

Professional Level – Options Module

Advanced Performance Management

March/June 2016 – Sample Questions



Time allowed

Reading and planning: 15 minutes

Writing: 3 hours

This question paper is divided into two sections:

Section A – This ONE question is compulsory and MUST be attempted

Section B – TWO questions ONLY to be attempted

Present Value and Annuity Tables are on pages 12 and 13.

Do NOT open this question paper until instructed by the supervisor.

During reading and planning time only the question paper may be annotated. You must NOT write in your answer booklet until instructed by the supervisor.

This question paper must not be removed from the examination hall.

Think Ahead

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Paper

The Association of
Chartered Certified
Accountants

Section A – This ONE question is compulsory and MUST be attempted

- 1 Flack Supermarkets (Flack) is a multi-national listed business operating in several developing countries. The business is divided into two divisions: Metro, which runs smaller stores in the densely populated centres of cities and Hyper, which runs the large supermarkets situated on the edges of cities. Flack sells food, clothing and some other household goods.

Competition between supermarkets is intense in all of Flack's markets and so there is a constant need to review and improve their management and operations. The board has asked for a review of their performance report to see if it is fit for the purpose of achieving the company's mission of being:

'...the first choice for customers by providing the right balance of quality and service at a competitive price. We will achieve this through acting in the long-term interests of our stakeholders: earning customer loyalty, utilising all our resources and serving our shareholders' interests.'

This report is used at Flack's board level for their annual review. The divisional boards have their own reports. Also, there has been criticism of the board of Flack in the financial press that they are 'short-termist' and so the board wants your evaluation of the performance report to include comments on this. A copy of the most recent report is provided as an example at Appendix 1.

The board is considering introducing two new performance measures to address the objective of 'utilising all our resources'. These are revenue and operating profit per square metre. The CEO also wants an evaluation of these two measures explaining how they might address this aspect of the mission, what those ratios currently are and how they could be used to manage business performance. There is information in Appendix 1 to assist in this work.

There have been disagreements between Flack's divisional management about capital allocation. The divisions have had capital made available to them. Both sets of divisional managers always seem to want more capital in order to open more stores but historically have been reluctant to invest in refurbishing existing stores. The board is unsure of capital spending priorities given that the press comments about Flack included criticism of the 'run-down' look of a number of their stores. The board wants your comments on the effectiveness of the current divisional performance measure of divisional operating profit and the possibility of replacing this with residual income in the light of these problems.

As the company is opening many new stores, the board also wants an assessment of the use of expected return on capital employed (ROCE) as a tool for deciding on new store openings, illustrating this using the data in Appendix 2 on one new store proposal. The focus of comments should be on the use of an expected value not on the use of return on capital employed, as this is widely used and understood in the retail industry.

Finally, the CEO has proposed to the board that a new information system be introduced. She wishes to spend \$100m on creating a loyalty card programme with a data warehouse collecting information from customers' cards regarding their purchases. Her plan is to use this information to target advertising, product range choices and price offers more efficiently than at present.

Required:

Write a report to the board of Flack to:

- (i) Evaluate the performance report of Flack, using the example provided in Appendix 1, as requested by the board.** (14 marks)
- (ii) Evaluate the introduction of the two measures of revenue and operating profit per square metre, as requested by the CEO.** (8 marks)
- (iii) Assess the proposal to change the divisional performance measure.**
Note: No calculations of the current values are required. (8 marks)
- (iv) Calculate the expected return on capital employed for the new store and assess the use of this tool for decision-making at Flack.** (8 marks)
- (v) Explain how the proposed new information system can help to improve business performance at Flack.** (8 marks)

Professional marks will be awarded for the format, style and structure of the discussion of your answer. (4 marks)

(50 marks)

Appendix 1 Board's performance report

Flack Year to 31 March

	Metro Budget 2016 \$'000	Metro Actual 2016 \$'000	Hyper Budget 2016 \$'000	Hyper Actual 2016 \$'000	Flack Budget 2016 \$'000	Flack Actual 2016 \$'000	Flack Actual 2015 \$'000	Change on PY
Revenue								
Food	1,093,521	1,104,567	5,431,277	5,542,119	6,524,798	6,646,686	6,513,752	2.04%
Clothes	765,465	773,197	3,801,894	3,879,483	4,567,359	4,652,680	4,536,363	2.56%
Other goods	328,056	331,370	1,629,383	1,662,636	1,957,439	1,994,006	1,964,096	1.52%
Total	2,187,042	2,209,134	10,862,554	11,084,238	13,049,596	13,293,372	13,014,211	2.15%
Cost of sales	1,994,583	2,014,730	10,199,937	10,408,099	12,194,520	12,422,829	12,186,796	1.94%
Gross profit	192,459	194,404	662,617	676,139	855,076	870,543	827,415	5.21%
Gross margins		8.80%		6.10%		6.55%		
Other operating costs	34,993	35,346	173,801	177,348	208,794	212,694	208,227	
Operating profit	157,466	159,058	488,816	498,791	646,282	657,849	619,188	6.24%
Operating margins		7.20%		4.50%		4.95%		
Finance costs					76,993	79,760	75,482	
Group profit before tax					569,289	578,089	543,706	6.32%
Tax					142,322	144,522	135,926	
Group profit after tax					426,967	433,567	407,780	6.32%
Total shareholder return						3.10%	2.70%	
Return on capital employed	13.2%	13.3%	13.2%	13.5%	13.2%	13.4%	13.2%	
Number of stores		533		208				
Total square metres		161,227		841,967				

Appendix 2 New store

The following data has been forecast by the marketing department for the new store based on Flack's existing experience. There are three possible scenarios:

Demand scenarios	Low	Medium	High
Revenue (\$m)	12.5	13	13.5
Probability (%)	20	50	30
Forecast operating margin (%)	4.1	4.3	4.4

The new store is expected to cost \$4.2m to buy, fit out and stock. The target ROCE for Flack has been set at 13%.

Section B – TWO questions ONLY to be attempted

- 2 Cuthbert is based in Ceeland and manufactures jackets for use in very cold environments by mountaineers and skiers. It also supplies the armed forces in several countries with variants of existing products, customised by the use of different coloured fabrics, labels and special fastenings for carrying equipment. Cuthbert incurs high costs on design and advertising in order to maintain the reputation of the brand.

Each jacket is made up of different shaped pieces of fabric called 'components'. These components are purchased by Cuthbert from an external supplier. The external supplier is responsible for ensuring the quality of the components and the number of purchased components found to be defective is negligible. The cost of the components forms 80% of the direct cost of each jacket, and the prices charged by Cuthbert's supplier for the components are the lowest in the industry. There are three stages to the production process of each jacket, which are each located in different parts of the factory:

Stage 1 – Sewing

The fabric components are sewn together by a machinist. Any manufacturing defects occurring after sewing has begun cannot be rectified, and finished garments found to be defective are heavily discounted, or in the case of bespoke variants, destroyed.

Stage 2 – Assembly

The garments are filled with insulating material and sewn together for the final time.

Stage 3 – Finishing

Labels, fastenings and zips are sewn to the finished garments. Though the process for attaching each of these is similar, machinists prefer to work only on labels, fastenings or zips to maximise the quantity which they can sew each hour.

Jackets are produced in batches of a particular style in a range of sizes. Throughout production, the components required for each batch of jackets are accompanied by a paper batch card which records the production processes which each batch has undergone. The batch cards are input into a production spreadsheet so that the stage of completion of each batch can be monitored and the position of each batch in the factory is recorded.

There are 60 machinists working in the sewing department, and 40 in each of the assembly and finishing departments. All the machinists are managed by 10 supervisors whose duties include updating the batch cards for work done and inputting this into a spreadsheet, as well as checking the quality of work done by machinists. The supervisors report to the factory manager, who has overall responsibility for the production process.

Machinists are paid an hourly wage and a bonus according to how many items they sew each week, which usually comprises 60% of their total weekly wages.

Supervisors receive an hourly wage and a bonus according to how many items their team sews each week. The factory manager receives the same monthly salary regardless of production output. All employees are awarded a 5% annual bonus if Cuthbert achieves its budgeted net profit for the year.

Recently, a large emergency order of jackets for the Ceeland army was cancelled by the customer as it was not delivered on time due to the following quality problems and other issues in the production process:

- A supervisor had forgotten to input several batch cards and as a result batches of fabric components were lost in the factory and replacements had to be purchased.
- There were machinists available to sew buttons onto the jackets, but there was only one machinist available who had been trained to sew zips. This caused further delay to production of the batch.
- When the quality of the jackets was checked prior to despatch, many of them were found to be sewn incorrectly as the work had been rushed. By this time the agreed delivery date had already passed, and it was too late to produce a replacement batch.

This was the latest in a series of problems in production at Cuthbert, and the directors have decided to use business process reengineering (BPR) in order to radically change the production process.

The proposal being considered as an application of BPR is the adoption of 'team working' in the factory, the three main elements of which are as follows:

1. Production lines would re-organise into teams, where **all** operations on a particular product type are performed in one place by a dedicated team of machinists.
2. Each team of machinists would be responsible for the quality of the finished jacket, and for the first time, machinists would be encouraged to bring about improvements in the production process. There would no longer be the need to employ supervisors and the existing supervisors would join the teams of machinists.
3. The number of batches in production would be automatically tracked by the use of radio frequency identification (RFID) tags attached to each jacket. This would eliminate the need for paper batch cards, which are currently input into a spreadsheet by the supervisors.

You have been asked as a performance management consultant to advise the board on whether business process reengineering could help Cuthbert overcome the problems in its production process.

Required:

(a) Advise how the proposed use of BPR would influence the operational performance of Cuthbert. (14 marks)

(b) Evaluate the effectiveness of the current reward systems at Cuthbert, and recommend and justify how these systems would need to change if the BPR project goes ahead. (11 marks)

(25 marks)

- 3 Dibble is formed of two autonomous divisions, Timber and Steel, and manufactures components for use in the construction industry. Dibble has always absorbed production overheads to the cost of each product on the basis of machine hours.

Timber Division

Timber Division manufactures timber frames used to support the roofs of new houses. The timber, which is purchased pre-cut to the correct length, is assembled into the finished frame by a factory worker who fastens the components together. Timber Division manufactures six standard sizes of frame which is sufficient for use in most newly built houses.

Steel Division

Steel Division manufactures steel frames and roof supports for use in small commercial buildings such as shops and restaurants. There is a large range of products, and many customers also specify bespoke designs for short production runs or one-off building projects. Steel is cut and drilled using the division's own programmable computer aided manufacturing machinery (CAM), and is bolted together or welded by hand.

Steel Division's strategy is to produce novel bespoke products at a price comparable to the simpler and more conventional products offered by its competitors. For example, many of Steel Division's customers choose to have steel covered in one of a wide variety of coloured paints and other protective coatings at the end of the production process. This is performed off-site by a subcontractor, after which the product is returned to Steel Division for despatch to the customer. Customers are charged the subcontractor's cost plus a 10% mark up for choosing this option. The board of Steel Division has admitted that this pricing structure may be too simplistic, and that it is unsure of the overall profitability of sales of some groups of products or sectors of the market.

Recently, several customers have complained that incorrectly applied paint has flaked off the steel after only a few months' use. More seriously, a fast food restaurant has commenced litigation with Dibble after it had to close for a week while steel roof frames supplied by Steel Division were repainted. Following this, the production manager has proposed increasing the number of staff inspecting the quality of coating on the frames, and purchasing expensive imaging machinery to make inspection more efficient.

The chief executive officer (CEO) at Dibble has approached you as a performance management expert for your advice. 'At a conference recently', he told you, 'I watched a presentation by a CEO at a similar business to ours talking about the advantages and disadvantages of using activity based costing (ABC) and how over several years the adoption of activity based management (ABM) had helped them to improve both strategic and operational performance.'

'I don't want you to do any detailed calculations at this stage, but I'd like to know more about ABC and ABM, and know whether they would be useful for Dibble', he said.

You are provided with extracts of the most recent management accounts for Timber and Steel Divisions:

Division (\$000)	Timber	Steel
Revenue	25,815	20,605
Materials	12,000	10,100
Direct labour	4,500	850
Subcontract costs	75	650
Analysis of production overheads (\$000)		
Set up time for CAM machinery	–	575
Machining time	–	2,777
Storage of goods awaiting or returned from subcontractors	120	395
Transfer of goods to and from subcontractors	50	300
Inspection and testing	35	425
Total production overheads	205	4,472
Gross profit	9,035	4,533

Required:

- (a) (i) Advise the CEO how activity based costing could be implemented. (4 marks)
- (ii) Assess whether it may be more appropriate to use activity based costing in Timber and Steel Divisions than the costing basis currently used. (8 marks)

- (b) Advise the CEO how activity based management could be used to improve business performance in Dibble. (13 marks)

(25 marks)

4 Universities in Teeland have three stated objectives:

1. To improve the overall standard of education of citizens in Teeland.
2. To engage in high quality academic research.
3. To provide well-qualified university graduates to meet the needs of the graduate jobs market in Teeland.

Each university is funded by a fixed sum of money from the Teeland government according to the number of students studying there. In addition, universities receive extra funds from the government and also from other organisations, such as large businesses and charities. These funds are used to support academic research.

Following the onset of an economic recession, the Teeland government has stated its intention to reduce spending on publicly funded services such as the universities. One senior politician, following his recent visit to neighbouring Veeland, was controversially quoted as saying:

‘The universities in Veeland offer much better value for money for the citizens there compared to our universities here in Teeland. There are 25 students for each member of academic staff in Veeland, whereas in Teeland, the average number is 16, and yet, the standard of education of citizens is much higher in Veeland. The Veeland government sets targets for many aspects of the services delivered by all the universities in Veeland. Furthermore, league tables of the performance of individual universities are published on the internet, and university leaders are given bonuses if their university falls within the top quarter of the league table. In Veeland, the system of performance measurement of the universities is considered so important that there is a special government department of 150 staff just to measure it.’

He went on to add, ‘I want to see a similar system of league tables, targets and bonuses for university leaders being introduced here in Teeland. To appear near the top of the league tables, I think we should expect each university to increase the number of graduates entering graduate jobs by at least 5% each year. I would also like to see other steps taken to increase value for money, such as reducing the number of academic staff in each university and reducing the salary of newly recruited academic staff.’

You have been asked to advise the Teeland government on the measurement of value for money of the universities and the proposed introduction of league tables for comparing their performance. Appendix A contains details and existing performance data relating to four of the best known universities in Teeland.

Northcity University is famous for its high teaching standards and outstanding academic research in all subjects. As such, it attracts the most able students from all parts of the world to study there.

Southcity University is a large university in the capital city of Teeland and offers courses in a wide range of subjects, though most of the funding it receives for academic research is for science and technology in which it is particularly successful.

Eastcity University is a small university specialising in the teaching of arts and humanities subjects such as history and geography.

Westcity University currently offers less strict entry standards to students to attract students from more diverse backgrounds, who may not normally have the opportunity of a university education.

Appendix A

Existing university performance data

	North	South	East	West
Number of students	17,600	30,400	5,200	11,200
Number of academic staff	1,750	2,400	485	625
Entry requirements ¹	100	77	72	48
Total annual payroll cost of academic staff	\$109m	\$149m	\$20m	\$37m
Graduate jobs filled each year ²	4,180	6,555	1,154	1,750
Funds received for academic research	\$491m	\$474m	\$26m	\$14m
TSOR survey rating ³	84%	76%	73%	90%
Position in league table ⁴	1	11	14	21

Key to performance data

¹ – Entry requirements represent students' average attainment in examinations prior to entering university. The entry requirement of the highest ranking university is scored as 100, with the score of all other universities being in proportion to that score.

² – The number of graduates each year who go on to further study or who begin jobs normally undertaken by university graduates. In Teeland, students attend university for an average of 3.2 years.

³ – The TSOR (Teeland students overall satisfaction rating) survey is undertaken by the Teeland government to assess students' overall satisfaction with the standard of teaching, the social and support aspects of university life and their optimism for their own future job prospects.

⁴ – The education department of the Teeland government has produced a provisional league table ranking the overall performance of each of the 45 universities in Teeland, with 1 being the highest ranking university. This has been compiled using a number of performance measures, weighted according to what the government believes are the most important of these measures.

Required:

(a) Advise the Teeland government how it could assess the value for money of the universities in Teeland, using the performance data in Appendix A. (12 marks)

(b) Assess the potential benefits of league tables for improving the performance of universities in Teeland and discuss the problems of implementing the proposal to introduce league tables. (13 marks)

(25 marks)

Present Value Table

Present value of 1 i.e. $(1 + r)^{-n}$

Where r = discount rate
 n = number of periods until payment

<i>Discount rate (r)</i>											
<i>Periods</i>											
(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	1
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	2
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	3
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	4
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	5
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	6
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	7
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	8
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	9
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	10
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350	11
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	12
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	13
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	14
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	15
(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	1
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694	2
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579	3
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482	4
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402	5
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335	6
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279	7
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233	8
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194	9
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162	10
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135	11
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112	12
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093	13
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078	14
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065	15

Annuity Table

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

Where r = discount rate
 n = number of periods

		<i>Discount rate (r)</i>									
<i>Periods</i>											
(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	1
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	2
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	3
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	4
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	5
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	6
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	7
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	8
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	9
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	10
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	11
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	12
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103	13
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367	14
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606	15
(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	1
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528	2
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106	3
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589	4
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991	5
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326	6
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605	7
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837	8
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031	9
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192	10
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327	11
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439	12
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533	13
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611	14
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675	15

End of Question Paper