



CIMA Professional
Gateway Assessment (CPGA)

25 May 2010 – Tuesday Afternoon Session

Instructions to candidates

You are allowed three hours to answer this question paper.
You are allowed 20 minutes reading time before the examination begins during which you should read the question paper and, if you wish, highlight and/or make notes on the question paper. However, you are not allowed, under any circumstances , to open the answer book and start writing or use your calculator during this reading time.
You are strongly advised to carefully read ALL the question requirements before attempting the question concerned (that is, all parts and/or sub-questions). The question requirements for Section A are highlighted in a dotted box.
ALL answers must be written in the answer book. Answers or notes written on the question paper will not be submitted for marking.
You should show all workings as marks are available for the method you use.
ALL QUESTIONS ARE COMPULSORY.
Section A comprises three questions on pages 2 to 7.
Section B comprises one question containing 12 objective test sub-questions on pages 8 to 12.
Maths tables are provided on pages 13 to 15. These are detachable for ease of reference.
The list of verbs as published in the syllabus is given for reference on page 19.
Write your candidate number, the paper number and the examination subject title in the spaces provided on the front of the examination answer book. Also write your contact ID and name in the space provided in the right hand margin and seal to close.
Tick the appropriate boxes on the front of the answer book to indicate which questions you have answered.

G1 - CIMA Professional Gateway Assessment

TURN OVER

SECTION A – 75 MARKS
ANSWER ALL THREE QUESTIONS

Question One

GM Ltd makes a variety of garden storage units and has one very popular model, 'the urban', which it sells to two large Do-it-Yourself (DIY) supermarkets (A and B respectively) and to a third privately owned firm with a number of smaller garden centre shops. The garden storage units are sold to customers at \$200 each (before discounts) and the standard cost of production is \$100 per unit. Of the \$100 cost, 40% is fixed overhead.

The Chief Executive Officer of GM Ltd is concerned about the real profitability of each group of customers. He asks the Chief Finance Officer to undertake a customer profitability analysis and calculate and compare the profit margin per customer (using ABC and before deducting fixed overhead) with the traditional contribution margin per customer.

The following additional overhead information is provided:

- Delivery costs vary but on average cost \$5 per kilometre.
- If a customer's inventory runs low then emergency delivery costs amount to \$600 per delivery and are incurred in addition to the cost related to delivery distances.
- Order taking costs are \$100 per order.
- Customers are entitled to specific discounts and sales commissions as agreed with them individually.
- Publicity costs are determined and agreed with each customer with regard to the support they required for each customer's individual marketing strategy. These costs are paid for by GM Ltd as part of the contract.

Additional customer data for the latest period:

	DIY - A	DIY - B	Small garden centre shops
Sales (in units)	1,000	500	400
Delivery kilometres travelled	1,000	500	850
Number of emergency deliveries	2	0	0
Number of orders taken	5	4	10
Discounts (percentage of sales revenue)	20%	15%	10%
Sales team overheads (percentage of sales revenue)	10%	10%	5%
Publicity costs	\$25,000	\$20,000	\$15,000

The requirement for Question One is on the opposite page

Required:

- (a) Using customer based profitability analysis, evaluate each of GM Ltd's three customers. Advise GM Ltd, with reasons, which customer is the most profitable.
(8 marks)
- (b) Discuss the key factors that should be considered when deciding whether or not to discontinue supplying a customer who is contributing relatively little profit in comparison with other customers of GM Ltd.
(5 marks)
- (c) GM Ltd is interested in the introduction of Just-in-Time (JIT). Advise GM Ltd on the advantages and disadvantages that could result from using this method.
(6 marks)
- (d) There is the possibility of introducing a new product, plastic moulded garden units, into GM Ltd's range and producing them in the existing factory. Explain how target and life cycle costing may be relevant to the management team in making this decision to adopt the new product to improve profitability.
(6 marks)
- (Total for Question One = 25 marks)*

Section A continues on the next page

Question Two

The main agenda item at the meeting of the Executive Board of PT Hospital is to discuss the new pay and reward system. The hospital needs to make changes to the existing pay systems to respond to government requirements to reform reward systems as part of its pay modernisation agenda. The aim is to harmonise the payments system for different categories of workers in the hospital on to one pay scale. This will mean that there is one pay scale for all employees of the hospital including nurses, physiotherapists, radiographers, technicians and ancillary staff (i.e. cleaners, porters and kitchen staff). The rationale for the new system is to achieve greater flexibility, to assist in recruitment and retention of staff and to reward people for their contribution to the achievement of hospital targets.

The hospital has 12 months in which to design and implement the new system in order to meet the government target of May 2011. There is a huge amount of work that will need to be undertaken to deliver the new system and a number of different stakeholders to satisfy.

At the meeting of the Board there was some discussion concerning who should be responsible for undertaking all tasks and activities associated with the development of the new system. The Human Resource (HR) Director who sits on the Executive Board proposed that a project manager should be appointed and a project team set up. Whilst he would expect some members of his HR team to be part of the project team, he is adamant that, although his staff are responsible for administering the current payroll system and dealing with staff enquiries about pay and rewards, designing a new pay system should not form part of the 'business as usual' work for the HR Department.

Required:

- (a) Describe the ways in which the proposed project in PT Hospital differs from 'business as usual' work. *(10 marks)*
- (b) Explain the different stages that would be involved in the project management process to design and implement the new pay and reward system for PT Hospital. *(15 marks)*

(Total for Question Two = 25 marks)

Section A continues on page 6

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Question Three

Extracts from the consolidated financial statements of the BX Group for the year ended 30 June 2009 are given below:

BX Group: Consolidated income statement for the year ended 30 June 2009

	2009 \$000
Revenue	85,000
Cost of sales	<u>(59,750)</u>
Gross profit	25,250
Operating expenses	<u>(5,650)</u>
Profit from operations	19,600
Profit on disposal of property (<i>note 2</i>)	<u>1,250</u>
Profit before interest and tax	20,850
Finance cost	<u>(1,400)</u>
Profit before tax	19,450
Income tax expense	<u>(6,250)</u>
Profit for the year	13,200
Attributable to:	\$000
Non-controlling interest	655
Equity shareholders of group	<u>12,545</u>
	<u>13,200</u>

BX Group: Extracts from statements of changes in equity for the year ended 30 June 2009

	Share capital	Share premium	Consolidated revenue reserves
	\$000	\$000	\$000
Opening balance	18,000	10,000	18,340
Issue of share capital	2,000	2,000	
Profit for the year			12,545
Dividends			<u>(6,000)</u>
Closing balance	<u>20,000</u>	<u>12,000</u>	<u>24,885</u>

BX Group: Balance sheet, with comparatives, at 30 June 2009

	2009		2008	
	\$000	\$000	\$000	\$000
ASSETS				
Non-current assets				
Property, plant and equipment	50,600		44,050	
Intangible assets (<i>note 3</i>)	<u>6,410</u>		<u>4,160</u>	
		57,010		48,210
Current assets				
Inventories	33,500		28,750	
Trade receivables	27,130		26,300	
Cash and cash equivalents	<u>1,870</u>		3,900	
		<u>62,500</u>		<u>58,950</u>
		<u>119,510</u>		<u>107,160</u>
EQUITY AND LIABILITIES				
Equity				
Share capital	20,000		18,000	
Share premium	12,000		10,000	
Consolidated revenue reserves	<u>24,885</u>		<u>18,340</u>	
		56,885		46,340
Non-controlling interest		3,625		1,920
Non-current liabilities				
Interest bearing borrowings		18,200		19,200

Current liabilities

Trade payables	33,340		32,810
Interest payable	1,360		1,440
Current tax payable	<u>6,100</u>		<u>5,450</u>
		<u>40,800</u>	<u>39,700</u>
		<u>119,510</u>	<u>107,160</u>

Notes:

1. Several years ago, BX acquired 80% of the issued ordinary shares of its subsidiary, TZ. On 1 January 2009, BX acquired 75% of the issued ordinary shares of CM in exchange for a fresh issue of 2 million of its own \$1 ordinary shares (issued at a premium of \$1 each) and \$2 million in cash. The net assets of CM at the date of acquisition were assessed as having the following fair values:

	<i>\$000</i>
Property, plant and equipment	4,200
Inventories	1,650
Trade receivables	1,300
Cash and cash equivalents	50
Trade payables	(1,950)
Current tax payable	<u>(250)</u>
	<u>5,000</u>

2. During the year, BX disposed of a non-current asset of property for proceeds of \$2,250,000. The carrying value of the asset at the date of disposal was \$1,000,000. There were no other disposals of non-current assets. Depreciation of \$7,950,000 was charged against consolidated profits for the year.
3. Intangible assets comprise goodwill on acquisition of TZ and CM (2008: TZ only). Goodwill has remained unimpaired since acquisition.

Required:

Prepare the consolidated cash flow statement of the BX Group for the financial year ended 30 June 2009 in the form required by IAS 7 *Statement of cash flows*, and using the indirect method. Notes to the cash flow statement are NOT required, but full workings should be shown.

(Total for Question Three = 25 marks)

(Total for Section A = 75 marks)

*End of Section A
Section B starts on the next page*

TURN OVER

SECTION B – 25 MARKS

ANSWER ALL TWELVE QUESTIONS

Instructions for answering Section B:

The answers to the twelve sub-questions in Section B should ALL be written in your answer book.

Your answers should be clearly numbered with the sub-question number and ruled off so that the markers know which sub-question you are answering. **For multiple choice questions you need only write the sub-question number and the letter of the answer option you have chosen.** You do not need to start a new page for each sub-question.

Question Four

- 4.1 A company manufactures three products using the same machine which has limited time available. The following cost and selling price details relate to the three products:

Product	<i>E</i>	<i>F</i>	<i>G</i>
	<i>\$/unit</i>	<i>\$/unit</i>	<i>\$/unit</i>
Selling price	35	31	47
Direct material	15	7	12
Direct labour	6	10	14
Variable overhead	4	6	7
Fixed overhead	7	5	10
Profit	6	3	4
	<i>Minutes per unit</i>	<i>Minutes per unit</i>	<i>Minutes per unit</i>
Machine time	30	14	24

The correct rank order for the three products so that the company maximises its profits as measured using throughput accounting is

- A EGF
- B GEF
- C GFE
- D FGE

(2 marks)

Section B continues on the opposite page

- 4.2** A company uses a standard absorption costing system and adjusts for any under or over absorbed overheads at the end of each period. The company produces only one type of product. The unit standard costs were the same in both March and April.

Data for April included:

	Budget	Actual
Sales volume	90,000 units	85,000 units
Production volume	80,000 units	78,000 units
Total fixed production overheads	\$400,000	\$395,000
Selling price per unit	\$11	\$14
Variable production costs per unit	\$4	\$4

The sales volume profit variance for April was

- A** \$35,000 adverse
- B** \$10,000 adverse
- C** \$50,000 adverse
- D** \$14,000 adverse

(2 marks)

- 4.3** The following data relate to a manufacturing company. At the beginning of April there was no inventory. During April, 2,000 units of Product Y were produced but only 1,750 were sold. The financial data for Product Y for April were as follows:

	\$
Materials	32,000
Labour	12,600
Variable production overheads	9,400
Fixed production overheads	22,500
Variable selling costs	6,000
Fixed selling costs	<u>19,300</u>
Total costs for Product Y	<u>101,800</u>

The value of inventory of Product Y at the end of April using a marginal costing approach was:

- A** \$6,750
- B** \$5,575
- C** \$9,563
- D** \$7,500

(2 marks)

Section B continues on the next page

TURN OVER

- 4.4** A company is considering a short-term pricing decision for a contract that would utilise some material D that it has held in inventory for some time. The company does not foresee any other use for the material. The work would require 1,000 kgs of material D. There are 800 kgs of material D in inventory, which were bought some time ago at a cost of \$3 per kg. The material held in inventory could currently be sold for \$3.50 per kg. The current purchase price of material D is \$4.50 per kg.

The relevant cost of material D for the company to use when making its pricing decision for the contract is closest to

- A** \$3,700
- B** \$3,500
- C** \$4,500
- D** \$3,300

(2 marks)

- 4.5** In the typical hierarchical organisation, the requirement for a lower level manager to report to a higher level manager in the chain of command is known as:

- A** Authority
- B** Empowerment
- C** Delegation
- D** Accountability

(2 marks)

- 4.6** Decisions about acquisitions and mergers occur at which ONE of the following levels of strategy?

- A** Functional
- B** Business
- C** Corporate
- D** Competition

(2 marks)

- 4.7** Organisational conflict between different levels in the organisation's hierarchy is known as what type of conflict?

(2 marks)

- 4.8** Identify each of the different team roles as defined by Belbin for the following:

- (i)* Gives attention to detail and is concerned with meeting deadlines
- (ii)* Supports other members of the team and helps to promote harmony
- (iii)* Imaginative and good at coming up with ideas and suggestions

(3 marks)

Section B continues on the opposite page

- 4.9** JAC operates a defined benefit pension plan for its employees. The fair value of the plan assets at 1 June 2008 was \$3,100,000. JAC made contributions of \$300,000 to the plan in the year to 31 May 2009 and the expected return on assets has been calculated at \$190,000. The pension plan paid out a total of \$225,000 in benefits in the period and the fair value of the plan assets at 31 May 2009 was \$3,340,000.

The actuarial gain or loss in respect of the pension plan assets of JAC's defined benefit pension plan for the year ended 31 May 2009 is:

- A** \$125,000 loss
- B** \$25,000 loss
- C** \$25,000 gain
- D** \$125,000 gain

(2 marks)

- 4.10** MX had 5 million \$1 ordinary shares in issue at 1 May 2008. On 30 September 2008 MX issued a further 2 million \$1 ordinary shares at par.

Profit before tax for the year ended 30 April 2009 was \$650,000 and the related income tax charge was \$210,000.

The basic earnings per share of MX for the year to 30 April 2009 is:

- A** 6.9 cents per share
- B** 7.1 cents per share
- C** 10.5 cents per share
- D** 13.5 cents per share

(2 marks)

- 4.11** AB, CD and EF are listed entities operating in the same business sector. At 31 December 2009 their P/E ratios were reported as follows:

AB	17.1
CD	13.2
EF	9.3

Which ONE of the following statements about these P/E ratios is correct?

- A** AB is regarded by the market as the riskiest of the three entities.
- B** AB has the highest earnings per share of the three entities.
- C** CD represents the safest investment because its P/E lies midway between the other two.
- D** EF's share price may be relatively lower than that of AB and CD because of an adverse effect such as a profit warning.

(2 marks)

Section B continues on the next page

TURN OVER

4.12 The Global Reporting Initiative created a Sustainability Reporting Framework, which provides details of disclosures that entities should include in their corporate reports.

Which ONE of the following is not specified in that framework as an area for which disclosures should be provided?

- A Economic
- B Environmental
- C Segmental
- D Social

(2 marks)

Total for Section B = 25 marks)

End of Question Paper

Reminder

All answers to Section B **must** be written in your answer book.
Answers to Section B written on the question paper will **not** be submitted for marking

End of Question Paper - Maths tables and Formulae are on pages 13-15 which are detachable for ease of reference

Maths Tables and Formulae

Present Value Table

Present value of \$1, that is $(1+r)^{-n}$ where r = interest rate; n = number of periods until payment or receipt.

Periods (n)	Interest rates (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
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149

Periods (n)	Interest rates (r)									
	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.079	0.065
16	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026

Cumulative present value of \$1 per annum, Receivable or Payable at the end of each year for n years $\frac{1-(1+r)^{-n}}{r}$

Periods (n)	Interest rates (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
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201
19	17.226	15.679	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365
20	18.046	16.351	14.878	13.590	12.462	11.470	10.594	9.818	9.129	8.514

Periods (n)	Interest rates (r)									
	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675
16	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730
17	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775
18	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812
19	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843
20	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870

FORMULAE

Annuity

Present value of an annuity of \$1 per annum receivable or payable for n years, commencing in one year, discounted at $r\%$ per annum:

$$PV = \frac{1}{r} \left[1 - \frac{1}{[1+r]^n} \right]$$

Perpetuity

Present value of \$1 per annum receivable or payable in perpetuity, commencing in one year, discounted at $r\%$ per annum:

$$PV = \frac{1}{r}$$

Growing Perpetuity

Present value of \$1 per annum, receivable or payable, commencing in one year, growing in perpetuity at a constant rate of $g\%$ per annum, discounted at $r\%$ per annum:

$$PV = \frac{1}{r-g}$$

Time series

Additive model:

$$\text{Series} = \text{Trend} + \text{Seasonal} + \text{Random}$$

Multiplicative model:

$$\text{Series} = \text{Trend} * \text{Seasonal} * \text{Random}$$

Regression analysis

The linear regression equation of Y on X is given by:

$$Y = a + bX \quad \text{or} \quad Y - \bar{Y} = b(X - \bar{X}),$$

where:

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

and
or solve

$$a = \bar{Y} - b\bar{X}$$

$$\sum Y = na + b \sum X$$

$$\sum XY = a \sum X + b \sum X^2$$

Exponential

$$Y = ab^x$$

Geometric

$$Y = aX^b$$

Learning curve

$$Y_x = aX^b$$

where:

Y_x = the cumulative average time per unit to produce X units;

a = the time required to produce the first unit of output;

X = the cumulative number of units;

b = the index of learning.

The exponent b is defined as the log of the learning curve improvement rate divided by log 2.

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LIST OF VERBS USED IN THE QUESTION REQUIREMENTS

A list of the learning objectives and verbs that appear in the syllabus and in the question requirements for each question in this paper.

It is important that you answer the question according to the definition of the verb.

LEARNING OBJECTIVE	VERBS USED	DEFINITION
1 KNOWLEDGE What you are expected to know.	List State Define	Make a list of Express, fully or clearly, the details/facts of Give the exact meaning of
2 COMPREHENSION What you are expected to understand.	Describe Distinguish Explain Identify Illustrate	Communicate the key features Highlight the differences between Make clear or intelligible/State the meaning or purpose of Recognise, establish or select after consideration Use an example to describe or explain something
3 APPLICATION How you are expected to apply your knowledge.	Apply Calculate Demonstrate Prepare Reconcile Solve Tabulate	Put to practical use Ascertain or reckon mathematically Prove with certainty or to exhibit by practical means Make or get ready for use Make or prove consistent/compatible Find an answer to Arrange in a table
4 ANALYSIS How you are expected to analyse the detail of what you have learned.	Analyse Categorise Compare and contrast Construct Discuss Interpret Prioritise Produce	Examine in detail the structure of Place into a defined class or division Show the similarities and/or differences between Build up or compile Examine in detail by argument Translate into intelligible or familiar terms Place in order of priority or sequence for action Create or bring into existence
5 EVALUATION How you are expected to use your learning to evaluate, make decisions or recommendations.	Advise Evaluate Recommend	Counsel, inform or notify Appraise or assess the value of Advise on a course of action

*CIMA Professional
Gateway Assessment (CPGA)*

May 2010

Tuesday Afternoon Session