Professional Level – Options Module

Advanced Performance Management

September/December 2017 – Sample Questions

Paper P5

Time allowed: 3 hours 15 minutes

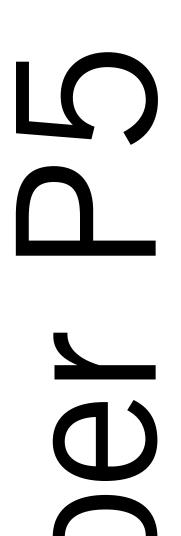This question paper is divided into two sections:

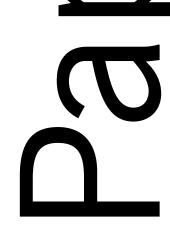Section A – This ONE question is compulsory and MUST be attempted

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.

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

Think Ahead **ACCA**

The Association of Chartered Certified Accountants

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The question paper begins on page 3.

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

1 Thyme Engine Products (Thyme) manufactures jet aircraft engines for the commercial aircraft market. This is a worldwide business although Thyme's production and development are all based in the country of Beeland. Thyme is a listed company and its stated overall objective is to be 'a world-class jet engine manufacturer trusted by our customers to deliver excellent products'. Its promise to its shareholders is that it will maximise their returns. The strategy to achieve this is to use world-class engineering to design engines and high quality production and customer service in order to drive profitable growth.

Thyme's share price has recently suffered as a result of the failure of a new engine design which led to large cash losses and a difficulty in obtaining new financing. There has also been a bribery scandal involving a senior manager and one of its key customers. As a result, a new chief executive officer (CEO) has been employed and she has begun a major review of systems at Thyme.

The first area which the CEO wants to examine is the information given to the board for strategic decision-making in both the planning and controlling of the business. The government of Beeland has been encouraging information sharing between businesses and has recently sponsored awards for management accounting. The winner of the engineering sector has produced a sample dashboard template (with dummy figures) for an annual review and this is given in Appendix 1. The CEO realised that the winner had a very similar overall objective and strategies to Thyme and wants to know what it is about this dashboard that helped it win the award. She does not want a new dashboard for Thyme at this stage but there may be some useful, specific comments to make about the contents of the dashboard given Thyme's recent problems.

The CEO has also recently been reading about integrated reporting and in the light of this review of the dashboard, the CEO has also asked for your views on how integrated reporting might impact on the type of information prepared by the company's management accountants.

As high quality engineering products lie at the heart of Thyme's competitive advantage, there has been a total quality management (TQM) approach to the management of all resources and relationships throughout the business. Thyme currently has a project under consideration to develop a new simple jet engine which would compete in the crowded market for small corporate jets. In order to compete in this market, it is believed that a target costing approach to this new engine would be beneficial. The CEO wants you to calculate the target cost gap for the new engine using the data in Appendix 2. Next, she wants to know how the use of target costing would fit within the existing TQM approach for this new engine.

The new engine project has further raised the profile of quality as a broad issue at Thyme and the CEO wants your advice on the costs associated with quality. She needs to know the cost of each of the four categories of quality costs. She has gathered data in Appendix 3 for this exercise. She is happy that she has identified that prevention costs are complete but is worried that some of the possible costs for the other three categories are missing and needs suggestions of cost areas to be examined to identify these missing items. Finally, she needs advice on the relative importance to Thyme of each of the four categories.

Required:

Write a report to the CEO of Thyme to:

(i) **Evaluate why the dashboard in Appendix 1 was award winning, as requested by the CEO.** (15 marks)

(ii) **Explain broadly the role of the management accountant in providing information for integrated reporting.**
(6 marks)

(iii) **Calculate the target cost gap for the new engine (using the data in Appendix 2) and assess how the use of this target cost will fit within the TQM approach.** (12 marks)

(iv) **Categorise and calculate the costs of quality at Thyme (given in Appendix 3). Suggest cost areas to be examined as required by the CEO, and evaluate the relative importance of each category to Thyme.**
(13 marks)

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

(50 marks)

Appendix 1

Award winning performance dashboard

Report for the year to June 2017

	2015	2016	2017	Budget variance 2017	Growth 2016 to 2017	Budget 2018
Financial						
Revenue ($m)	10,652	11,213	11,500	234F	2·6%	11,776
Operating profit margin	16·2%	16·8%	17·2%	0·2 percentage points F	0·4 percentage points	17·2%
EVA™	746	774	815	48F	5·3%	803
Total shareholder return	6·5%	6·8%	11·1%	4·5 percentage points F	4·3 percentage points	7·5%
Design						
Class leading products in:						
fuel efficiency	3	3	3	0		3
noise levels	2	2	3	1F		3
chemical emissions	1	2	3	1F		3
Manufacturing						
Percentage of orders right first time	92·0%	92·4%	93·7%	0·7 percentage points F		93·0%
Delivery						
Deliveries on time	88·0%	89·9%	88·2%	0·2 percentage points F		88·0%
Market share (as percentage of market leader)	33·0%	35·2%	38·1%	1·1 percentage points F		39·0%

Commentary:

The revenue growth of the business remains strong above the average growth for the sector of 1·5%.

EVA™ is positive and growing indicating increased shareholder wealth.

Healthy and continuing growth in market share reflects an increased number of class-leading products and improvements in 'right on time' service to customers.

There have been no major new business risks arising during the period while market volume growth continues as expected.

4

Appendix 2

New jet engine

		$'000/engine
Competitor price		2,500
Raw materials		200
Subcomponents bought in		600
Skilled labour		625
General labour		125
Production overheads		275
Planned profit margin	15%	

Notes:

1. Design and development has cost $120m and the engine is expected to sell approximately 1,200 units over its lifetime.

2. Sales and marketing costs are expected to be approximately 20% of the selling price.

3. The planned selling price is expected to match the competitor's price with the brand reputation of Thyme providing the competitive edge.

Appendix 3

Quality costs identified in current year

	$m
Repairs and replacements under customer warranties	223
Customer relationship management – complaint handling	56
Performance testing of final assembly	110
Performance testing of subcomponents from suppliers	28
Costs of re-inspection after repairs arising from final assembly testing	95
Training in quality control	11
Maintenance of inspection equipment	36

Notes:

1. The company spent $92m in the year buying higher quality raw materials to use in manufacture.

2. The company's revenue was $11,500m in the current year.

Section B – TWO questions ONLY to be attempted

2   Chicory operates a chain of depots in Deeland, supplying and fitting tyres and other vehicle parts to lorries, buses and agricultural vehicles. Chicory's objective is to maximise shareholder wealth. Due to a slowdown in the Deeland economy, Chicory's recent performance has been weak. An unsuccessful acquisition has also caused cash flow problems and a write-off of goodwill of $24·7m in the year to 30 June 2017.

The board has commissioned a benchmarking exercise to help improve Chicory's performance. This exercise will involve comparison of a range of financial and other operational performance indicators against Fennel, a similar business in Veeland. Fennel has agreed to share some recently available performance data with Chicory as they operate in different countries. The reason Fennel was chosen as a benchmark is that as well as supplying and fitting tyres and parts to heavy vehicles, a large part of Fennel's business involves supplying electricity to charging points to recharge electric cars. Fennel installs and operates the charging points in public places, and users pay Fennel for the electricity they use. The board of Chicory intends to follow a similar business model as the use of electric cars is increasing in Deeland.

The Veeland economy is growing strongly. Electric car use there has increased rapidly in the last two years, encouraged by tax incentives for businesses, like Fennel, to install and operate charging points. The Veeland government has also underwritten loans taken out by businesses to finance this technology, which has enabled Fennel to borrow funds for the significant capital investment required. The cost of components used in the charging points is falling rapidly. Capitalisation of development costs related to this technology is permitted in Veeland, but not in Deeland. In 2015, Fennel invested heavily in IT systems which significantly improved performance by increasing the availability of parts in its depots, and reducing inventories.

Chicory uses return on average capital employed (ROCE) as its main financial performance indicator, and this is to be benchmarked against Fennel. One board member suggested that, though it may have some disadvantages, EBITDA (earnings before interest, tax, depreciation and amortisation) could have advantages as a performance measure over the existing measure, and should also be included in the benchmarking exercise.

You have been given the most recently available financial data for both businesses in Appendix 1, with the data for Fennel being converted into $ from its home currency.

Required:

(a) **Evaluate the relative financial performance of Chicory against Fennel using the two financial performance measures identified in the benchmarking exercise and evaluate their use as performance measures in this situation.**

   (i)   **ROCE.**   (6 marks)

   (ii) **EBITDA.**   (10 marks)

(b) **Advise Chicory on the problems of using the benchmarking exercise with Fennel as a way to improve performance.**   (9 marks)

(25 marks)

Appendix 1

Benchmark data ($)

Extract from statement of financial position

End of year	30 June 17 Chicory	31 December 15 Fennel[1]
Total assets	140·0	296·0
Current liabilities	(81·0)	(120·0)

Beginning of year[1]	Chicory	Fennel
Total assets	138·0	290·0
Current liabilities	(60·0)	(120·0)

Income statement

	30 June 17 Chicory	31 December 15 Fennel
Revenue	175·1	350·0
Cost of sales	(130·1)	(299·0)
Gross profit	45·0	51·0
Administrative expenses	(11·0)	(25·0)
Write off of goodwill	(24·7)	–
Operating profit[2]	9·3	26·0
Interest payable	(1·8)	(8·0)
Profit before tax	7·5	18·0
Tax	(3·0)	(1·0)
Net profit	4·5	17·0

Notes

[1] $6m of new capital was introduced into Fennel on 31 March 2015. Normally, new net investment is spread evenly over the year.

[2] Operating profit is after charging depreciation of non-current assets of $18m in Chicory, and $25m in Fennel.

3 Tosemary and Rhyme Hospital (TRH) is a small hospital for the treatment of patients with only minor injuries. Patients arriving at TRH with more serious injuries are referred to a larger hospital nearby. Those with minor injuries are admitted into TRH and wait to be seen by a doctor. After treatment, most patients leave the hospital and need not return. If their treatment has failed, however, they are re-admitted for additional treatment.

Patients do not have to pay for treatment at TRH, which is a not-for-profit, public sector hospital. It is funded entirely by the government from taxation and a fixed level of funding is received from the government each year. It is up to TRH to allocate its funding to different areas, such as doctors' salaries, medicines and all other costs required to run a hospital.

TRH's objectives are:

– to give prompt access to high quality medical treatment for patients
– to provide value for money for the taxpayer, as measured by the '3Es' framework of economy, efficiency and effectiveness
– to contribute to medical science by developing innovative ways to deliver treatment to patients.

It has been suggested to TRH that the hospital has inadequate performance measurement systems in place to assess whether it is achieving its objectives, and that insufficient attention is given to the importance of non-financial performance indicators. You have been asked for your advice, and have met with some of the doctors to get their opinions.

One senior doctor has told you, 'I think TRH always delivers value for money. We've always achieved our total financial budgets. Doctors here work much longer hours than colleagues in other hospitals, often without being paid for working overtime. There is not enough government funding to recruit more doctors. At busy times, we've started referring more patients arriving at TRH to the larger hospital nearby. This has helped reduce average waiting times. Patients arriving at TRH are now seen by a doctor within 3 hours 50 minutes rather than 4 hours as was previously the case. So, we're already doing all we can. I don't know how much time we spend developing innovative ways to deliver treatment to patients though, as most of the performance data we doctors receive relates to financial targets.'

Recent performance data for TRH and national average information has been provided in Appendix 1. This is indicative of the data which the doctors at TRH receive.

Required:

(a) Explain why non-financial performance indicators are particularly important to measure the performance of not-for-profit organisations such as TRH. (5 marks)

(b) Justify one performance measure for each of the components of the value for money framework used at TRH and, using that measure evaluate whether TRH is delivering value for money. (10 marks)

(c) Evaluate the extent to which the management style at TRH can be said to be budget constrained and advise on the implications of this approach for managing TRH's performance. (10 marks)

(25 marks)

Appendix 1

Data for the year ended 31 August 2017

	TRH	National average[1]
Number of doctors	25	24
Total doctors' salaries including overtime	$3·75m	$4·20m
Total doctors' salaries budget including overtime	$3·75m	$3·20m
Number of patients treated	24,375	20,000
Average staff satisfaction rating[2]	9%	89%
Number of patients re-admitted	1,830	300

Notes

[1] National average for other public sector minor injuries hospitals.

[2] Staff satisfaction rating was obtained by conducting a survey of all 25 doctors. A survey score of 100% represents 'totally satisfied', and a score of 0% represents totally unsatisfied.

4 Sweet Cicely (SC) manufactures sweets and confectionery and has delivered stable but modest increases to the shareholder wealth for many years. Following a change in ownership, the new shareholders are keen to increase the long-term performance of the business and are prepared to accept a high level of risk to achieve this.

SC is considering setting up a factory to manufacture chocolate bars. There are three options (1, 2 and 3) for the size and output capacity of the new chocolate factory. SC must choose a size most suited to the expected demand for its products. As well as the impact of the quality, branding and pricing of its products, demand for SC chocolate bars will be influenced by external factors such as consumer tastes for chocolate over other sweets, and even the suggested health benefits of certain types of chocolate.

A high-cost ingredient in chocolate bars is cocoa, a commodity traded on international markets. The market price of cocoa fluctuates with worldwide demand. Due to economic growth, chocolate consumption is rising in many countries, where it was once considered a luxury. In some countries, however, governments are considering introducing additional taxes on products containing sugar in order to reduce the consumption of chocolate and confectionery products. Being derived from an agricultural crop, the availability and price of cocoa is also influenced by climatic conditions, soil erosion, and disease. Conflicts and political instability in cocoa growing regions can also restrict its availability. Recent technological advances in the production of cocoa, such as the use of genetically modified crops, promise higher yields from cocoa plants in the near future.

You have been asked to help SC choose one of the three options for the new chocolate factory. One board member told you: 'The board proposed expanding into cake manufacturing several years ago. With hindsight, our planning on that proposal was poor. We sold only slightly fewer cakes than expected, but hadn't realised how sensitive our operating profit would be to a small change in demand. The previous shareholders thought problems in the cake business would put their dividends at risk, so SC stopped manufacturing cakes, barely a year after it started. The board does not want to repeat these mistakes. We want to minimise the opportunity cost of making the wrong decision about the size of the new chocolate factory.'

Appendix 1 shows the net present values for the three options discounted at SC's current cost of capital. Appendix 2 shows the expected operating profit generated by the three options in the first year of the project, according to the market price of cocoa, and assuming an annual demand of 70 million chocolate bars.

Required:

(a) Advise SC why decisions, such as what size of chocolate factory to build, must include consideration of risk and uncertainty, and evaluate the use of PEST analysis in managing the risk and uncertainty surrounding the project. (14 marks)

(b) Using the data in Appendix 1, explain which of the three options for the new chocolate factory would be preferred by the board and the new shareholders according to their respective risk appetites. (6 marks)

(c) Using the data in Appendix 2, recommend which of the three options for the new chocolate factory a risk neutral investor would choose, and explain any problems with the approach used to make the choice.
(5 marks)

(25 marks)

Appendix 1

Net present values for the three options discounted at SC's current cost of capital ($m)

	Option 1	Option 2	Option 3
Annual demand for chocolate bars			
50 million	4·0	(8·0)	(32·0)
60 million	6·0	16·0	(24·0)
70 million	6·0	16·0	17·0

Appendix 2

Expected operating profit generated by the three options in the first year of the project, assuming an annual demand of 70 million chocolate bars ($m)

Probability	Market price of cocoa ($ per ton)	Option 1	Option 2	Option 3
0·3	2,500	3·0	5·0	7·0
0·4	3,000	0·5	2·0	1·5
0·3	3,500	(2·0)	(1·0)	(2·0)

[P.T.O.

Present Value Table

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

Where   r = discount rate

           n = number of periods until payment

Discount rate (r)

Periods (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. $\dfrac{1 - (1 + r)^{-n}}{r}$

Where   r = discount rate
            n = number of periods

Discount rate (r)

Periods (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