



# National University of Science and Technology

## FACULTY OF COMMERCE

### DEPARTMENT OF ACCOUNTING

**FINAL EXAMINATION PAPER: 2012/2013**

**DATE: MAY 2013**

**SUBJECT: MANAGEMENT AND COST  
ACCOUNTING IB: CAC 2205**

**TIME ALLOWED: THREE (3) HOURS**

**MARKS: 100**

### **INSTRUCTIONS TO CANDIDATES**

1. Answer **ALL** questions
2. Use the examination book provided
3. Use black or blue pen
4. Begin each question on a new page and
5. Submit all answer books

### QUESTION 1 (25 MARKS)

Harvey Ltd produces a single product, Product DG, and is preparing budgets for the next three-month period, July to September. The current cost data for Product DG is as follows:

			\$
Direct Material X	1.5kg at 3.50 per kg		5.25
Direct Material P	2.0kg at 4.50 per kg		9.00
Direct labour	12minutes at \$8.00 per hour		1.60
Variable production overhead	\$1.00 per unit		1.00
Fixed production overhead	\$3.00 per direct labour hour		0.60
			<b>17.45</b>

Harvey Ltd experiences seasonal changes in sales volumes, and forecast sales for the next four months are expected to be as follows:

Month	July	August	September	October
Sales (units)	30,000	35,000	60,000	20,000

It has been decided that opening stocks of finished goods in August and September must be 20% of the expected sales for the coming month. Closing stocks of finished goods in September must be 10% of the expected sales in October. Stocks of finished goods at the start of July are expected to be 4,000 units. Opening stocks of finished goods in July are valued at \$69,800.

There will be 30,000 kg of Material X and 40,400 kg of Material P in stock at the start of July. These stocks will be bought in June at the current prices per kilogram for each material. Further supplies of Material X and Material P will need to be purchased for higher prices of \$3.80 per kg for Material X and \$4.80 per kg for Material P due to supplier price increases. Opening stocks of each material will remain at the same level as at the start of July.

In any given month, any hours worked in excess of 8,000 hours are paid at an overtime rate of \$12.00 per hour.

Harvey Ltd operates a FIFO (first in, first out) stock valuation system.

#### Required:

- (a) Prepare the following budgets for July, August and September and in total for the three-month period:
- i. Production budget, in units; (3)
  - ii. Material usage budget, in kilograms; (3)
  - iii. Production budget, in money terms. (3)
- (b) Calculate the value of the closing stocks of finished goods at the end of the three-month period, and the value of cost of sales for the period. (6)
- (c) Discuss the concept activity based budget and the limitations of this type of budget. (10)

## **Question 2 (25 marks)**

Higgins Co (HC) manufactures and sells pool cues and snooker cues. The cues both use the same type of good quality wood (ash) which can be difficult to source in sufficient quantity. The supply of ash is restricted to 5,400 kg per period. Ash costs \$40 per kg. The cues are made by skilled craftsmen (highly skilled labour) who are well known for their workmanship. The skilled craftsmen take years to train and are difficult to recruit. HC's craftsmen are generally only able to work for 12,000 hours in a period. The craftsmen are paid \$18 per hour.

HC sells the cues to a large market. Demand for the cues is strong, and in any period, up to 15,000 pool cues and 12,000 snooker cues could be sold. The selling price for pool cues is \$41 and the selling price for snooker cues is \$69.

Manufacturing details for the two products are as follows:

	<b>Pool cues</b>	<b>Snooker cues</b>
Craftsmen time per cue	0.5 hours	0.75 hours
Ash per cue	270 g	270 g
Other variable costs per cue	\$ 1.20	\$ 4.70

HC does not keep inventory.

### **Required:**

(a) Calculate the contribution earned from each cue. (5)

(b) Determine the optimal production plan for a typical period assuming that HC is seeking to maximize the contribution earned. You should use a linear programming graph (using the graph paper provided), identify the feasible region and the optimal point and accurately calculate the maximum contribution that could be earned using whichever equations you need. (15)

Some of the craftsmen have offered to work overtime, provided that they are paid double time for the extra hours over the contracted 12,000 hours. HC has estimated that up to 1,200 hours per period could be gained in this way.

(c) Explain the meaning of a shadow price (dual price) and calculate the shadow price of both the labour (craftsmen) and the materials (ash) (5)

## **Question 3(25 marks)**

You are part of a project team working on the development of an improved design for the warning system for a passenger ferry. This project has been given the code PF201. An impending change in legislation means that a modification to the fire warning system is required. This modification will add \$2.4m to the development costs and will also require an engineering team to be transferred from another project (BR156) which is close to completion.

The engineering team will be required to work on the ferry project for four weeks at cost of \$112,500 per week. The transfer of the team will delay the completion of project BR156,

reducing the number of units which will be sold. Data relating to the two projects is given below:

<b>Project</b>	<b>Note</b>	<b>PF201</b>	<b>BR156</b>
Cost to date	1	\$3.35m	\$32.86m
Costs to complete	2	\$31.14m	\$0.75m
Expected sales volumes (units):			
Year 1	3	40	25
Year 2		55	30
Year 3		50	20
Selling price per unit		\$1.43m	\$2.86m
Variable cost per unit		\$1.12m	\$1.96m
Standard hours per unit	4	700	1100

### **Note 1**

It is the company's policy to recover development costs over the first three years of a project's life. If the project is abandoned, costs incurred to date cannot be recovered and must be written off against profit in the accounting period in which the project is abandoned.

### **Note 2**

The costs relating to Project PF201 are before the transfer of the engineering team.

### **Note 3**

Expected sales volumes do not take into account the effect of the transfer of the engineering team. The delay resulting from the transfer of the engineering team is expected to lead to a loss of the sale of three units of Project BR156 in the first year. The sale of these units will not be recovered in subsequent periods.

### **Note 4**

The company absorbs fixed costs on the basis of standard hours at a rate of \$100 per standard hour. The project manager has shown you a memo from the Managing Director which includes the following comments: 'You will be aware that the company requires all projects to generate a profit over the first three years in which sales are made. The calculation of profit should include the full write off of development costs. When external factors lead to a major change in the resources required for a project, a revised assessment should be carried out. This is to establish if the profit objective is still likely to be achieved. Such an assessment should take full account of sunk costs and opportunity costs. If the revised assessment indicates that the project will not generate a profit over the first three years, it should not be continued.

The project manager does not know what is meant by the terms 'sunk costs' and 'opportunity costs'. He has asked you to explain these terms and to prepare the revised assessment.

### **Required:**

(a) Identify, and in relation to Project PF201, give an example of:

- |                             |            |
|-----------------------------|------------|
| <b>i.</b> sunk cost         | <b>(3)</b> |
| <b>ii.</b> opportunity cost | <b>(3)</b> |
| <b>iii.</b> relevant cost   | <b>(3)</b> |
| <b>iv.</b> committed cost   | <b>(3)</b> |

(b) Prepare the revised assessment of Project PF201, and indicate whether or not it should be continued. (13)

**Question 4 (25 marks)**

Greenland Co is evaluating a decision regarding its new product, Purple - whether to develop and market it. It has provided the following information:

Projected development costs of Purple	\$360,000
Probability of successful development of Purple	0.80

The following are the anticipated profits if Purple's development were to be successful and marketed well:

<b>Chances</b>	<b>High success</b>	<b>Average success</b>	<b>Failure</b>
Probability	0.50	0.35	0.15
Anticipated profits	\$600,000	\$220,000	(\$150,000)

**Required:**

- (a) Calculate expected value of each outcome. (6)
- (b) Draw a decision tree to illustrate the given scenario and suggest the best course of action. (13)
- (c) List any THREE limitations of the decision tree method. (6)

**END OF EXAMINATION PAPER**