
CERTIFIED ACCOUNTING TECHNICIAN (CAT)
STAGE 3 EXAMINATION
S3.2 MANAGEMENT ACCOUNTING
PILOT PAPER

Instructions

- 1 Time allowed: **3 hours**.
- 2 This examination has **three** sections: **A, B and C**.
- 3 Section A has **10** multiple choice questions equal to 2 marks each.
- 4 Section B has **2** questions equal to 10 marks each.
- 5 Section C has **3** questions equal to 20 marks each.
- 6 All questions are compulsory.

Section A – All TEN questions are compulsory and MUST be attempted

1. The following costs have been included in the budget for a profit centre:

- (i) Depreciation of machines
- (ii) Head office costs allocated to the profit centre by head office
- (iii) Interest payable on loans to buy machinery for the profit centre

Which of the above items are likely to be controllable by the profit centre manager?

- A (i) only
- B (i) and (ii)
- C (iii) only
- D (i) and (iii)
- E None of the above

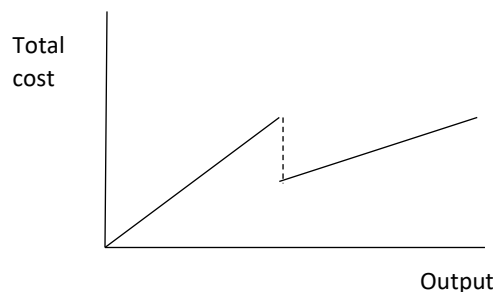
(2 marks)

2. What is meant by the principal budget factor?

- A The officer who coordinates all the departmental budgets
- B The constraint that limits the output of the organisation
- C The rate of inflation that is applied to the previous year's budget figures
- D The extent to which budgets are used in an organisation
- E None of the above

(2 marks)

3. The following diagram shows how a cost behaves as the total level of output increases:



Which of the following types of cost is consistent with the diagram above?

- A Weekly total labour cost where labour is paid a standard rate for up to 40 hours per week but overtime is paid at a premium rate
- B Cost of materials where the supplier charges the standard price on purchases up to a certain quantity, and a discounted price on purchases above that quantity
- C Cost of materials where the supplier charges the standard price on purchases up to a certain quantity, but when that quantity is exceeded a lower price per unit applies to all units purchased during the year
- D Annual costs of energy where a fixed annual cost is charged plus a variable cost based on usage
- E None of the above

(2 marks)

4. Muteteli reported the following sales figures in 2019 and 2020:

2019: RWF520,000

2020: RWF535,600

The Consumer Price Index (CPI) was as follows:

2019: 142.4

2020: 156.3

What was the change in Muteteli's sales between 2019 and 2020 in real terms?

- A A fall of 8.9%
- B A fall of 6.2%
- C An increase of 3.0%
- D An increase of 13%
- E None of the above

(2 marks)

5. Nabil is a farmer. He is about to harvest the sweet potatoes on his land using manual labourers. In order to ensure that the labourers are productive, he has set a target that each worker should harvest 100kg of sweet potatoes per hour. He has also set a budget of eight hours per labourer.

Yesterday, one of the labourers, Kamau, worked for nine hours. He picked 850kg of sweet potatoes.

What are the capacity, efficiency and activity ratios for Kamau?

	Efficiency	Capacity	Activity
A	94.4%	112.5%	106.25%
B	106.25%	112.5%	94.4%
C	94.4%	106.25	112.5%
D	106.25%	94.4%	112.5%
E	None of the above		

(2 marks)

6. The Big Mining Corporation have discovered a fraud at one of their sites. The procurement manager was buying tools from one particular supplier, Small Tools Ltd. Small Tools Ltd's prices were typically 10% higher than those of other suppliers. It was discovered that Small Tools Ltd were paying a fee to the procurement manager worth 5% of all sales.

The following new controls have been proposed by the managing director of The Big Mining Corporation:

- (i) Segregation of duties between the making of payments and recording of payments to suppliers
- (ii) Rotation of procurement managers on a regular basis
- (iii) A requirement that all purchase orders over RWF200,000 are signed by the procurement manager
- (iv) Requiring that three written quotations are received for all major purchases or regular supplies, and regular review of these by the financial controller.

Which of the above controls would have reduced the risk of the fraud that occurred?

- A (i) only
- B (ii) and (iv)
- C (i) and (iii)
- D (ii) only
- E None of the above

(2 marks)

7. Abeni is considering investing in a new accounting software package for her retail business. She is trying to decide between buying an off the shelf accounting package or having a customised system specially written for her by a local IT company.

Which of the following statements is correct?

- A An off the shelf system is less likely to meet all of Abeni's requirements than a customised system.
- B An off the shelf system will be more expensive than a customised system.
- C There are more likely to be processing errors in an off the shelf system than a customised system.
- D The customised system will not need testing while the off the shelf system will.
- E None of the above

(2 marks)

8. Organisations may use both primary and secondary sources of information on costs, prices, demand and availability of resources.

Which of the following statements about primary and secondary sources of data is correct?

- A Primary information comes from within the organisation while secondary information is external.
- B Secondary information is generally more reliable than primary.
- C Secondary information is more expensive to obtain than primary information.
- D Primary information can be found on many websites.
- E None of the above

(2 marks)

9. A food processing plant incurred the following indirect costs last year in its two production departments:

	RWF
Light and heat	12,000,000
Supervisors' salaries department 1	20,000,000
Supervisors' salaries department 2	5,000,000
Machinery maintenance costs	35,000,000

The following information is available about the two production departments:

Department 1	Department 2
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Factory area (cubic metres)	400	200
Machine operating hours	30,000	10,000

What is the total value of indirect costs allocated and apportioned to department 1 for the year?

- A RWF34,250,000
- B RWF51,333,333
- C RWF54,250,000
- D RWF55,250,000
- E None of the above

(2 marks)

10. The following statements have been made about the maturity phase of the product life cycle:

- (i) Customers stop buying the product and sales start to decline.
- (ii) Sales revenue may grow but at a slow rate.
- (iii) The product may be totally redesigned to try to boost sales.
- (iv) The maturity phase is likely to bring strong positive cash flows.

Which of the above statements are true?

- A (i) only
- B (ii) and (iv)
- C (i) and (iii)
- D (ii) only
- E None of the above

(2 marks)

Section B – BOTH questions are compulsory and MUST be attempted

11. Sentwali's Souvenirs is a tourist gift shop located in Kigali which is owned by Sentwali Gasamagera. The shop sells Rwandan hand made goods and is very popular among foreign tourists visiting Rwanda. The revenues of the shop have been growing steadily since Sentwali started it four years ago.

Sentwali wishes to prepare her budget for the year ending 31 December 2021, but finds it difficult to predict revenues due to the seasonal nature of the business. In the period October to March, business is good, as this is when there are more tourists. April to June is a little slow and revenues start to pick up again in September.

Sentwali's son Runi is studying Statistics at University, and has been performing some trend analysis. He has calculated four centred quarterly moving average revenues for past quarters as follows:

RWF'000		
2019	Q4	52,000
2020	Q1	62,400
2020	Q2	74,880
2020	Q3	89,856

Runi has also calculated the seasonal variations for each quarter, where the quarterly sales revenue is a percentage of trend figure for that quarter:

Q1	110%
Q2	70%
Q3	90%
Q4	130%

Sentwali prices her products so that she makes a mark-up of 80% on cost. During the period from October to December, she employs an assistant. The cost of employing the assistant including wages and employers contributions is RWF20,000 per month during the months that she is employed. Sentwali's other costs are RWF7,500 per month.

Required

Prepare a statement of budgeted profit and loss for the year 2021 with a note showing forecast sales by quarter.

Total (10 marks)

12. Claudine's Fashion Ltd is a clothes manufacturing company located in Bugesera. The company is preparing its budget for next year. The following is an extract from the budgeted statement of profit or loss:

RWF'000	
Revenue	50,000
Costs of materials	(30,000)
Direct labour costs	(7,200)
Gross profit	<u>12,800</u>

The company's sales are expected to grow by 5% per annum every year and this has not been taken into account in the budget above.

Claudine is considering buying a new computerised sewing and cutting machine which would automate some of the tasks that are being performed manually. The machine would cost

RWF10 million and would last for four years. After four years, the machine would be scrapped. Expected scrap proceeds are zero.

The machine would reduce the need for manual labour so one member of production staff would be made redundant. Redundancy payments of RWF400,000 would be made at the start of the first year, representing two months wages. Due to more accurate cutting of fabrics, materials costs would fall by 5% per unit. The costs and savings relating to the machine have not been included in the budget above. Claudine's cost of capital is 12%.

Required

Assess whether Claudine should invest in the machine taking into account the net present value of the relevant cash flows, and non-financial factors.

Total (10 marks)

Section C – All THREE questions are compulsory and MUST be attempted

13. The North Region District Education Authority (NRDEA) is responsible for setting up and running secondary schools, funded by the state. Its stated mission is 'To prepare young Rwandans to make a positive impact in the work place.' Mr Mulifi, a director at the North Region has contacted you as he wishes to introduce a system of performance measurement at the schools to drive forward their improvement.

He has provided you with some data from two secondary schools in the North Region. One of the schools, School Aye is in an urban area, while School Bee is in a rural location.

	School Aye	School Bee
Number of pupils	800	500
Number of teachers	20	15
Total annual running costs (RWF million)	98	54
Average class sizes	50	30
% of lower secondary students who move to upper secondary	58%	30%
% of lower secondary students who move to technical and vocational training	38%	24%

Required

- Discuss the problems of performance measurement in public sector bodies such as schools. **(6 marks)**
- Explain the meaning of economy, efficiency and effectiveness which are often used in the appraisal of performance in not-for-profit organisations. **(6 marks)**
- Using the data provided by Mr Mulifi, compare the performance of School Aye and School Bee. **(8 marks)**

Total (20 marks)

14. The Great Coffee Farmers Association (GCFA) was formed by a group of Coffee Plantation owners to process raw coffee beans, and export them directly to foreign customers.

GCFA buys the ripe coffee 'cherries' from local farmers and processes them. Processing includes washing the beans, drying them, then milling them to remove the skins. Typically, 7kg of cherries are required to produce 1kg of green coffee beans. The GCFA is accredited by the international fair trade agreement which certifies that farmers receive a fair price for the beans.

A production manager was recently hired for the most recent season. He was provided with the following standard direct cost for 1kg of green beans:

	RWF
Materials: 7kg of cherries at RWF 225 per cherry	1,575
Labour: 1.5 hours at RWF 450 per hour	<u>675</u>

Total variable costs	<u>2,250</u>
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During his first month in charge, the factory produced 30,000kg of green coffee beans. The following costs were incurred:

	RWF
Materials: (240,000kg of cherries)	48,000,000
Labour: (50,000 hours at RWF 425 per hour)	<u>21,250,000</u>
Total direct cost	<u>69,250,000</u>

The production manager is pleased with his first month in charge. He said "I managed to bargain the staff down to RWF 425 per hour, so that should result in a large saving. We used more materials than we should have, because the quality of the cherries was not as high as expected, and I know that the purchasing manager paid a lower price than normal for these. I think our costs should be in line with the standard".

Required

- (a) Based on the information provided above, calculate the following variances:
- (i) Materials price variance
 - (ii) Materials usage variance
 - (iii) Labour rate variance
 - (iv) Labour efficiency variance **(8 marks)**
- (b) Using the variances calculated in part (a), assess the performance of the production manager for the month. **(8 marks)**

After seeing the variances that you calculated in part (a), the production manager has complained that the variances were not calculated fairly as the standards turned out to be incorrect, due to factors outside of his control.

- (c) Discuss whether the standard should have been revised before the variances were calculated.

Note: You are not expected to perform any calculations in this part of the question **(4 marks)**

Total (20 marks)

15. The Big Technology Company is considering starting production of a new smart watch. The watch is designed for runners, and records information such as the distance and route of each run, and the heart rate of the runner during the activity. Each watch would need components and materials costing RWF20,000 per unit. However, if more than 75,000 units are produced per year, discounts of 5% would be provided by all suppliers.
- It would take skilled labourers half an hour to assemble each unit. Skilled labourers are paid RWF 600 per hour, and can work up to 40 hours per week, for 48 weeks of the year. Production supervisors would also be required. Each supervisor can supervise up to 15 skilled labourers. Production supervisors are paid a salary of RWF24 million per year.
- Fixed and variable production overheads will be incurred. Variable overheads depend on labour hours worked. The company believes that overheads will be the

same as an older version of the smart watch that was produced last year. Total overhead costs (fixed and variable) for the last four months of last year, excluding depreciation, were as follows:

Month	Labour hours	Total overhead costs RWF millions
September	14,000	89
October	10,000	70
November	12,000	79
December	16,000	100

New machinery costing RWF4,000 million is required to produce the watch. The machinery should be depreciated over four years using a straight line method.

Required

- (a) Assuming that the company makes 100,000 smart watches, calculate the budgeted cost per unit of the smart watch based on the information provided above. **(9 marks)**
- (b) Market research has indicated that the new watch could be sold for a price of RWF38,000. The company wishes to earn a 20% return per annum on the RWF4,000 million that it has invested in machinery to make the watch. Calculate the target cost per watch, and the cost gap that exists between the target cost and the budgeted cost per unit. **(3 marks)**
- (c) Explain target costing and suggest ways in which any cost gap for the Big Technology Company's new watch can be reduced or eliminated. **(8 marks)**

Total (20 marks)

Total (100 marks)

FORMULA SHEET GIVEN IN THE EXAM**Regression analysis**

$$y = a + bx$$

$$a = \frac{\sum Y}{n} - b \frac{\sum X}{n}$$

$$b = \frac{n \sum XY - \sum X \sum Y}{n \sum X^2 - (\sum X)^2}$$

$$r = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}}$$

PRESENT VALUE TABLE

Present value of RWF1 ie $(1+r)^{-n}$

where r = interest rate

n = number of periods until payment

Periods	Discount rates (r)									
(n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239

(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065

ANNUITY TABLE

Present value of an annuity of 1 ie $\frac{1 - (1 + r)^{-n}}{r}$.

where r = interest rate

n = number of periods

Periods	Discount rates (r)									
(n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606

(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675

End of question paper