MARCH 2023 PROFESSIONAL EXAMINATIONS
MANAGEMENT ACCOUNTING (PAPER 2.2)
CHIEF EXAMINER'S REPORT, QUESTIONS AND MARKING SCHEME

EXAMINER'S GENERAL COMMENTS

This report is focused on the evaluation of the management accounting paper written in the March 2023 professional examination. Though the questions were fairly balanced in terms of spread over the syllabus, the theory constituted only about 18% of the total scores.

The overall performance was below expectation.

STANDARD OF THE PAPER

The standard was not different from previously administered papers. Almost all the areas in the syllabus were covered and marks were fairly allocated based on the weightings. It appeared however that marks allocated for question 4 a) did not commensurate with the tasks involved. Candidates were required to calculate the relevant cash flow and calculate the NPV for three (3) marks.

PERFORMANCE OF CANDIDATES

Performance of candidates was below expectation. The poor performance was widespread. No signs of copying were observed. Generally, the questions were within the competence of an average candidate. What may have accounted for such poor performance could be the fact that theory questions were few and some of the areas were also not popular with students e.g. Throughput Accounting, Economic Value Added (EVA) and Sensitivity Analysis under Investment Appraisal.

NOTABLE STRENGHTS AND WEAKNESSES

Most candidates performed well in the budgeting questions. The budgeted income statement was well answered as well as the theory in 4 (b).

Candidates demonstrated some weaknesses in three major areas; EVA, Standard Costing and Sensitivity Analysis. Most candidates could not calculate the economic profit (net operating profit after tax) neither could they calculate the weighted average cost of capital. The topic appeared new to candidates.

Under variances, most candidates had difficulty using the given variances to determine standard cost. In answering the factors to consider before variances are investigated some candidates were talking about causes of variances.

The capital budgeting question appeared a bit loaded and though mathematically feasible it was not too realistic since the first-year inflow alone could result in positive NPV. Secondly most candidates were not conversant with the sensitivity analysis.

QUESTION ONE

Vilagio Engineering (VE) is a listed company, manufacturing pumps and valves for use in the irrigation Sector. These highly engineered components are integrated into plant and equipment. The company has grown significantly via acquisitions in the last 20 years to become a worldwide business. The overall objective of the company is 'to deliver sustainable growth in value to the shareholders by working in partnership with customers to deliver innovative and value-for-money solutions utilising the skills of the highly-trained workforce.' The Chief Executive Officer (CEO) has recognised that the company has been so focused on making acquisitions to the detriment of establishing sound management practises. The CEO has therefore tasked you to assess Vilagio's performance using Economic Value Added.

Income Statement extract for the year:

	2022	**2021**
	GH¢ million	**GH¢ million**
Revenue	608	520
Pre-tax accounting profit	134	108
Taxation	(46)	(37)
Profit after Tax	88	71
Dividends	(29)	(24)
Retained earnings	59	47

Statement of Financial Position extract for the year ending:

	2022	**2021**
	GH¢ million	**GH¢ million**
Non-current assets	250	192
Net current assets	256	208
	506	**400**
Financed by:		
Shareholders' funds	380	312
Medium and long-term bank loans	126	88
	506	**400**

Additional information:

i) Capital employed at the end of 2020 amounted to GH¢350 million
ii) VE had non capitalised leases valued at GH¢16 million in each of the years 2020 to 2022. Ignore amortisation calculations.
iii) VE's pre-tax cost of debt was estimated to be 9% in 2021 and 10% in 2022.
iv) VE's cost of equity was estimated to be 15% in 2021 and 17% in 2022.
v) The target capital structure is 70% equity, 30% debt.
vi) The rate of taxation is 30% in both 2021 and 2022.
vii) Economic depreciation amounted to GH¢64 million in 2021 and GH¢72 million in 2022. These amounts were equal to the depreciation used for tax purposes and depreciation charged in the income statements.
viii) Interest payable amounted to GH¢6 million in 2021 and GH¢8 million in 2022.
ix) Other non-cash expenses amounted to GH¢20 million per year in both 2021 and 2022

Required:

a) Estimate the Economic Value Added (EVA) for Vilagio Engineering for both 2021 and 2022, and Comment on the company's performance. **(12 marks)**
b) State **THREE (3)** advantages and **TWO (2)** disadvantages of EVA. **(5 marks)**
c) Explain the relationship between EVA and Net Present Value (NPV). **(3 marks)**

(Total: 20 marks)

QUESTION TWO

a) The statement below relates to the costs and selling price of a unit of three products produced by a company:

Product	**A**	**B**	**C**
	GH¢	**GH¢**	**GH¢**
Selling price	150	120	230
Direct material cost	48	30	55
Direct labour cost	54	40	90
Variable overhead	12	15	30
Fixed overhead	16	20	25

The following additional information has also been provided:

- Labour rate per hour for all the products is GH¢8
- Demand for the year in units: A - 4,000; B - 2,500; C - 3,600.
- Available labour hours: 65,000.

Required:

i) Prepare a production plan that will maximise profit using the throughput approach. **(9 marks)**
ii) Calculate the Through Put Accounting Ratio for each product assuming that the conversion cost is based on the annual demand. **(6 marks)**

b) PTC for the past couple of months recorded adverse variances in material usage for one of its products. As a result, Management is considering carrying out an investigation on these adverse variances.

Required:

Explain **FOUR (4)** considerations that Management should take account of before proceeding with the investigation. **(5 marks)**

(Total: 20 marks)

QUESTION THREE

a) Tsekpo produces strong and affordable doors for the Ghanaian market. The company has been operating for the past five years from its manufacturing base at Tafo.

During the year under consideration, Tsekpo invested in a new information technology system in order to improve its management accounting information. Unfortunately, there has been problems with the software since its acquisition. The standard cost card, which provides details of the standard production cost to make one door, has been lost and the company is unable to prepare its budget for the year ahead.

The Management Accountant has retrieved some information relating to actual costs and variances for the year. The budgeted production for the year was 21,000 doors. Other relevant information is shown below:

Actual Cost	**GH¢**
Direct material costs: 16,200 square meters	81,000
Direct labour costs: 8,640 hours	108,864
Variable production overhead costs	54,000
Fixed production overhead Costs	85,200

Variances	
Direct material price variance	4,050 F
Direct material usage variance	5,670 F
Direct labour rate variance	864 F
Direct labour efficiency Variance	27,432 F
Variable production overhead expenditure variance	432 A
Variable production overhead efficiency variance	13,392 F
Fixed production overhead expenditure variance	3,775 A

Additional information:

i) Actual production is 600 doors above budgeted level.
ii) Tsekpo operate a standard variable costing system.

Required:

Using the information provided, prepare the standard cost card for the production of one door. **(10 marks)**

b) The Income Statement of AJ Ltd for the year ended December 2022 was as follows:

		GH¢
Sales revenue		120,000
Cost of sales		(90,000)
Gross profit		30,000
Other expenses:		
Administrative	8,000	
Selling and distribution	7,000	
Finance	4,500	(19,500)
Profit before		**10,500**

Based on the above, the company is preparing the budget for the year 2023 on the following assumptions:

Sales: The current sales represent 15% of market share. Management plans to increase this to 20%. Meanwhile industry experts are projecting a 12% growth in that sector.

Cost of sales: As a result of improvement in the quality of materials the cost of sales will reduce by 5% from the current level.

Other expenses:

i) Administrative cost is to increase by 20% over the 2022 actual.
ii) Selling and distribution cost will increase by 18% over the 2022 actual figure.
iii) Finance cost will however be kept at the same percentage of sales revenue as in the actual statement.

Required:

Prepare the budgeted income statement for the year 2023. **(10 marks)**

(Total: 20 marks)

QUESTION FOUR

a) Arkoo Ltd (Arkoo) is planning to invest GH¢5 million in its sound engineering studio with a life span of 10 years. Arkoo charges GH¢5.50 for every compact disc (CD) produced with an associated cost of GH¢4.80. The Company plans to produce 8,700,000 CDs each year. Arkoo evaluates all investment opportunities against a discount factor of 21%.

Required:

i) Determine whether the project is viable or not using the Net Present Value (NPV) method. **(3 marks)**
ii) Calculate the percentage by which the following conditioning factors of Arkoo must change in order for NPV to be zero.

- Selling price **(3 marks)**
- Variable cost **(3 marks)**
- Sales Volume **(3 marks)**
- Initial investment **(3 marks)**

b) Budgetary control is a crucial aspect of managing a business' finances. By implementing a robust budgetary control system, businesses can use their financial resources effectively and efficiently to achieve their goals and objectives.

Required:

i) Explain ***budgetary control***. **(2 marks)**
ii) Recommend **TWO (2)** ways by which budgetary control can help to provide information to ensure operational continuity. **(3 marks)**

(Total: 20 marks)

QUESTION FIVE

The following data relates to the planned activity of three products of Parlour Plc.

	Tintin	**Panpan**	**Sonson**
	GH¢	GH¢	GH¢
Selling price	17.19	15.28	10.99
Material @GH¢3.50	7.00	5.25	3.85
Labour @GH¢1.75	5.25	3.50	1.75
Variable Overhead @ GH¢0.75	1.50	3.00	2.25
Demand (units)	15,000	10,000	12,500

i) Due to the general rise in prices, the company envisages that labour and variable production overhead cost would rise by 20% while material cost increases by 15%. It is the policy of the firm to maintain at all times the current mark-up (to the nearest whole number) on the total variable cost for each of the three products.

ii) The following resources are available to support the production:
- Material 60,000kgs
- Labour hours 65,000hours

iii) The three products are compliments and the company envisages that 50% of the demand for all products have to be met for any operating year.

iv) The annual fixed cost which will not be affected by the price adjustment is estimated as GH¢42,500.

Required:

a) Prepare a profit statement assuming the company has capacity to meet all demand and considering the needed adjustments to reflect the proposed price changes. **(8 marks)**

b) Based on the resource limitation and proposal adjustment, what should be the optimal production plan. **(10 marks)**

c) Determine the associated profit from the optimal production plan. **(2 marks)**

(Total: 20 marks)

SUGGESTED SOLUTION

QUESTION ONE

a) Computation of EVA

		2022		2021
		GH¢		**GH¢**
NOPAT		88		71
Interest	(0.7*8)	5.6	(0.7*6)	4.2
Non-cash expense		20		20
		113.6		95.2
Capital Employed		400		350
Non-capitalized leases		16		16
		416		**366**

WACC = (%e*Ke) + (%d*Kd (1-t))
2022: = (0.7*0.17) + (0.3*0.01(1-0.3)) =14%
2021: = (0.7*0.15) + (0.3*0.09 (1-0.3)) = 12.39%

EVA = NOPAT – (CAPITAL EMPLOYED* WACC)
2022: = 113.6 - (416*14) = 55.36%
2021: = 95.2 – (366*12.39) = 49.85%

Comment: Management has increased shareholders' value by 11% between 2021 and 2022.

(12 marks)

b) Advantages of EVA

- Aligning decisions with shareholder wealth
- EVA focuses on the long-term NPV of a company
- Financing – the cost of capital is emphasized.
- Cash flows- EVA is based on cash flow and hence less distorted by the accounting policies chosen
- Clarity of measure- it given an absolute figure
- Profit are shown the way shareholder's account them
- The confusion of multiple goals is ended.

(Any 3 points @ 1 mark each = 3 marks)

Disadvantages of EVA

- The calculation of EVA may be complicated due to the number of adjustments required.
- It is difficult to use for inter-firm and inter-divisional comparisons because it is not a ratio measure.
- Economic depreciation is difficult to estimate and conflicts with generally accepted accounting principles.

(Any 2 points @ 1 mark each = 2 marks)

c) There is a direct relationship between NPV and EVA. NPV is equal to the present value of the projects future EVA. In order words EVA for the entire life of the project should be equal to the NPV. Therefore, accepting positive NPV projects should result in a positive EVA. So a reward system that compensates managers for producing EVA is consistent with the use of NPV for capital budgeting decision. **(3 marks)**

(Total: 20 marks)

EXAMINER'S COMMENTS

This question was poorly attempted by most of the candidates;

a) Most candidates got the key components of the answer wrong i.e. NOPAT, WACC and even the capital employed. The manual used the opening capital employed but the average is also acceptable.
b) A few of those who attempted were able to outline the advantages and disadvantages of EVA.
c) The relationship between EVA and NPV was not too clear so this could be narrowed down to similarities and differences.

QUESTION TWO

a) i)

Product	**A**	**B**	**C**	
	GH¢	**GH¢**	**GH¢**	
Selling price	150	120	230	
Direct material cost	48	30	55	
Through put	102	90	175	3
No. of hrs. per unit (note,i)	6.75	5	11.25	1.5
TP per limiting factor	15.11	18	15.56	
Ranking	**3rd**	**1st**	**2nd**	(1.5)

Note i:

Allocation of limited resources:

B: 2,500×5 = 12,500 hrs. (0.5)
C: 3,600 ×11.25 = 40,500 hrs. (0.5)
A: 1778×6.75 = 12,000 hrs. (0.5)

Production Plan to maximise profit will be;

A: 1,778 units (0.5)
B : 2,500 units (0.5)
C: 3,600 units (0.5)

(9 marks)

iii) Total Conversion Cost

	GH¢
A: 82 x 4,000	= 328,000
B: 75 x 2,500	= 187,500
C: 145 x 3,600	= 522,000
	1,037,500

(1.5 marks)

Conversion cost per limited resources = GH¢ 1,037,000/65,000

GH¢ 15.96

(1.5 marks)

Through Put Accounting Ratio (TPAR) = Throughput per limiting resource / Conversion cost per limiting resource

⇨ TPAR =

A	**B**	**C**
15.11/15.96	18/15.96	15.56/15.96
0.95	**1.13**	**0.97**

(3 marks)

b) **Considerations before carrying out adverse variance investigations**

- **Materiality -** the amount of the variance should be substantial enough to necessitate the investigation.
- **Controllability** - if the reason for the variance is obvious, say for example the management has taken a decision to give a pay hike of 10%, and then the labour rate variance could be adverse. If the reasons are known, then there is no need of investigating a variance.
- **The type of the standard being used** - if the standard is set at the ideal level of efficiency, then the variance could always be adverse.
- **Variance trend -** if a variance is occurring every month and it is of the same/similar amount then investigations need to be done to find out the root cause.
- **Interdependence between variances -** if one variance affects the other then there is no requirement for an investigation. For example, cheap material will make the material price variance favourable and the efficiency variance adverse. Cheap materials could also make the labour efficiency variance adverse.
- **Cost of the investigation -** if the estimated cost of the investigation is more than the benefit of the investigation, it is pointless to carry out the investigation.

(Any 4 points @ 1.25 mark each = 5 marks)

(Total: 20 marks)

EXAMINER'S COMMETS

Performance in sub-question a) was average. The concept of throughput was fairly understood. The challenge was how to arrive at the number of hours per unit for the calculation of TP per limiting factor. The allocation of the limited resources and calculation of the optimal plan were well attempted. Some had difficulty calculating the TPAR.

For the b) part of the question, some candidates did well to explain the factors to consider before variances are investigated. Others however were explaining causes of material and labour costs variances e.g. poor- quality material, untrained labour force etc.

QUESTION THREE

a) Standard cost card for one door

	Per Unit
	GH¢
Direct materials: 0.80sq meters x GH¢5.25	4.25
Direct labour 0.5 hrs x GH¢12.70	6.35
Variable production overhead: 0.50 hrs x GH¢6.20	3.10
Total production cost	**13.65**

Workings:

Cost statement

	Original Budget	**Flexed Budget**	**Actual Quantity**
Demand	21,000	21,600	21,600
	GH¢	**GH¢**	**GH¢**
Direct materials	88,200	90,720	81,000
Direct labour: 0.50 hrs x GH¢12.70	133,350	137,160	108,864
Variable production overhead: 0.50hrs x GH¢6.20	65,100	66,960	54,000
Fixed production overhead	81,425	81,425	85,200
Total production cost	**368,075**	**376,025**	**329,064**

Materials price variance

= (SP - AP) x AQ = GH¢4,050

= (SP - GH¢81,000/16,200) x 16,200 = GH¢4,050

=> 16,200 SP = GH¢81,000+GH¢4,050

=>SP = GH¢ 5.25 per square metre

Materials usage variance

= (SQ - AQ) x SP = GH¢5,670

= (SQ - 16,200) x GH¢5.25 = GH¢5,670
=> 5.25 SQ = GH¢85,050 + GH¢5,670
=> SQ = 17,280 square metres

SQ = Total standard materials quantity for actual production
=> need to get standard quantity to produce one unit
= 17,280 square metres / 21,600 units = 0.80 square metres per unit

Labour rate variance
= (SR - AR) x AH = GH¢ 864
= (SR - GH¢108,864/8,640) x 8,640 = GH¢ 864
=> 8,640 SR = GH¢108,864 + GH¢864
=>SR = GH¢ 12.70 per hour

Labour efficiency variance
= (SH - AH) x SR = GH¢ 27,432
= (SH - 8,640) x GH¢12.70 = GH¢ 27,432
=> 12.70 SH = GH¢109,728 + GH¢27,432
=> SH = 10,800 hours

SH = Total standard hours required for actual production
=> need to get standard quantity to produce one unit
= 10,800 / 21,600 units = 0.5 hours per unit

Variable overhead expenditure variance
= (SR - AR) x AH = -GH¢432
= (SR - GH¢54,000/8,640) x 8,640 = -GH¢432
=>8,640 SR = GH¢54,000 - GH¢432
=>SR = GH¢ 6.20 per hour

Variable overhead efficiency variance
= (SH - AH) x SR = GH¢13,392
= (SH - 8,640) x GH¢6.20 = GH¢13,392
=> 6.20 SH = GH¢53,568 + GH¢13,392
=> SH = 10,800
Variable overhead is applied to products based on labour hours
=> standard quantity to produce one unit = 0.50 hours

Fixed production overhead expenditure variance
= (BFO - AFO) = (GH¢3,775)
= (BFO - GH¢85,200) = (GH¢3,775)
=> BFO = GH¢85,200 + (GH¢3,775)
=> BFO = GH¢81,425

(10 marks)

b) **Budgeted income statement for the year ending 2023**

	GH¢	GH¢
Sales revenue		179,200 (3)
Cost of sales (70%)		125,440 (1.5)
Gross profit		53,760 (0.5)
Less:		
Admin. Expenses	9,600 (1)	
Selling &dist.	8,260 (1)	
Finance cost	6,720 (1.5)	
		24,580 (0.5)
Net Profit		**29,180 (1)**

Workings:

Sales; market size 120,000÷ .15 = 800,000
Budgeted market size; 800,000× 1.12= 896,000.
Company's market share 20%. 896,000×.2=179,200

Cost of sales; Current percentage 90,000/120,000= 75%
Improvement of 5%, new percentage= 70%

Administrative expenses; 8,000×1.2 =9,600
Selling &distribution exp. 7,000×1.18=8260

Finance cost; Current percentage 4,500/120,000=.0375
Budget; .0375×179,200= 6,720

(10 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

Before the standard cost card can be prepared, the individual variances must be computed. Most candidates had difficulty using the given variances to compute the input quantities and their prices for the cost elements. Understanding the process of calculating the variances can offer a huge advantage in this area.

Preparing budgets based on actual performance is common. For sub-question b), most candidates could project the items in the income statement. The only challenge was the various interpretation assigned to the statement for cost of sales. This however did not negatively affect their performance. Those who attempted this sub-section scored good marks.

QUESTION FOUR

a)

i) **Assessing project using NPV**

Details	**YEAR 0**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**
Revenue		47,850,000	47,850,000	47,850,000	47,850,000
Variable cost		(41,760,000)	(41,760,000)	(41,760,000)	(41,760,000)
Contribution		6,090,000	6,090,000	6,090,000	6,090,000
Initial Outlay	(5,000,000)				
Discount Factor (21%)	1	0.8264	0.6830	0.5645	0.4665
PV	**(5,000,000)**	**5,033,058**	**4,159,552**	**3,437,646**	**2,841,030**

YEAR 5	**YEAR 6**	**YEAR 7**	**YEAR 8**	**YEAR 9**	**YEAR 10**
47,850,000	47,850,000	47,850,000	47,850,000	47,850,000	47,850,000
(41,760,000)	(41,760,000)	(41,760,000)	(41,760,000)	(41,760,000)	(41,760,000)
6,090,000	6,090,000	6,090,000	6,090,000	6,090,000	6,090,000
0.3855	**0.3186**	**0.2633**	**0.2176**	**0.1799**	**0.1486**
2,347,959	**1,940,462**	**1,603,687**	**1,325,361**	**1,095,340**	**905,240**

NPV GH¢19,689,335

Or

NPV = -5,000,000 + 6,090,000*($\frac{1-(1+0.21)^{-10}}{0.21}$)

= -5,000,000 + 6,090,000*(4.0540798)

= -5,000,000 + 24,689,335

= GH¢19,689,335 **(3 marks)**

ii) Sensitivity analysis:

Sensitivity analysis = $\frac{\text{NPV}}{\text{PV of Affected cash flow}}$ x 100%

Selling price = $\frac{\text{NPV}}{\text{PV of Sales revenue}}$ x 100%

PV of sales revenue = 47,850,000*($\frac{1-(1+0.21)^{-10}}{0.21}$)

= 47,850,000*(4.0540798)

= 193,987,630

= $\frac{19,689,335}{193,987,630}$ x 100%

= -10.1498% **(3 marks)**

Variable Cost = $\frac{\text{NPV}}{\text{PV of Variable Cost}}$ x 100%

PV of Variable cost = 41,760,000 *($\frac{1-(1+0.21)^{-10}}{0.21}$)

= 41,760,000 *(4.0540798)

= 169,298,296

= $\frac{19,689,335}{169,298,296}$ x 100% = + 11.6300% **(3 marks)**

Sale volume = $6{,}090{,}000*(\frac{1-(1+0.21)^{-10}}{0.21})$

= 6,090,000*(4.0540798)

= 24,689,334.7873

= $\frac{19{,}689{,}335}{24{,}689{,}334}$ x 100%

= - 79.7483% **(3 marks)**

Initial investment

= Increase in initial investment by GH¢19,689,335

= $\frac{19{,}689{,}335}{5{,}000{,}000}$ x 100%

= + 393.7867% **(3 marks)**

b)

i) Budgetary control provides the framework for ensuring that programs and projects planned are successfully implemented. **(2 marks)**

ii) Ways by which budgetary control can help to provide information

- Activities and programs that will ensure future growth of the organization must be identified to be included in annual plans.
- Activities that will impact on growth are given funding priority.
- Unprofitable programmes are dropped.
- Funds are allocated for research and development.

(Any 3 points @ 1 mark each = 3 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

The question appeared a bit loaded. Requirement a) i) for three marks expected candidates to calculate the cash flow and the NPV. Candidates using the individual discount factors would require more time because the project life was too long. Secondly though the concept was mathematically feasible, it appeared too unrealistic since the first-year cash flow could result in positive NPV.

In doing the sensitivity analysis, the annuity factor for the project life was required and candidates had to calculate that when it could have been given.

Performance for ii) was generally bad as candidates had difficulty in using the NPV calculated in i) to determine how sensitive the variables provided in the question are.

For the b) part, candidates explained budgetary control quite well and most of them scored the full marks. The ii) part of the question was an application of the concept of budgetary control and some candidates could not relate the concept to business sustainability.

QUESTION FIVE

Calculation of price changes:
Material will increase by 15% from GH¢3.5 = (1.15 x GH¢3.5) = **GH¢4.025**
Hourly rate will increase by 20% from GH¢1.75 = (1.20 x GH¢1.75) = **GH¢2.1**
Overhead rate will increase by 20% from GH¢0.75 = (1.20 x GH¢0.75) = **GH¢0.90**

Determination of the new selling price based on the old mark-up
Determination of old mark-up

	Tintin	**Panpan**	**Sonson**
	GH¢	**GH¢**	**GH¢**
Selling price	17.19	15.28	10.99
Material @GH¢3.50	7.00	5.25	3.85
Labour @GH¢1.75	5.25	3.50	1.75
Variable Overhead @ GH¢0.75	1.50	3.00	2.25
Contribution	3.44	3.53	3.14
Cont. to Var. Cost Ratio	3.44/13.75 = **25%**	3.53/11.75 = **30%**	(3.14/7.85) = **40%**

Determination of new selling price and variable cost sheet

	Tintin	**Panpan**	**Sonson**
	GH¢	**GH¢**	**GH¢**
Material @ GH¢4.025	8.05	6.04	4.43
Labour @ GH¢2.1	6.30	4.20	2.1
Variable Overhead @ GH¢0.90	1.80	3.60	2.7
Total Variable Cost	16.15	13.84	9.23
Contribution (25%/30%/40%)	4.04	4.15	3.69
Selling price	**20.19**	**17.99**	**12.92**

a) **Profit Statement assuming there is no shortage in resource**

	Tintin GH¢	**Panpan GH¢**	**Sonson GH¢**	**Total GH¢**
Selling price	**20.19**	**17.99**	**12.92**	
Material @ GH¢4.025	8.05	6.04	4.43	
Labour @ GH¢2.1	6.30	4.20	2.1	
Variable Overhead @ GH¢0.90	1.80	3.60	2.7	
Total Variable Cost	16.15	13.84	9.23	
Contribution 25%/30%/40%	4.04	4.15	3.69	
Demand	15,000	10,000	12,500	
Total Contribution (GHGH¢)	**60,600**	**41,500**	**46,125**	**148,225**
Fixed cost				42,500
Profit				**105,725**

(8 marks)

Determination of the resource in short supply

	Material (kg)	Labour hours
Tintin	15,000 x 2kg = 30,000kg	15,000 x 3 = 45,000hours
Panpan	10,000 x 1.5kg = 15,000kg	10,000 x 2 = 20,000hours
Sonson	12,500 x 1.1kg = 13,750kg	12,500 x 1 = 12,500hours
Total resource required	58,750kg	77,500hours
Resource available	60,000kg	65,000hours
(Excess) or shortage	**(1,250kg)**	**12,500hours**

Thus, while labour hours is in short supply, material is not.

Determination of Contribution per limiting factor

	Tintin	Panpan	Sonson
	GH¢	GH¢	GH¢
Selling price	**20.19**	**17.99**	**12.92**
Material @ GH¢4.025	8.05	6.04	4.43
Labour @ GH¢2.1	6.30	4.20	2.1
Variable Overhead @ GH¢0.90	1.80	3.60	2.7
Total Variable Cost	16.15	13.84	9.23
Contribution 25%/30%/40%	4.04	4.15	3.69
Limiting factor	3	2	1
Contribution per limiting factor	**1.35**	**2.08**	**3.69**
Ranking	**3rd**	**2nd**	**1st**

b) **Allocation of limited resource**

	Tintin	Panpan	Sonson	Total (Hours)
Total hours available				**65,000**
Guaranteed minimum demand	**7,500**	**5,000**	**6,250**	
Hours required	3	2	1	
Total	22,500	10,000	6,250	38,750
				26,250
Allocation of remaining balance	3,333	5,000	6,250	
	3	2	1	
	10,000	10,000	6,250	26,250
Total products	**10,833**	**10,000**	**12,500**	
Total hours	**32,500**	**20,000**	**12,500**	

(10 marks)

c) **Determination of optimal benefit**

	Tintin	Panpan	Sonson	Total
Units to be produced	10,833	10,000	12,500	
Contribution per unit (GH¢)	4.04	4.15	3.69	
Total contribution (GH¢)	**43,765.32**	**41,500**	**46,125**	**131,390.32**
Fixed cost (GH¢)				(42,500.00)
Profit (GH¢)				**88,890.32**

(2 marks)

(Total: 20 marks)

EXAMINER'S COMMENTS

Production plan with limited resources is one of the areas in short term decision making which most candidates are familiar with. What most candidates could not do well was adjustment of the input costs and calculation of the new contribution that was needed for the ranking. A few of the candidates based their ranking on the unadjusted prices. Some also used the total approach which is acceptable but, in most cases, lead to inaccurate answers.

The performance was average, candidates understood the concept except the application of price level changes.

CONCLUSION

The obvious reason for the poor performance was inadequate preparation. Question one under Economic Value Added was unexpected, candidates had difficulty in working back to derive standard or actual cost when variances had been given and sensitivity analysis under investment appraisal was mostly neglected by most people who provided tuition to candidates.

Candidates writing this paper should note that questions are set to cover all the areas specified in the syllabus and so should be guided accordingly.