

Professional Level – Options Module

Advanced Performance Management

September/December 2015



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.

The Association of Chartered Certified Accountants

P5
P
Paper

ACCA

**This is a blank page.
The question paper begins on page 3.**

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

1 Iron Chicken (IC) is a multinational business which manufactures commercial building control systems. Building control systems include heating and air-conditioning systems, lighting controls, power and water monitoring and security systems (e.g. keypad access, alarms and CCTV). IC's manufacturing takes place at a number of factory sites where some products have a long product life and are simple and mass-produced while other products are complex and have a short product life due to changing technologies. IC's mission statement is 'to create value for shareholders through control products which improve productivity, save energy and increase comfort and safety'.

A new chief executive officer (CEO) has been appointed to address a decline in IC's share price in the last three years. This CEO has identified that the business has grown through acquisition and as a result she stated, 'senior management have focused on making corporate deals and not making control systems.' The CEO has declared that the business must focus on optimising its value generation rather than just getting larger through acquisitions.

You are a performance management expert within IC. The CEO has tasked you with aiding her in aspects of her improvement programme. First, she wants your views on the use of EVA™ as the key performance metric at IC. You have been supplied with the current EVA™ calculation (Appendix 1) but there is some doubt about whether the junior management accountant who has done this work was sufficiently trained in the method. So, the CEO needs you to evaluate its accuracy and the assumptions which form part of the calculation.

Second, the CEO believes that the poor performance of the company can be addressed by ensuring that the mission statement flows down into the performance management of the business. To that end, the following critical success factors (CSFs) have been identified and the CEO wants you to suggest additional key performance indicators (KPIs) for these.

CSF	Associated current KPI
1. Greater staff productivity	Units produced per labour hour
2. Reduction of wastage in production	Power consumed per unit produced
3. Greater innovation of products	Number of new products launched

Your suggestions should be in addition to these current KPIs.

Third, in order to improve performance, the CEO plans to implement initiatives associated with 'lean' manufacturing. Specifically, there are three projects which have been suggested and the CEO needs your advice on these:

1. Move to just-in-time manufacturing
2. Use kaizen costing
3. Examine the costs of quality in achieving a 'zero defects' approach to manufacturing

The CEO has stated, 'I need to know briefly how the improvement projects will meet the three CSFs and also how they will impact on the existing three KPIs.'

Finally, the CEO requested, 'You must tell me the implications of the improvement projects for our information systems as I feel that they are not currently suitable for the plan that I have.' The current information systems of the company are based around the functional departments of the business such as manufacturing, marketing, finance and logistics. Each department has developed its own system although all feed into the finance system which is the main one used for strategic decision-making. In order that the department systems can all feed through to the current finance system, these current systems only handle quantitative data. The company is considering the implementation of a new information system. This new system will introduce networking technology in order to bring together all of the departmental systems into a new, single, corporate database.

Required:

Write a report to the CEO of Iron Chicken to:

- (i) Evaluate the accuracy of the EVA™ calculation and the assumptions in Appendix 1. Advise the CEO on your results, providing calculations as needed. (15 marks)**
- (ii) For each of the three critical success factors at IC, briefly explain a weakness of the current KPI associated with that CSF and then provide a justified alternative KPI. (6 marks)**
- (iii) Explain what the three improvement projects are, how they will help to meet the CSFs at IC and comment on the impact of each project on the existing three KPIs. (15 marks)**
- (iv) Assess the impact of the proposed, new information system on the three improvement projects. (10 marks)**

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

(4 marks)

(50 marks)

Appendix 1

Economic value added

Year ended 30 June 2015

	\$m	Note
Operating profit	551.4	
<i>Add back</i>		
Non-cash expenses	15.1	
Marketing capitalised	23.1	5
Operating lease expenses	40.0	
<i>Less</i>		
Tax	134.8	6
Lost tax relief on interest	24.5	7
Net operating profit after tax (NOPAT)	<u>470.3</u>	
Capital employed		
From the statement of financial position	2,401.0	10
Marketing spend capitalised	23.1	5
Operating leases	<u>115.0</u>	8
Adjusted capital employed	2,539.1	

$$\text{WACC} = (1/2 \times 16\%) + (1/2 \times 6.8\%) = 11.4\%$$

$$\text{EVA}^{\text{TM}} = \text{NOPAT} - (\text{WACC} \times \text{Capital employed}) = 181$$

Assumptions and notes:

- 1 Debt/Equity 100.0%
- 2 Cost of equity 16.0%
- 3 Tax rate 30.0%
- 4 Cost of debt (pre-tax) 6.8%
- 5 There has been \$23.1m of marketing spent each year for the last two years in order to build the brand of IC long term.
- 6 Tax paid in the year was \$130m while the tax charged per the accounts was \$134.8m.
- 7 Interest charged in the period was \$81.6m.
Lost tax relief on this interest was 30% x \$81.6m.
- 8 The operating leases have an average life of four years.
- 9 The only research and development spending identified in the last five years was \$10m expensed during this year on a new product.
The product has not been launched yet.
- 10 Capital employed during the period (from the statement of financial position):

Opening	2,282.0
Change in period	<u>119.0</u>
Closing	2,401.0

Section B – TWO questions ONLY to be attempted

- 2 Perkin manufactures electronic components for export worldwide, from factories in Ceeland, for use in smartphones and hand held gaming devices. These two markets are supplied with similar components by two divisions, Phones Division (P) and Gaming Division (G). Each division has its own selling, purchasing, IT and research and development functions, but separate IT systems. Some manufacturing facilities, however, are shared between the two divisions.

Perkin's corporate objective is to maximise shareholder wealth through innovation and continuous technological improvement in its products. The manufacturers of smartphones and gaming devices, who use Perkin's components, update their products frequently and constantly compete with each other to launch models which are technically superior.

Perkin has a well-established incremental budgeting process. Divisional managers forecast sales volumes and costs months in advance of the budget year. These divisional budgets are then scrutinised by the main board, and revised significantly by them in line with targets they have set for the business. The finalised budgets are often approved after the start of the accounting year. Under pressure to deliver consistent returns to institutional shareholders, the board does not tolerate failure by either division to achieve the planned net profit for the year once the budget is approved. Last year's results were poor compared to the annual budget. Divisional managers, who are appraised on the financial performance of their own division, have complained about the length of time that the budgeting process takes and that the performance of their divisions could have been better but was constrained by the budgets which were set for them.

In P Division, managers had failed to anticipate the high popularity of a new smartphone model incorporating a large screen designed for playing games, and had not made the necessary technical modifications to the division's own components. This was due to the high costs of doing so, which had not been budgeted for. Based on the original sales forecast, P Division had already committed to manufacturing large quantities of the existing version of the component and so had to heavily discount these in order to achieve the planned sales volumes.

A critical material in the manufacture of Perkin's products is silver, which is a commodity which changes materially in price according to worldwide supply and demand. During the year supplies of silver were reduced significantly for a short period of time and G Division paid high prices to ensure continued supply. Managers of G Division were unaware that P Division held large inventories of silver which they had purchased when the price was much lower.

Initially, G Division accurately forecasted demand for its components based on the previous years' sales volumes plus the historic annual growth rate of 5%. However, overall sales volumes were much lower than budgeted. This was due to a fire at the factory of their main customer, which was then closed for part of the year. Reacting to this news, managers at G Division took action to reduce costs, including closing one of the three R&D facilities in the division.

However, when the customer's factory reopened, G Division was unwilling to recruit extra staff to cope with increased demand; nor would P Division re-allocate shared manufacturing facilities to them, in case demand increased for its own products later in the year. As a result, Perkin lost the prestigious preferred supplier status from their main customer who was unhappy with G Division's failure to effectively respond to the additional demand. The customer had been forced to purchase a more expensive, though technically superior, component from an alternative manufacturer.

The institutional shareholders' representative, recently appointed to the board, has asked you as a performance management expert for your advice. 'We need to know whether Perkin's budgeting process is appropriate for the business, and how this contributed to last year's poor performance', she said, 'and more importantly, how do we need to change the process to prevent this happening in the future, such as a move to beyond budgeting.'

Required:

- (a) Evaluate the weaknesses in Perkin's current budgeting system and whether it is suitable for the environment in which Perkin operates. (13 marks)
- (b) Evaluate the impact on Perkin of moving to beyond budgeting. (12 marks)

(25 marks)

**This is a blank page.
Question 3 begins on page 8.**

3 Posie is a large business which manufactures furniture. It is made up of two autonomous divisions in Deeland. The manufacturing division purchases raw materials from external suppliers, and performs all manufacturing and packaging operations. All sales are made through the retail division which has 95 retail stores in Deeland, as well as through Posie's own well-developed website. Posie has retail operations in eight other countries as well as in Deeland. These overseas businesses operate as independent subsidiaries within the Retail Division, each with their own IT and accounting functions.

The furniture is sold in boxes for customers to assemble themselves. About 10% of the products sold by Posie are purchased already packaged from other manufacturers. All deliveries are outsourced through a third party distribution company.

Posie's corporate objective is to maximise shareholder wealth by producing 'attractive, functional furniture at low prices'. This is how customers generally perceive the Posie brand. The CEO of Posie is concerned about increasing levels of returns made by customers and increasing numbers of consumers complaining on online forums about products purchased from Posie.

Concerned about the impact on the Posie brand and the cost-leadership strategy, the CEO has asked you as a performance management expert to help Posie implement the six sigma technique to reduce the number of products returned and in particular to define customers' requirements and measure Posie's existing performance. The production director has been appointed to sponsor the project and you will be supported by a small team of managers who have recently received training in six sigma. The board member responsible for manufacturing quality recently resigned because she thought it was unfair that the manufacturing division was being held responsible for the increased level of customer returns.

You have been given access to some information concerning the reasons why customers return goods to help you measure existing performance in this area (Appendix 1). This is an extract from the management reporting pack presented to the board at their monthly meetings. The returns data, however, are only compiled every six months due to the lengthy analysis required of data from Posie's overseas retail operations. It is included twice a year in the board report along with the KPIs for customer satisfaction. The last time this information was produced 93% of customers indicated they were satisfied with the quality of the manufacture of Posie's products.

The CEO has heard that six sigma requires 'large amounts of facts and data'. He suggested that the returns data contain insufficient detail and that as part of your project you may need to do more analysis, for example, on why customers are not satisfied with the manufacturing quality.

He also added, 'I'm not sure that our current IT systems are capable of generating the data we need to identify which responsibility centres within the manufacturing division are the root causes of the problem of customer returns. We are planning to change the designation of the overseas retail businesses from profit centres to revenue centres, but again we need to know first how this will affect the information requirements of the business and any potential problems with doing so.'

Appendix 1

Reasons given by customers for returning goods

Category	Reason for return of goods	% Responses
1	Difficult to assemble or pieces missing	48%
2	Goods arrived damaged	14%
3	Goods were not as described or were defective	25%
4	Goods were of poor quality or no longer wanted	11%
5	Arrived late	2%
Total		100%

Required:

- (a) Advise the board how the six sigma project at Posie to reduce returns from customers could be implemented using DMAIC methodology. (15 marks)
- (b) Evaluate the impact on Posie's information requirements arising from:
- (i) The need to identify and improve on the level of customer returns. (6 marks)
 - (ii) The proposed re-designation of the overseas subsidiaries from profit centres to revenue centres. (4 marks)
- (25 marks)**

4 Soup operates passenger rail services in Deeland, a technologically advanced country, with high demand for fast reliable rail travel from business and leisure passengers. Many passengers choose train travel because they see it as less harmful to the environment than other forms of transport.

Soup's main objective is to maximise shareholder wealth. Since becoming licensed to operate routes in Regions A and B by the Deeland government five years ago, Soup has consistently delivered increased dividends and share prices for investors. In its initial appraisal of the licensing opportunity, Soup expected to operate the routes for at least 15 years, however, their licence may not be renewed when it expires in three years' time. The government has warned Soup it 'is unhappy about high returns to shareholders while there are many reports of poor passenger service, overcrowded trains and unreliable services on certain routes and at busy times'.

Soup owns its fleet of diesel powered trains. Each train in Region A has seven coaches with 70 passenger seats available per coach. In the less busy Region B, each train has six coaches each with 70 seats. As a condition of the licence, Soup runs a set number of services at both busy and quieter times in both regions. Soup has two larger rivals, both operating electric trains, which cause less harm to the environment than diesel powered trains. They run on the same routes in both regions.

The government regulates fares charged to passengers, which are the same per distance travelled for every operator in that region. The railway track, stations and other infrastructure are managed by the government which charges the operators a fee. There are several stations along the route which are only used by Soup trains and others where Soup trains do not stop at all.

Soup's trains are 25 years old, originally purchased cheaply from an operator whose licence was withdrawn by the government. Soup believes the low price it paid is a key competitive advantage enabling them to steadily increase their return on capital employed, the company's main performance measure, to a level well in excess of their rivals. The shareholders are pleased with the growth in passenger numbers over the last five years, which is the other performance measure Soup uses.

Soup's ageing trains spend increasing time undergoing preventative maintenance, safety checks or repairs. A recent television documentary also showed apparently poor conditions on board, such as defective heating and washroom facilities and dirty, torn seating. Passengers complained in the programme of difficulties finding a seat, the unreliability of accessing wireless internet services and even that the menu in the on-board cafe had not changed for five years.

Soup's CEO responded that unreliable internet access arose from the rapid growth in passengers expecting to access the internet on trains. She said Soup had never received any formal complaints about the lack of choice in the on-board cafe, nor had she heard of a recent press report that Soup's trains were badly maintained, so causing harm to the environment.

The CEO has asked you, as chief management accountant, for your advice. 'In view of the government's warning, we must develop performance measures balancing the needs of passengers with the requirements of the shareholders', she has said. 'I don't want to know how to improve the actual performance of the business; that is the job of the operational managers, nor do I just want a list of suggested performance measures. Instead I need to know why these performance measures will help to improve the performance of Soup.'

The following data applies to Soup:

	Region A	Region B
Number of services per day		
Peak times	4	4
Other times	6	8
Number of passengers per day		
Peak times	2,500	1,400
Other times	2,450	1,850

Required:

- (a) Advise the CEO on how the use of the balanced scorecard could improve the performance management system of Soup. (10 marks)
- (b) Using the performance data given, evaluate the comments of the Deeland government that Soups trains are overcrowded. (7 marks)
- (c) Assess the problems Soup may encounter in selecting and interpreting performance measures when applying the balanced scorecard to its performance management system. (8 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

Periods (n)	Discount rate (r)										
	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