Paper, the  $[MC_{Paper} = SMC_{Paper} \text{ or } MC_{Paper} > SMC_{Paper} \text{ or } MC_{Paper} < SMC_{Paper}]$ . For Oil, the  $[MC_{Oil} = SMC_{Oil} \text{ or } MC_{Oil} > SMC_{Oil} \text{ or } MC_{Oil} < SMC_{Oil}]$ . The social rate of product transformation SRPT is  $[SMC_{Oil} \div SMC_{Paper} \text{ or } SMC_{Paper} \div SMC_{Oil} \text{ or } SMC_{Paper} \cdot SMC_{Oil}]$ . The SRPT will be [ $< \text{ or } > \text{ or } =$ ] than/to MRPT which is denoted by  $[MC_{Oil} \div MC_{Paper} \text{ or } MC_{Paper} \div MC_{Oil}]$ . This means that the rate at which society can trade Paper for Oil is [smaller or larger or equal] than/to the rate at which they can be traded privately. The private market will tend to produce [too much or too little or enough] Oil. To compensate for the externalities produced by oil the government can [pay a subsidy to consumers or tax the oil producing company].

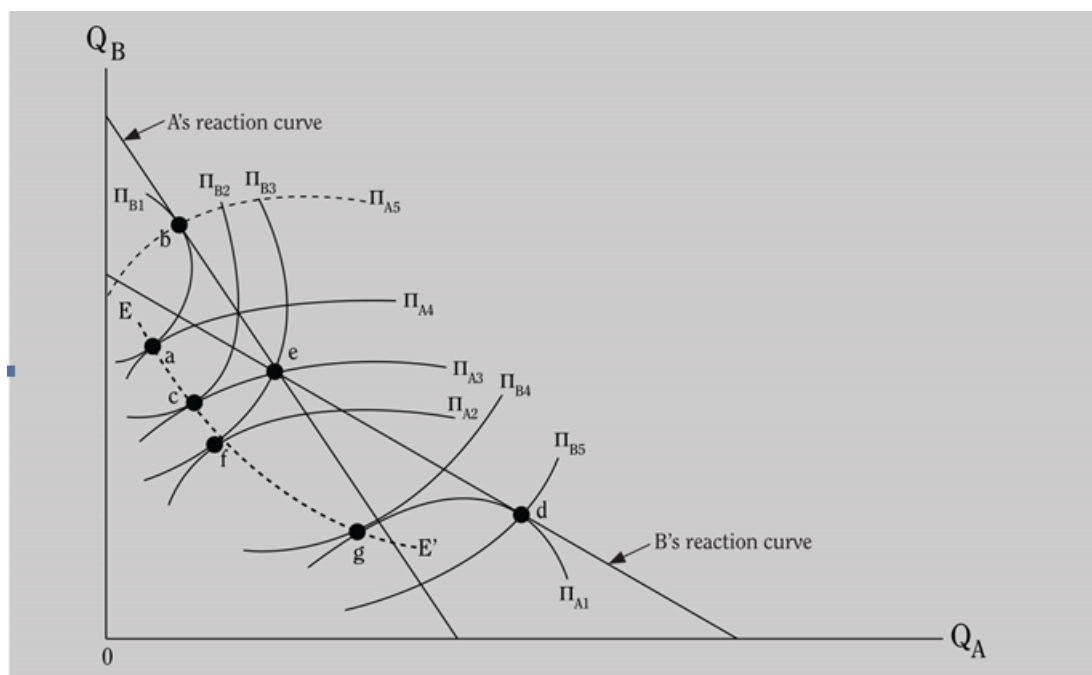
3.8 The following figure deals with the taxation of negative externalities. Answer the questions relating to the taxation of negative externalities that follows. (3)



Question	Answer
1. What is the size of the social cost (tax)?	
2. Will there be an <b>undersupply</b> or <b>oversupply</b> of chemicals at the lower price $p_e$ ?	
3. Who pays for the tax and what portion do they pay?	

Question 4: Strategic firm behaviour [20]

4.1 Assume the following figure and answer the questions that follow. (8)



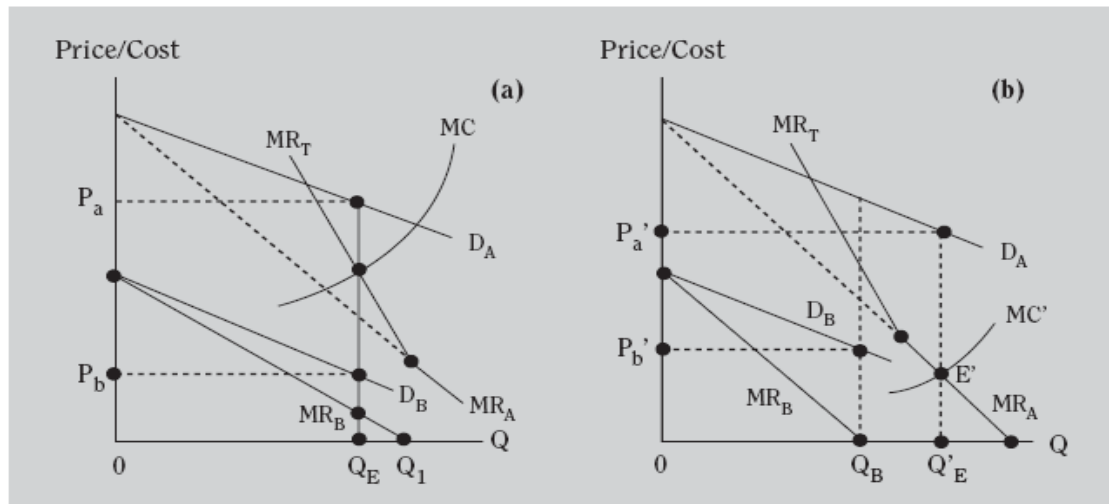
Task	Answer
Does iso-profit $\Pi_{B1}$ indicate a higher or lower profit position for firm B when compared to iso-profit $\Pi_{B2}$ ?	
Indicate the Cournot solution.	
Which firm is the sophisticated leader at point <b>d</b> ?	
Explain briefly the profit positions of the two firms when firm A is the sophisticated leader.	
Explain briefly how the contraction curve EE' is derived.	
Explain briefly why point <b>c</b> will result in greater industry profits and not point <b>e</b> .	

4.2 Answer the following questions relating to the shareholder-management model

(6)

Questions	Answer
1. Changes in the financial security constraint (fsc) will affect [ <u>growth in capital <math>g_c</math></u> or <u>growth in demand <math>g_d</math></u> ]	
2. The profit margin (pm) is used as a proxy for both ..... and .....	
3. Assume that the overall fsc increase. What impact would it have on JS (job security)? (Simply mention <u>reduced</u> or <u>enhanced</u> ).	
4. $g_c$ = [ <u>positively</u> or <u>negative</u> or <u>non-monotonic</u> ] correlated with $dr$	
5. $g_d$ = [ <u>positively</u> or <u>negative</u> or <u>non-monotonic</u> ] correlated with $dr$	
6. If fsc is high, the managers are [ <u>risk averters</u> or <u>risk-takers</u> ].	

4.3 The following figures refer to multiple product pricing. Product A is the main product and product B is the by-product. Ring the correct options in the paragraph that follows. (6)



From figure (a) it is clear that no excess of the two products will occur because of the fact that both the marginal revenue values are positive or negative.

In figure (b) the quantity of the main product or by-product will be less than the quantity of the main product or by-product.

For the product which marginal revenue is negative the output will be based on the condition

MR=1 or MR=0 and for the other product output will be based on the condition

MR derived from its own demand = marginal cost or MR derived from the combined marginal revenues = marginal cost.

In the case where the marginal revenue of the by-product is negative at the profit maximizing output, the firm will produce zero units or Q\_B or Q\_E of the by-product.