Professional Level – Options Module

Advanced Performance Management

Thursday 6 December 2012

Time allowed
Reading and planning: 15 minutes
Writing: 3 hours

This paper is divided into two sections:

Section A – BOTH questions are compulsory and MUST be attempted

Section B – TWO questions ONLY to be attempted

Present Value and Annuity Tables are on pages 13 and 14.

Do NOT open this 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

Paper P5

ACCA

Section A – BOTH questions are compulsory and MUST be attempted

1 Lincoln & Lincoln Advertising (LLA) is an advertising agency based in Veeland, which is a large well-developed country considered to be one of the wealthiest in the world. LLA operates out of three regional offices (North, East and West) with its head office functions based in the East offices. The business offers a wide range of advertising services:

Strategic: Advising on an overall advertising campaign (mix of advertising channels and overall themes);

Buying: Advising and buying advertising space (on television, radio, websites and in newspapers and magazines); and

Creative: Designing and producing specific adverts for the customers' use.

The company is one of the three largest agencies in Veeland with many years of experience and many awards won. Competition in advertising is fierce, as advertising spending by businesses has suffered recently during a general economic downturn. Most new business is won in tender competitions between different advertising agencies.

Veeland is a large country with considerable diversity of markets, economic conditions and fashions across its regions. As a result, the regional offices have developed with a considerable amount of decision-making autonomy. This also reflects the temperament of the key creative employees of the firm who have a strong attachment to their campaign ideas and take great personal pride in their success. The individualism of the key employees also comes from the way that LLA has grown. The business has been built through acquisition of small, local businesses in each of the three regions. Each of these acquisitions has been consolidated into the appropriate regional office.

You have been recruited in to LLA in order to take up the newly created post of senior management accountant. Your recruitment caused some concern amongst the board but was championed by the chief executive officer (CEO) as 'necessary to stay ahead of the game'. The board have asked that you prove yourself and also give a fresh perspective on LLA by providing them with a report. Initially, you have been asked to provide an assessment of the current financial position of the three regional offices. The most recent management accounts are in Appendix 1. The basic assessment calculations have already been accurately completed by one of the junior staff and the results are in Appendix 2.

As part of the briefing for this exercise, you attended part of a recent board meeting where you were told that the board want your views on the choice of net income as the performance measure for each of the regional offices. They want you to suggest other measures and why they are appropriate for each office. The CEO has advised you that you may want to use different key measures for each office, rather than have a 'one-size fits all policy'. During the board's discussion, issues around controllability and responsibility accounting appear to be the main concerns of the board. The CEO also stated that the board would not be interested in a long list of which numbers have gone up and which have gone down. They will want to be given a coherent picture of what is going on at each of the regional offices.

Finally, the CEO said, 'Well, if you are not completely tired out at the end of this little project then I'd also like you to comment on our remuneration policy at the regional offices including ideas based on your assessment of performance measures.' Later, the CEO gave you a note (see Appendix 3) describing these policies at LLA.

Required:

Write the report to the board of LLA to:

(i) Assess the recent performance of the three regional offices by interpreting the data given in Appendices 1 and 2. (10 marks)

(ii) Evaluate the choice of net income as the performance measure for the regional offices and suggest other measures and why they are appropriate for each office. (10 marks)

(iii) Using the information provided, evaluate LLA's remuneration policy suggesting changes as appropriate. (10 marks)

Professional marks will be awarded in question 1 for the format, style, structure and clarity of the discussion of your answer. (4 marks)

Note: the Appendices follow on the next two pages.

(34 marks)

Appendix 1: LLA financial data

The figures are drawn from the regional offices' management accounts for year to September 2012.

	North $m	East $m	West $m
Revenue	151	523	467
Cost of sales	45	147	159
Staff costs	53	194	145
Other costs	27	86	67
Operating profit	26	96	96
Allocated head office costs	6	31	16
Net income	20	65	80
Net cash flow in year	24	86	46
Current assets	22	82	119
Current liabilities	10	35	31
Capital expenditure	3	10·2	23·8
Capital employed	39	121	112

Notes:

1. East office data is for the regional office only. It excludes any costs of the head office function based there other than the allocated costs listed.
2. Notional cost of capital at LLA is 9%.
3. Current assets contains only accounts receivable for each office.

Appendix 2: Basic calculations

[These can be assumed to be calculated correctly.]

		Change on year			Margins	
		Sep-12	Sep-11	Sep-12	Sep-11	Sep-10
Revenue						
	North	–1·9%	–1·3%			
	East	1·0%	1·0%			
	West	8·9%	8·1%			
Cost of sales						
	North			29·8%	29·9%	30·1%
	East			28·1%	29·0%	30·0%
	West			34·0%	31·9%	30·0%
Staff costs						
	North			35·1%	35·1%	35·3%
	East			37·1%	37·1%	37·0%
	West			31·0%	31·0%	31·0%
Operating profit						
	North	–7·1%	0·0%	17·2%	18·2%	17·9%
	East	7·9%	8·5%	18·4%	17·2%	16·0%
	West	5·5%	4·6%	20·6%	21·2%	21·9%
Net Income						
	North	–4·8%	–4·5%	13·2%	13·6%	14·1%
	East	12·1%	13·7%	12·4%	11·2%	9·9%
	West	6·7%	5·6%	17·1%	17·5%	17·9%

Notes

1. Other costs and allocated head office costs are fixed.
2. Margins are calculated as a percentage of revenue.

		Sep-12	Sep-11	Sep-10
Current ratio				
	North	2·2	2·3	2·1
	East	2·3	2·3	2·4
	West	3·8	2·9	2·4
Receivable days				
	North	53	55	54
	East	57	58	59
	West	93	68	55
ROCE	based on operating profit			
	North	67%	88%	117%
	East	79%	90%	103%
	West	86%	106%	140%
	based on net income			
	North	51%	66%	92%
	East	54%	59%	64%
	West	71%	87%	115%
Residual income	based on operating profit			
($m's)	North	22·5	25·1	25·8
	East	85·1	80·1	74·8
	West	85·9	83·3	81·4
	based on net income			
	North	16·5	18·1	19·8
	East	54·1	49·1	43·8
	West	69·9	67·3	65·4

Appendix 3: Note on remuneration from the CEO:

There are broadly five grades of staff at each regional office. The following is an outline of their remuneration packages. (The head office staff are treated separately and are not part of this exercise.)

Senior management
All staff at this level are paid a basic fixed salary, which reflects industry norms over the last few years, plus a bonus dependent on the net income of their office.

Creative staff
The 'creatives' are on individual packages which reflect the market rates in order to recruit them at the time that they were recruited. Some are fixed salary and some have a fixed element plus a bonus based on their office's revenues.

Buying staff
The buyers are paid a fixed salary plus a bonus based on the prices for advertising space that they negotiate compared to the budgeted cost of space. The budget is set by the finance team at head office based on previous years' experience and their forecast for supply and demand in the year in question.

Account management staff
Account management handles relationships with clients and also develops new clients. They are paid a fixed market-based salary.

Administration staff
These staff are paid the market rate for their jobs as a fixed salary based on hours worked.

2 The Drinks Group (DG) has been created over the last three years by merging three medium-sized family businesses. These businesses are all involved in making fruit drinks. Fizzy (F) makes and bottles healthy, fruit-based sparkling drinks. Still (S) makes and bottles fruit-flavoured non-sparkling drinks and Healthy (H) buys fruit and squeezes it to make basic fruit juices. The three companies have been divisionalised within the group structure. A fourth division called Marketing (M) exists to market the products of the other divisions to various large retail chains. Marketing has only recently been set up in order to help the business expand. All of the operations and sales of DG occur in Nordland, which is an economically well-developed country with a strong market for healthy non-alcoholic drinks.

The group has recruited a new finance director (FD), who was asked by the board to perform a review of the efficiency and effectiveness of the finance department as her first task on taking office. The finance director has just presented her report to the board regarding some problems at DG.

Extract from finance director's Report to the Board:

'The main area for improvement, which was discussed at the last board meeting, is the need to improve profit margins throughout the business. There is no strong evidence that new products or markets are required but that the most promising area for improvement lies in better internal control practices.

Control

As DG was formed from an integration of the original businesses (F, S, H), there was little immediate effort put into optimising the control systems of these businesses. They have each evolved over time in their own way. Currently, the main method of central control that can be used to drive profit margin improvement is the budget system in each business. The budgeting method used is to take the previous year's figures and simply increment them by estimates of growth in the market that will occur over the next year. These growth estimates are obtained through a discussion between the financial managers at group level and the relevant divisional managers. The management at each division are then given these budgets by head office and their personal targets are set around achieving the relevant budget numbers.

Divisions

H and S divisions are in stable markets where the levels of demand and competition mean that sales growth is unlikely, unless by acquisition of another brand. The main engine for prospective profit growth in these divisions is through margin improvements. The managers at these divisions have been successful in previous years and generally keep to the agreed budgets. As a result, they are usually not comfortable with changing existing practices.

F is faster growing and seen as the star of the Group. However, the Group has been receiving complaints from customers about late deliveries and poor quality control of the F products. The F managers have explained that they are working hard within the budget and capital constraints imposed by the board and have expressed a desire to be less controlled.

The marketing division has only recently been set up and the intention is to run each marketing campaign as an individual project which would be charged to the division whose products are benefiting from the campaign. The managers of the manufacturing divisions are very doubtful of the value of M, as each believes that they have an existing strong reputation with their customers that does not require much additional spending on marketing. However, the board decided at the last meeting that there was scope to create and use a marketing budget effectively at DG, if its costs were carefully controlled. Similar to the other divisions, the marketing division budgets are set by taking the previous year's actual spend and adding a percentage increase. For M, the increase corresponds to the previous year's growth in group turnover.'

End of extract

At present, the finance director is harassed by the introduction of a new information system within the finance department which is straining the resources of the department. However, she needs to respond to the issues raised above at the board meeting and so is considering using different budgeting methods at DG. She has asked you, the management accountant at the Group, to do some preliminary work to help her decide whether and how to change the budget methods. The first task that she believes would be useful is to consider the use of rolling budgets. She thinks that fast-growing F may prove the easiest division in which to introduce new ideas.

F's incremental budget for the current year is given below. You can assume that cost of sales and distribution costs are variable and administrative costs are fixed.

	Q1	Q2	Q3	Q4	Total
	$'000	$'000	$'000	$'000	$'000
Revenue	17,520	17,958	18,407	18,867	72,752
Cost of sales	9,636	9,877	10,124	10,377	40,014
Gross profit	7,884	8,081	8,283	8,490	32,738
Distribution costs	1,577	1,616	1,657	1,698	6,548
Administration costs	4,214	4,214	4,214	4,214	16,856
Operating profit	2,093	2,251	2,412	2,578	9,334

The actual figures for quarter 1 (which has just completed) are:

	$'000
Revenue	17,932
Cost of sales	9,863
Gross profit	8,069
Distribution costs	1,614
Administration costs	4,214
Operating profit	2,241

On the basis of the Q1 results, sales volume growth of 3% per quarter is now expected.

The finance director has also heard you talking about bottom-up budgeting and wants you to evaluate its use at DG.

Required:

(a) Evaluate the suitability of incremental budgeting at each division. (8 marks)

(b) Recalculate the budget for Fizzy division (F) using rolling budgeting and assess the use of rolling budgeting at F. (8 marks)

(c) Recommend any appropriate changes to the budgeting method at the Marketing division (M), providing justifications for your choice. (4 marks)

(d) Analyse and recommend the appropriate level of participation in budgeting at Drinks Group (DG). (6 marks)

(26 marks)

Section B – TWO questions ONLY to be attempted

3 Stillwater Services (SS) is a listed water utility company providing water and sewage services to the public and businesses of a region of Teeland. The company was formed when the government-owned Public Water Company of Teeland was broken up into regional utility companies (one of which was SS) and sold into private ownership over four years ago.

As a vital utility for the economy of Teeland, water services are a government-regulated industry. The regulator is principally concerned that SS does not abuse its monopoly position in the regional market to unjustifiably increase prices. The majority of services (80%) are controlled by the regulator who sets an acceptable return on capital employed (ROCE) level and ensures that the pricing of SS within these areas does not breach this level. The remaining services, such as a bottled water operation and a contract repairs service, are unregulated and SS can charge a market rate for these. The regulator calculates its ROCE figure based on its own valuation of the capital assets being used in regulated services and the operating profit from those regulated services.

The target pre-tax ROCE set by the regulator is 6%. If SS were to breach this figure, then the regulator could fine the company. In the past, other such companies have seen fines amounting to millions of dollars.

The board of SS are trying to drive the performance for the benefit of the shareholders. This is a new experience for many at SS, having been in the public sector until four years ago. In order to try to better communicate the objective of maximising shareholder wealth, the board have decided to introduce economic value added (EVA™) as the key performance indicator.

The finance director has asked you to calculate EVA™ for the company, based on the following financial information for the year ending 30 September 2012:

Stillwater Services

	Regulated $m	Non-regulated $m	2012 Total $m
Revenue	276·0	69·0	345·0
Operating costs	230·0	47·0	277·0
Operating profit	46·0	22·0	68·0
Finance charges			23·0
Profit before tax			45·0
Tax at 25%			9·5
Profit after tax			35·5

Capital employed:	2012 $m	2011 $m
Measured from published accounts	657·0	637·0
Measured by regulator (for regulated services only)	779·0	761·0

Notes:

1. Total operating costs include

	2012 $m	2011 $m
Depreciation	59	57
Provision for doubtful debts	2	0·5
Research and development	12	–
Other non-cash items	7	6

2. Economic depreciation is assessed to be $83m in 2012.

   Economic depreciation includes any appropriate amortisation adjustments.

   In previous years, it can be assumed that economic and accounting depreciation were the same.

3. Tax is the cash paid in the current year ($9m) and an adjustment of $0·5m for deferred tax provisions. There was no deferred tax balance prior to 2012.

4. The provision for doubtful debts was $4·5m on the 2012 statement of financial position.

5. Research and development is not capitalised in the accounts.

   It relates to a new project that will be developed over five years and is expected to be of long-term benefit to the company. 2012 is the first year of this project.

6. Cost of capital of SS

	Equity	16%
	Debt (pre-tax)	5%

7. Gearing of SS

Gearing of SS	40% Equity
	60% Debt

Required:

(a) Evaluate the performance of SS using EVA™. (13 marks)

(b) Assess whether SS meets its regulatory ROCE target and comment on the impact of such a constraint on performance management at SS. (7 marks)

(20 marks)

4 Coal Creek Nursing Homes (CCNH) is a company operating residential care homes for the elderly in Geeland. Residents are those elderly people who can no longer care for themselves at home and whose family are unable to look after them. There are 784 homes with about 30,000 residents under the care of the company. There are about 42,500 staff, who range from head office staff through the home managers to the care staff and cleaners and caterers. The company is a private company which aims to make a suitable return to its shareholders. It had revenues of $938m in the last year and is one of the largest providers of residential care places in Geeland.

The company is split into two divisions: General Care (GC) which handles ordinary elderly residents and Special Care (SC), which is a newer operation that handles residents who need intensive care and attention due to physical or mental ailments.

The company does not own its homes but rents these from a number of large commercial landlords. It has taken on a large number of new homes recently in order to cope with the expansion of SC, which has proved successful with 24% pa revenue growth over the last two years. GC is a mature business with little growth in a sector that is now fully supplied. GC has seen volumes and margins falling as price pressure comes from its main customers (public sector health organisations who contract out this part of their care provision).

A new chief executive officer (CEO) has just taken over at CCNH. She was appointed because the board of CCNH believed that the company was in difficulty. The previous CEO had been forced to leave following a scandal involving a number of the homes where residents' money had gone missing and their families had called in the police. The finance director and the operations director had also resigned, leaving the company without any experienced senior management.

The board have tasked the new CEO with ascertaining the current position of the business and identifying a strategy to address the issues that arise. The CEO wants to address the strategy, deciding whether to divest or retain elements of the business.

The CEO has come to you, as the most senior member of finance staff, for assistance with this task. The first area that she wants help on is the problem that the business is having with its landlords. The company struggled to meet its most recent rental payment, which the bank eventually agreed to cover through an increase to the overdraft, as CCNH had no ready cash. She is upset that the chosen strategic measures of performance (earnings per share growth and operating profit margin) did not identify the difficulties that the firm is now facing. One of the other directors had mentioned gearing problems but she did not follow what this meant.

Also, she has heard of qualitative models for predicting corporate failure and wants to apply one at CCNH. Obviously, she wants to know if CCNH exhibits any symptoms of failure.

You have been given the outline financial statements to help with this task (see Appendix on the next page).

Required:

(a) Discuss why indicators of liquidity and gearing need to be considered in conjunction with profitability at CCNH. Illustrate your answer with suitable calculations. (11 marks)

(b) Explain one qualitative model for predicting corporate failure (such as Argenti) and comment on CCNH's position utilising this model. You are not expected to give scores, only to comment on the areas of weakness at CCNH. (9 marks)

(20 marks)

Appendix:

Outline financial statements for CCNH for the year just ended

Summary Income Statements

		General Care $m	Special Care $m	Total $m
Revenue		685	253	938
Operating costs				
Homes	payroll	397	139	536
	running	86	24	110
Rents		193	64	257
Central costs		27	3	30
Operating profit		(18)	23	5
Interest				5
Profit before tax				0
Tax				0
Profit for the period				0

Statement of Financial Position

	General Care $m	Special Care $m	Total $m
Assets			
Non-current assets	244	87	331
Current assets	17	47	64
Total assets	261	134	395
Equity and Liabilities			
Share capital			165
Retained earnings reserve			24
Long-term borrowings			102
Current liabilities	76	28	104
Total equity and liabilities			395

Note: A breakdown of the long-term financing into the two divisions has not been possible.

5 Herman Swan & Co (HS) is a family-owned company that has made fashionable clothes and leather goods for men for over 100 years. The company has been successful in building a strong reputation for quality by sourcing from local textile and leather producers. It sells its goods across the world through a chain of owned shops and also franchised stalls inside large, well-known stores. The company is still owned and run by the family with no other shareholders. The main goal of the firm is to organically grow the business for the next generation of the Swan family.

Customers are attracted to HS products due to the history and the family story that goes behind the products. They are willing to pay the high prices demanded as they identify with the values of the firm, especially the high quality of manufacturing.

The competition for HS has been increasing for more than ten years. It is made up of other global luxury brands and also the rising national champions in some of the rapidly expanding developing countries. The competitors often try to leverage their brands into many different product types. However, the Swan family have stated their desire to focus on the menswear market after an unsuccessful purchase of a handbag manufacturer five years ago.

The company is divided into a number of strategic business units (SBU). Each production site is an SBU, while the whole retail operation is one SBU. The head office previously functioned as a centre for procurement, finance and other support activities. The company has recently invested in a new management information system (MIS) that has increased the data available to all managers in the business. This has led to much of the procurement shifting to the production SBUs and the SBU managers taking more responsibility for budgeting. The SBU managers are delighted with their increased responsibilities and with the results from the new information system but feel there is still room for improvement in its use. The system has assisted in a project of flattening the organisation hierarchy by cutting out several layers of head office management.

You are the management accountant at HS and have been trying to persuade your boss, the finance director, that your role should change. You have read about Burns and Scapens' report 'Accounting Change Project' and think that it suggests an interesting change from your current roles of preparing and reviewing budgets and overseeing the production of management and financial accounts. Your boss is sceptical but is willing to listen to your arguments. He has asked you to submit an explanation of the change that you propose and why it is necessary at HS.

Also, your boss has asked you for an example of how your role as an 'internal consultant' would be valuable at HS by looking at the ideas of brand loyalty and awareness. You should consider their impact on performance management at HS, both from the customer and the internal business process perspectives and how to measure them.

Required:

(a) Describe the changes in the role of the management accountant based on Burns and Scapens work. Explain what is driving these changes and justify why they are appropriate to HS. (12 marks)

(b) Using HS as an example, discuss the impact of brand loyalty and awareness on the business both from the customer and the internal business process perspectives and evaluate suitable measures for brand loyalty and awareness. (8 marks)

(20 marks)

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