

**THE INSTITUTE OF CHARTERED
ACCOUNTANTS (GHANA)**



**NOVEMBER 2007 EXAMINATIONS
(PROFESSIONAL)**

PART 2

**MANAGEMENT ACCOUNTING & CONTROL
(Paper 2.2)**

Attempt five (5) Questions in ALL

TIME ALLOWED: 3 HOURS

NB: Please use separate booklet(s) for each part
Do not answer PARTS A & B in the same answer booklets

PART A

Attempt ALL Questions in this section
NB: Use a separate Answer Booklet(s) for Part A

QUESTION 1

STC Ltd, which recently entered the express parcel delivery business, is evaluating a new venture; the establishment of a motorcycle courier service offering same-day delivery.

The venture would require the purchase of a building for €250 million, payable immediately. The building would need extensive alterations costing €150 million to enable it to become the control and distribution centre for the venture. The alterations would take a year, and operations could not commence until the building was ready. Immediately after completion of the building, STC Ltd would take delivery of 100 motorcycles at €4 million each and engage riders.

Running costs of the operation in current prices are expected to be fixed costs of €750 million per annum and a variable cost of €1000 per packet. Fixed costs are expected to increase by 8% per year and variable costs by 5% per year. €50 million of working capital would need to be injected immediately prior to the completion of the building.

A market research, undertaken at a cost of €40 million, suggests that the price per packet should be €5,000 or €8,000. At these prices the following numbers of packets are forecast:

<u>Expected Packets Per Year</u>		
<u>Probability of Demand</u>	<u>Price of €5000</u>	<u>Price of €8000</u>
0.10	175,000	160,000
0.20	275,000	190,000
0.40	350,000	210,000
0.20	375,000	230,000
0.10	400,000	260,000

The above prices are at current price levels and are expected to increase by 5% at the end of each year. Over the next 5 years, STC Ltd's cost of capital is expected to be 15% per annum, constant. The board wishes to evaluate the venture over the first five years of operations, at the end of which the realizable value of the venture as a going concern is expected to be €1 billion.

Unless otherwise stated, assume all cash flows take place at the end of the year. Ignore taxation.

Required:

- (a) Decide, with reasons, which price for the packets would maximize profit. **(6 marks)**
- (b) Calculate the expected net present value of the venture for the first five years of operations. **(14 marks)**
- (Total: 20 marks)**

QUESTION 2

- (a) i) Explain and discuss the similarities and differences between Residual Income and Economic Value Added as methods for assessing the performance of divisions. (3 marks)
- ii) Define the 'controllability principle' and give arguments for and against its implementation in determining performance measures. (3 marks)
- iii) Discuss the problems that arise specifically when determining transfer prices where divisions are located in different countries. (3 marks)

- (b) Gyasi Ventures employs a standard cost system. It manufactures Ogun soap by mixing three raw material components. Materials standard and cost for the production of 100 kg output are as follows:

<u>Material</u>	<u>Kg.</u>	<u>Cost Per Kg</u>	<u>Amounts (¢)</u>
L	66	¢50,000	3,300,000
M	33	35,000	1,155,000
N	<u>11</u>	20,000	<u>220,000</u>
Input	110		<u>4,675,000</u>
Output	<u>100</u>		
Normal Loss	<u>10</u>		

To convert 110 kgs of raw materials into 100 kg of finished products requires 450 direct labour hours at ¢20,000 per direct labour hour.

Actual data for the month of May are shown below:

Material	Quantity	Quantity	Price Per Kg (¢)
	Purchased	Requisitioned	
L	2,400	1,920	52,000
M	1,200	1,000	36,000
N	500	380	19,000

Production of 3,500 kgs of Ogun Soap resulted in 15,000 Direct Labour Hours at ¢20,300.00.

No stock of raw materials or work in progress at the beginning of the month of May existed. The material price variance is assumed to be recorded at the time of purchases.

Required:

- Calculate
- (i) Materials price mix and yield variances
- (ii) Direct labour rate, efficiency and yield variances

(11 marks)
(Total: 20 marks)

QUESTION 3

ASEM ABA Ltd manufactures two products, Asem and Beba, using one basic raw material and one grade of labour. The actual operating results achieved for eleven months ended June 2006 are shown below.

	GHC'000
Sales: Asem (GHC 12,000 each)	48,000
Beba (GHC 20,000 each)	<u>40,000</u>
	<u>88,000</u>
Actual cost of sales:	
Direct material	44,000
Direct labour	14,000
Variable overheads	6,000
Fixed overheads	<u>10,000</u>
	<u>74,000</u>
Profit	<u>14,000</u>

Standard costing system is operated by the company.

During the above period, the actual material consumption was as specified in the standard, which for Asem is 3 kilos per unit, and for Beba, 4 kilos per unit.

The standard wage rate is GHC 3,000 per hour. The standard labour cost of Asem is GHC 1,500 and Beba, GHC 3,000 per unit. Labour achieved standard efficiency but, throughout the above period, the actual wage rate paid was higher than standard and consequently an adverse rate variance of GHC 2,000,000 was incurred.

Overheads were as stated in the standard. Variable overheads vary directly with labour hours worked. There was no change in any stock levels during the period.

Budgeted production for 2007 is 6,000 units of Asem and 4000 units of Beba. Material stocks are budgeted to decrease by 2,000 kilos; there will be no change in any other stocks. The standard material consumption per unit will be as specified in 2006 and, after careful consideration, it has been agreed that 2007 standard material price will be the actual average price paid during 2006.

The actual wage rate for 2006 will be increased by GHC 700 per hour for 2007, GHC 500 per hour of which is the result of a productivity agreement which will enable the company to reduce its standard time for each product by 20%.

Budgeted overheads will be at the same rate as shown for 2006 and it may be assumed there are no wages included in overheads.

Required:

- (a) Calculate the material purchases budget and the wages budget, showing both quantities and values for the year ended July 2007 ***(14 marks)***
- (b) Calculate the net cost-savings which Asem Aba Ltd should achieve during 2007 as a result of the productivity agreement, assuming that there is no restriction on the number of labour hours which could be made available, if required. ***(6 marks)***
- (Total: 20 marks)***

PART B

Attempt ANY Two (2) Questions

NB: Use a SEPARATE answer booklet(s) for this Section

QUESTION 4

- (a) Distinguish between intrapolation and extrapolation.

(4 marks)

- (b) A professional institute has been analysing the performance of candidates in a recently conducted examination. The table below gives the marks scored in each section of a paper by 10 candidates in the November 2006 professional examinations.

Section A(y)	31	27	23	39	22	17	51	39	30	44
Section B (x)	22	22	21	27	22	17	30	24	21	31

Required:

- (i) Represent the information in a scatter diagram (3 marks)
- (ii) Draw the line of best fit on the scatter diagram (2 marks)
- (iii) Find the least square regression equation of y and x (6 marks)
- (iv) Interpret the regression equation best fit-line (3 marks)
- (v) Using the line of best fit, if the pass mark is a total of 50% of the 2 Sections, will a candidate pass if he/she scored 30 marks in section A? (2 marks)

(Total: 20 marks)

QUESTION 5

- (a) Describe the main characteristics of a Normal Frequency curve

(2 marks)

- (b) The time allocated for a paper in a professional examination is 3 hours. Observations by the examinations manager over the years have revealed that the time a student takes to complete the paper has a normal distribution with mean 140 minutes and a standard deviation of 25 minutes. In May 2006, 400 students took the paper.

Required:

- (i) How many students completed the paper in less than two hours? (4 marks)
- (ii) Find the number of students who completed the paper within the last half hour (4 marks)
- (ii) Find the number of students who could not complete the paper before time (5 marks)
- (iv) Below what time would 87.5% of the students have completed the paper? (5 marks)

(Total: 20 marks)

QUESTION 6

- (a) Under what circumstances will Linear programming be a suitable method for modeling an allocation problem? (2 marks)
- (b) Gold Cost Golden Company Ltd (GCGCL) produces two products (the King and the Queen). The two products use basically the same ingredients. The main constraint on production is the availability of labour in each of three processing departments. The table below gives the labour availability and requirements for the two products.

	Labour requirement hours/tonne		Labour availability hours/month
	King	Queen	
Department A	10	4	1000
Department B	3	2	360
Department C	2	5	800

The contribution per tonne is €150 for King and €75 for Queen. The company sells all that it produces.

Required:

- (i) Formulate a linear programme model for this problem which maximizes the total contribution per month. (4 marks)
- (ii) Express the linear programme in terms of slacks (2 marks)
- (iii) Construct the initial simplex tableau (4 mark)
- (iv) Solve the first simplex tableau (5 marks)
- (c) The final simplex tableau is given in the table below:

Basix Mix		150	75	0	0	0	Solution
		X	Y	S _A	S _B	S _C	
150	X	1	0	0.25	-0.5	0	70
75	Y	0	1	-0.375	1.25	0	75
0	S _C	0	0	1.375	-5.25	1	285
Sacrifice		150	75	9	18.75	0	16125
Improvement		0	0	-9	-18.75	2	-

Required:

Interpret the final simplex tableau.

(3 marks)
(Total: 20 marks)

QUESTION 7

- a) Explain the term float in network analysis. *(2 marks)*
- b) On February 1, 2007 NUKOMAKO Ltd commissioned a Research and Development project to develop a new product. The activities to be carried out and the staff requirement to complete the project are given below.

<u>Activity</u>	<u>Immediate Predecessor</u>	<u>Expected time (weeks)</u>	<u>Number of Staff required</u>
A	-	10	6
B	-	6	4
C	A	4	4
D	A	10	10
E	A	6	6
F	C	4	4
G	D	8	10
H	B,E	12	8
I	H	4	2
J	F,G,I	12	4

Required:

- (i) Draw a network for the project *(6 marks)*
- (ii) Determine the duration of the project and the critical path *(4 marks)*
- (iii) Construct a chart showing the number of staff required at any time for the project *(6 marks)*
- (c) Management of Nukomako Ltd does not want more than 18 staff involved in this project at any one time.

Required:

Which activities must be re-scheduled to achieve this objective?

(2 marks)
(Total: 20 marks)