Hong Kong Institute of
Accredited Accounting Technicians
香港財務會計協會

Professional Bridging Examination

June 2011 Session

Paper II
PBE Management Accounting and Finance

Questions & Answers Booklet

SECTION A (COMPULSORY) (Total: 40 marks)

*Answer **ALL** questions in this section. Marks are indicated at the end of each question. Together they are worth 40% of the total marks for this examination.*

CASE

BOTH questions in this section are compulsory. Together they are worth 40% of the total marks for this examination.

PBE Industries Ltd. (PBE) produces two types of mini-motors: M12 and M24. M12 motor is for simple electrical appliances and M24 is for more complicated electrical appliances. The cost data for these mini-motors are as follows:

	M12	M24
Machine hours required per unit	2.00	2.50
Standard cost per unit:		
Direct material	$ 2.50	$ 4.00
Direct labour	5.00	4.00
Manufacturing overhead:		
Variable	3.00	2.50
Fixed	4.00	5.00
Total	$14.50	$15.50

The variable manufacturing overhead is applied on the basis of direct labour hours. Fixed manufacturing overhead is applied on the basis of machine hours. The company needs to produce 8,000 units of M12 and 11,000 units of M24 in order to meet the demand of the markets. Two weeks ago, senior management decided to spend additional machine time on other products. As a result, only 30,000 machine hours per year can be used in the production of mini-motors. An external customer offers to buy both types of mini-motors at $14.0

Besides manufacturing, PBE has a small retail outlet in the reception area in the manufacturing plant and directly sells mini-motors to individual customers. The outlet is manned by some disabled employees. After reviewing the financial statements of the outlet by the new chairman, Mr. Thomas Yan, suggested to close this outlet and use the resources somewhere else. Mr. Yan is an expert in supply chain and value chain. The financial figures for the year just ended are as follows:

Revenues	$900,000
Variable costs	300,000
Traceable fixed costs	680,000
Allocated corporate overhead	150,000

If the retail outlet is closed, 80% of the traceable fixed cost will be eliminated. In addition, the company will incur one-time closure costs of $50,000.

Question 1 **(25 marks – approximately 45 minutes)**

You are the chief financial analyst of PBE Industries Ltd and you are asked by the Finance Director to advise on the manufacturing strategy.

Required:

(a) **If PBE decides to produce all M12 mini-motors and purchase M24 mini-motors only as needed. Find the number of M24s required to be purchased.**

(4 marks)

(b) **Calculate the contribution to the company for a unit of M12 and for a unit of M24.**

(6 marks)

(c) **PBE does not have sufficient machine time to produce all M12s and M24s. Which mini-motors should PBE produce first with the limited machine hours available? State the reason.**

(4 marks)

(d) **Define a value chain and point out the activities in a value chain.** **(5 marks)**

(e) **To improve the competitiveness of PBE Industries Ltd., senior management suggested various schemes to make M12 and M24 mini-motors more attractive. Prepare a memo to the new chairman to propose two financial and two non-financial suggestions for enhancing competitiveness and attractiveness.**

(6 marks)

Question 2 **(15 marks – approximately 27 minutes)**

Regarding the closure of the retail outlet as proposed by the new chairman.

Required:

(a) **Calculate the profit or loss of the retail outlet.** **(2 marks)**

(b) **Determine if the retail outlet should be closed. Show your reasoning.** **(5 marks)**

(c) **What TWO qualitative factors should senior management consider regarding the closure?** **(4 marks)**

(d) **"Financial objective is our only goal" claims the new chairman. Suggest other measurements, particularly from the view of shareholders, in measuring the performance of PBE Industries Ltd.** **(4 marks)**

* * * END OF SECTION A * * *

SECTION B (ANSWER THREE QUESTIONS ONLY) **(Total: 60 marks)**

*Answer any **THREE** questions in this section. Each question carries 20 marks. Together they are worth 60% of the total marks for this examination.*

Question 3 **(20 marks – approximately 36 minutes)**

A company uses the Miller Orr Model to manage its cash level. Suppose that short-term securities yield 5% per year and it costs the company $50,000 each time it buys or sells securities. The daily variance of cash flows is $1,000,000 and the bank requires $1,000,000 minimum current account balance. Assume 1 year consists of 365 days.

Required:

(a) **Explain the basic principle of the Miller Orr Model?** **(4 marks)**

(b) **What is the target cash balance?** **(4 marks)**

(c) **What is the upper balance for the cash account?** **(2 marks)**

(d) **Draw a graph showing the model with indications of suitable actions taken and answers calculated from part (b) and (c) above.** **(4 marks)**

(e) **Suggest THREE methods commonly used to improve the cash cycle.** **(6 marks)**

Question 4 **(20 marks – approximately 36 minutes)**

Agape Company manufactures and sells two types of mobile phone: 3G and 4G. The manufacturing information for the first quarter is as follows:

	3G	4G
Sales in units	5,000	3,000
Sales price per unit	$3,000	$6,000
Variable production costs per unit	$600	$1,200
Traceable fixed production costs	$6,000,000	$9,000,000
Variable selling expenses per unit	$300	$360
Traceable fixed selling expenses	$300,000	$450,000
Allocated portion of corporate expenses	$3,480,000	$3,600,000

Required:

(a) **Prepare a segmented income statement for the first quarter, showing columns for the company as a whole and for each product.**

(8 marks)

(b) **Explain why segment reporting is an extension of responsibility accounting. Use the data from part (a), point out the item(s) which is/are relevant for responsibility accounting.**

(3 marks)

(c) **The director of the 3G product is responsible for its production and marketing. What are the advantages of such decentralised structure?**

(4 marks)

(d) **What are the THREE levels of responsibility to which decentralised companies divide their segments? Describe briefly and indicate which level the 3G business belongs to.**

(5 marks)

Question 5 **(20 marks – approximately 36 minutes)**

A property developer just succeeded in bidding for a piece of land in Hong Kong at the price of HK$10 billion. According to the lands regulation in Hong Kong, the allowable floor area for development is 1,250,000 sq.ft.. The development time frame is 3 years. Borrowing cost is 5% p.a. and construction cost is HK$2,000 per sq.ft.. Assume the development cost consists of land cost, construction cost and interest cost. Both the construction cost and land cost are financed by borrowing.

Required:

(a) **What is the dollar cost of development per sq. ft.?** **(4 marks)**

(b) **If the developer is able to increase the allowable floor area for development by 30% through constructing additional structures without incurring additional construction costs, what is the cost of development per sq.ft.? Based on a mark-up of 25%, what is the sales price per sq.ft.?** **(3 marks)**

Assume the development project lasts for 5 years in which the land costs paid in year 0, construction and interest costs are paid in year 1, 2 and 3 by equal instalments. Sales of the property begins in year 3 and generates cash flows in equal instalments at the end of year 3, 4 and 5. Use the inflated floor area for parts (c) and (d).

(c) **What are the cash flows from year 0 to year 5? Show in tabular format.** **(4 marks)**

(d) **If the cost of equity is 7% and the cost of debt is 5%. The tax rate is 16.5%. The developer company is financed by 30% debt and 70% equity. Find the weighted average cost of capital and use it to calculate the NPV of the project.** **(6 marks)**

(e) **Explain two reasons why using the weighted average cost of capital calculated in (d) may not be appropriate for this project.** **(3 marks)**

Question 6 **(20 marks – approximately 36 minutes)**

The Chairman of a listed bank H announced in its interim result that the return on equity is 10% and that the dividend per share will unlikely increase in the coming few years. Financial analysts in the market produced a report and listed the returns on equity of several banks:

Banks	Return on equity
Bank H	10%
Bank A	22%
Bank B	20%
Bank C	14%

Required:

(a) **Define return on equity and predict with explanation whether the return on asset is higher than or lower than the return on equity.**

(4 marks)

(b) **Predict the movement of share prices of Bank H based on the dividend growth model in the coming years. Briefly state the assumptions.**

(3 marks)

(c) **Explain why return on equity is often used by analysts in comparing the performance of a listed company.**

(3 marks)

(d) **Decompose the return on equity into three components based on Du Pont identity. Name and explain the significance of each term.**

(6 marks)

(e) **Explain why average banks, not manufacturing firms, have the advantages in achieving high return on equity based on the Du Pont Identity argument, under the same economic environment.**

(4 marks)

* * * END OF EXAMINATION PAPER * * *

Formula Sheet

Effective Annual Rate:

$$EAR = \left(1 + \frac{r}{m}\right)^{M} - 1 \qquad EAR = e^{r} - 1$$

Present Values:

Ordinary annuity: $PV = C\left(\frac{1-(1+r)^{-T}}{r}\right)$

Growing annuity: $PV = \left(\frac{C_1}{r-g}\right)\left[1-\left(\frac{1+g}{1+r}\right)^{T}\right]$

Constant perpetuity: $PV = \frac{C}{r}$

Growing perpetuity: $PV = \frac{C_1}{r-g}$

IRR:

$$NPV = 0 = -C_0 + \frac{C_1}{(1+IRR)} + \frac{C_2}{(1+IRR)^2} + \frac{C_3}{(1+IRR)^3} + \ldots + \frac{C_T}{(1+IRR)^T}$$

Expected Return, Variance, Covariance, and Correlation Coefficient:

$$\overline{R} = \sum_{i=1}^{S} p_i R_i \qquad \sigma^2 = \sum_{i=1}^{S} p_i (R_i - \overline{R})^2 \qquad \sigma_{AB} = \sum_{i=1}^{S} p_i (R_{Ai} - \overline{R}_A)(R_{Bi} - \overline{R}_B) \qquad \rho_{AB} = \frac{\sigma_{AB}}{\sigma_A \sigma_B}$$

$$\overline{R}_P = X_A \overline{R}_A + X_B \overline{R}_B \qquad \sigma_p^2 = X_A^2 \sigma_A^2 + X_B^2 \sigma_B^2 + 2 X_A X_B \sigma_{AB}$$

Beta (or β):

$$\beta_i = \frac{Cov(R_i, R_M)}{\sigma_{R_M}^2}$$

Capital Structure - MM II (with corporate taxes):

$$r_s = r_0 + \frac{B}{S}(r_0 - r_B)(1 - T_c)$$

Miller-Orr Model

$Z = [(3 \times TC \times V) / (4 \times R)]^{1/3} + L$

$H = 3Z - 2L$

Present Value of $1

Period	0.50%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	0.9950	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696
2	0.9901	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561
3	0.9851	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575
4	0.9802	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718
5	0.9754	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972
6	0.9705	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5346	0.5066	0.4803	0.4556	0.4323
7	0.9657	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759
8	0.9609	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269
9	0.9561	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843
10	0.9513	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3522	0.3220	0.2946	0.2697	0.2472
11	0.9466	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.3173	0.2875	0.2607	0.2366	0.2149
12	0.9419	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869
13	0.9372	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625
14	0.9326	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2320	0.2046	0.1807	0.1597	0.1413
15	0.9279	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.2090	0.1827	0.1599	0.1401	0.1229
16	0.9233	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1883	0.1631	0.1415	0.1229	0.1069
17	0.9187	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1696	0.1456	0.1252	0.1078	0.0929
18	0.9141	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1528	0.1300	0.1108	0.0946	0.0808
19	0.9096	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1377	0.1161	0.0981	0.0829	0.0703
20	0.9051	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240	0.1037	0.0868	0.0728	0.0611

Present Value of Annuity of $1

Period	0.50%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	0.9950	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696
2	1.9851	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257
3	2.9702	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832
4	3.9505	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550
5	4.9259	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522
6	5.8964	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845
7	6.8621	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604
8	7.8230	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	5.1461	4.9676	4.7988	4.6389	4.4873
9	8.7791	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716
10	9.7304	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892	5.6502	5.4262	5.2161	5.0188
11	10.6770	10.3676	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065	5.9377	5.6869	5.4527	5.2337
12	11.6189	11.2551	10.5753	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206
13	12.5562	12.1337	11.3484	10.6350	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831
14	13.4887	13.0037	12.1062	11.2961	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819	6.6282	6.3025	6.0021	5.7245
15	14.4166	13.8651	12.8493	11.9379	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474
16	15.3399	14.7179	13.5777	12.5611	11.6523	10.8378	10.1059	9.4466	8.8514	8.3126	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542
17	16.2586	15.5623	14.2919	13.1661	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.5488	7.1196	6.7291	6.3729	6.0472
18	17.1728	16.3983	14.9920	13.7535	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.7016	7.2497	6.8399	6.4674	6.1280
19	18.0824	17.2260	15.6785	14.3238	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982
20	18.9874	18.0456	16.3514	14.8775	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5136	7.9633	7.4694	7.0248	6.6231	6.2593
25	23.4456	22.0232	19.5235	17.4131	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	8.4217	7.8431	7.3300	6.8729	6.4641
30	27.7941	25.8077	22.3965	19.6004	17.2920	15.3725	13.7648	12.4090	11.2578	10.2737	9.4269	8.6938	8.0552	7.4957	7.0027	6.5660
40	36.1722	32.8347	27.3555	23.1148	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574	9.7791	8.9511	8.2438	7.6344	7.1050	6.6418
60	51.7256	44.9550	34.7609	27.6756	22.6235	18.9293	16.1614	14.0392	12.3766	11.0480	9.9672	9.0736	8.3240	7.6873	7.1401	6.6651
80	65.8023	54.8882	39.7445	30.2008	23.9154	19.5965	16.5091	14.2220	12.4735	11.0998	9.9951	9.0888	8.3324	7.6919	7.1427	6.6666
120	90.0735	69.7005	45.3554	32.3730	24.7741	19.9427	16.6514	14.2815	12.4988	11.1108	9.9999	9.0909	8.3333	7.6923	7.1429	6.6667
240	139.5808	90.8194	49.5686	33.3057	24.9980	19.9998	16.6667	14.2857	12.5000	11.1111	10.0000	9.0909	8.3333	7.6923	7.1429	6.6667

Future Value of $1

Period	0.50%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1.0050	1.0100	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000
2	1.0100	1.0201	1.0404	1.0609	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100
3	1.0151	1.0303	1.0612	1.0927	1.1249	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310
4	1.0202	1.0406	1.0824	1.1255	1.1699	1.2155	1.2625	1.3108	1.3605	1.4116	1.4641
5	1.0253	1.0510	1.1041	1.1593	1.2167	1.2763	1.3382	1.4026	1.4693	1.5386	1.6105
6	1.0304	1.0615	1.1262	1.1941	1.2653	1.3401	1.4185	1.5007	1.5869	1.6771	1.7716
7	1.0355	1.0721	1.1487	1.2299	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487
8	1.0407	1.0829	1.1717	1.2668	1.3686	1.4775	1.5938	1.7182	1.8509	1.9926	2.1436
9	1.0459	1.0937	1.1951	1.3048	1.4233	1.5513	1.6895	1.8385	1.9990	2.1719	2.3579
10	1.0511	1.1046	1.2190	1.3439	1.4802	1.6289	1.7908	1.9672	2.1589	2.3674	2.5937
11	1.0564	1.1157	1.2434	1.3842	1.5395	1.7103	1.8983	2.1049	2.3316	2.5804	2.8531
12	1.0617	1.1268	1.2682	1.4258	1.6010	1.7959	2.0122	2.2522	2.5182	2.8127	3.1384
13	1.0670	1.1381	1.2936	1.4685	1.6651	1.8856	2.1329	2.4098	2.7196	3.0658	3.4523
14	1.0723	1.1495	1.3195	1.5126	1.7317	1.9799	2.2609	2.5785	2.9372	3.3417	3.7975
15	1.0777	1.1610	1.3459	1.5580	1.8009	2.0789	2.3966	2.7590	3.1722	3.6425	4.1772
16	1.0831	1.1726	1.3728	1.6047	1.8730	2.1829	2.5404	2.9522	3.4259	3.9703	4.5950
17	1.0885	1.1843	1.4002	1.6528	1.9479	2.2920	2.6928	3.1588	3.7000	4.3276	5.0545
18	1.0939	1.1961	1.4282	1.7024	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599
19	1.0994	1.2081	1.4568	1.7535	2.1068	2.5270	3.0256	3.6165	4.3157	5.1417	6.1159
20	1.1049	1.2202	1.4859	1.8061	2.1911	2.6533	3.2071	3.8697	4.6610	5.6044	6.7275
25	1.1328	1.2824	1.6406	2.0938	2.6658	3.3864	4.2919	5.4274	6.8485	8.6231	10.8347
30	1.1614	1.3478	1.8114	2.4273	3.2434	4.3219	5.7435	7.6123	10.0627	13.2677	17.4494
40	1.2208	1.4889	2.21	3.26	4.80	7.04	10.29	14.97	21.72	31.41	45.26
60	1.3489	1.8167	3.28	5.89	10.52	18.68	32.99	57.95	101.26	176.03	304.48
80	1.4903	2.2167	4.88	10.64	23.05	49.56	105.80	224.23	471.95	986.55	2048.40
120	1.8194	3.3004	10.77	34.71	110.66	348.91	1088.19	3357.79	10252.99	30987.02	92709.07
240	3.3102	10.8926	115.89	1204.85	12246.20	121739.57	1184152.57	11274742.82	105123864.28	960195145.04	8594971441.07

Period	11%	12%	13%	14%	15%
1	1.1100	1.1200	1.1300	1.1400	1.1500
2	1.2321	1.2544	1.2769	1.2996	1.3225
3	1.3676	1.4049	1.4429	1.4815	1.5209
4	1.5181	1.5735	1.6305	1.6890	1.7490
5	1.6851	1.7623	1.8424	1.9254	2.0114
6	1.8704	1.9738	2.0820	2.1950	2.3131
7	2.0762	2.2107	2.3526	2.5023	2.6600
8	2.3045	2.4760	2.6584	2.8526	3.0590
9	2.5580	2.7731	3.0040	3.2519	3.5179
10	2.8394	3.1058	3.3946	3.7072	4.0456
11	3.1518	3.4785	3.8359	4.2262	4.6524
12	3.4985	3.8960	4.3345	4.8179	5.3503
13	3.8833	4.3635	4.8980	5.4924	6.1528
14	4.3104	4.8871	5.5348	6.2613	7.0757
15	4.7846	5.4736	6.2543	7.1379	8.1371
16	5.3109	6.1304	7.0673	8.1372	9.3576
17	5.8951	6.8660	7.9861	9.2765	10.7613
18	6.5436	7.6900	9.0243	10.5752	12.3755
19	7.2633	8.6128	10.1974	12.0557	14.2318
20	8.0623	9.6463	11.5231	13.7435	16.3665
25	13.5855	17.0001	21.2305	26.4619	32.9190
30	22.8923	29.9599	39.1159	50.9502	66.2118
40	65.00	93.05	132.78	188.88	267.86
60	524.06	897.60	1530.05	2595.92	4384.00
80	4225.11	8658.48	17630.94	35676.98	71750.88
120	274635.99	805680.26	2341063.63	6738793.69	19219445.00
240	75424928785.77	649120673317.10	5480578920960.75	45411340363982.90	369387066182044.00

Future Value of Annuity of $1

Period	0.50%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	2.0050	2.0100	2.0200	2.0300	2.0400	2.0500	2.0600	2.0700	2.0800	2.0900	2.1000
3	3.0150	3.0301	3.0604	3.0909	3.1216	3.1525	3.1836	3.2149	3.2464	3.2781	3.3100
4	4.0301	4.0604	4.1216	4.1836	4.2465	4.3101	4.3746	4.4399	4.5061	4.5731	4.6410
5	5.0503	5.1010	5.2040	5.3091	5.4163	5.5256	5.6371	5.7507	5.8666	5.9847	6.1051
6	6.0755	6.1520	6.3081	6.4684	6.6330	6.8019	6.9753	7.1533	7.3359	7.5233	7.7156
7	7.1059	7.2135	7.4343	7.6625	7.8983	8.1420	8.3938	8.6540	8.9228	9.2004	9.4872
8	8.1414	8.2857	8.5830	8.8923	9.2142	9.5491	9.8975	10.2598	10.6366	11.0285	11.4359
9	9.1821	9.3685	9.7546	10.1591	10.5828	11.0266	11.4913	11.9780	12.4876	13.0210	13.5795
10	10.2280	10.4622	10.9497	11.4639	12.0061	12.5779	13.1808	13.8164	14.4866	15.1929	15.9374
11	11.2792	11.5668	12.1687	12.8078	13.4864	14.2068	14.9716	15.7836	16.6455	17.5603	18.5312
12	12.3356	12.6825	13.4121	14.1920	15.0258	15.9171	16.8699	17.8885	18.9771	20.1407	21.3843
13	13.3972	13.8093	14.6803	15.6178	16.6268	17.7130	18.8821	20.1406	21.4953	22.9534	24.5227
14	14.4642	14.9474	15.9739	17.0863	18.2919	19.5986	21.0151	22.5505	24.2149	26.0192	27.9750
15	15.5365	16.0969	17.2934	18.5989	20.0236	21.5786	23.2760	25.1290	27.1521	29.3609	31.7725
16	16.6142	17.2579	18.6393	20.1569	21.8245	23.6575	25.6725	27.8881	30.3243	33.0034	35.9497
17	17.6973	18.4304	20.0121	21.7616	23.6975	25.8404	28.2129	30.8402	33.7502	36.9737	40.5447
18	18.7858	19.6147	21.4123	23.414	25.645	28.132	30.906	33.999	37.450	41.301	45.599
19	19.8797	20.8109	22.8406	25.117	27.671	30.539	33.760	37.379	41.446	46.018	51.159
20	20.9791	22.0190	24.2974	26.870	29.778	33.066	36.786	40.995	45.762	51.160	57.275
25	26.5591	28.2432	32.0303	36.459	41.646	47.727	54.865	63.249	73.106	84.701	98.347
30	32.2800	34.7849	40.5681	47.575	56.085	66.439	79.058	94.461	113.283	136.308	164.494
40	44.1588	48.8864	60.4020	75.401	95.026	120.800	154.762	199.635	259.057	337.882	442.593
60	69.7700	81.6697	114.0515	163.053	237.991	353.584	533.128	813.520	1253.213	1944.792	3034.816
80	98.0677	121.6715	193.7720	321.363	551.245	971.229	1746.600	3189.063	5886.935	10950.574	20474.002
120	163.8793	230.0387	488.3	1123.7	2741.6	6958.2	18119.8	47954.1	128149.9	344289.1	927080.7
240	462.0409	989.2554	5744.4	40128.4	306130.1	2434771.5	19735859.6	161067740.3	1314048291.0	10668834933.8	85949714400.7

Period	11%	12%	13%	14%	15%
1	1.0000	1.0000	1.0000	1.0000	1.0000
2	2.1100	2.1200	2.1300	2.1400	2.1500
3	3.3421	3.3744	3.4069	3.4396	3.4725
4	4.7097	4.7793	4.8498	4.9211	4.9934
5	6.2278	6.3528	6.4803	6.6101	6.7424
6	7.9129	8.1152	8.3227	8.5355	8.7537
7	9.7833	10.0890	10.4047	10.7305	11.0668
8	11.8594	12.2997	12.7573	13.2328	13.7268
9	14.1640	14.7757	15.4157	16.0853	16.7858
10	16.7220	17.5487	18.4197	19.3373	20.3037
11	19.5614	20.6546	21.8143	23.0445	24.3493
12	22.7132	24.1331	25.6502	27.2707	29.0017
13	26.2116	28.0291	29.9847	32.0887	34.3519
14	30.0949	32.3926	34.8827	37.5811	40.5047
15	34.4054	37.2797	40.4175	43.8424	47.5804
16	39.1899	42.7533	46.6717	50.9804	55.7175
17	44.5008	48.8837	53.7391	59.1176	65.0751
18	50.396	55.750	61.725	68.394	75.836
19	56.939	63.440	70.749	78.969	88.212
20	64.203	72.052	80.947	91.025	102.444
25	114.413	133.334	155.620	181.871	212.793
30	199.021	241.333	293.199	356.787	434.745
40	581.826	767.091	1013.704	1342.025	1779.090
60	4755.066	7471.641	11761.950	18535.133	29219.992
80	38401.025	72145.693	135614.927	254828.441	478332.529
120	2496681.8	6713993.8	18008174.1	48134233.5	128129626.7
240	685681170770.6	5409338944300.8	42158299391998.1	324366716885585.0	2462580441213620.0

SECTION A (COMPULSORY) (Total: 40 marks)

Answer 1(a)

Since there are only 30,000 machine hours available, and PBE Industries Ltd. decides to produce M12 mini-motors first, the machine hours left will be used to produce M24 mini-motors.

Machine hours available	30,000
Machine hours for M12	16,000
Machine hours for M24	14,000
No. of M24 produced	5,600
Requirements for M24	11,000
No. of M24 purchased	5,400

The machine hours left are not sufficient to produce all 11,000 M24 mini-motors. PBE Industries Ltd needs to purchase 5,400 units from outside.

Answer 1(b)

Based on the information given, the contribution per unit for M12 and M24 mini-motors are both $3.5.

	M12	M24
Sales price	$14	$14
Direct material	$2.5	$4.0
Direct labour	$5.0	$4.0
Var. overhead	$3.0	$2.5
Total variable cost	$10.5	$10.5
Contribution	$3.5	$3.5

Answer 1(c)

Since machine hours are limiting factors, the contribution per machine hour is calculated.

	M12	M24
Sales price	$14	$14
Direct material	$2.5	$4.0
Direct labour	$5.0	$4.0
Var. overhead	$3.0	$2.5
Total variable cost	$10.5	$10.5
Contribution	$3.5	$3.5
Contribution/machine hours	=$3.5/2=$1.75	=$3.5/2.5=$1.40

The contribution per machine hour is higher for M12 mini-motor. PBE Industries should produce M12 mini-motor first.

Answer 1(d)

A value chain is defined as a series of activities in the manufacturing process from sourcing of materials to distribution of final products to the end customers. Product pass through all activities must gain value.

The value chain is divided into primary activities and support activities. Primary activities include inbound logistics, operations, outbound logistics, marketing and sales, and service. Support activities include firm infrastructure, human resources management, technology and procurement.

Answer 1(e)

To: Thomas Yan, Chairman
From: YYY, Chief Financial Analyst
Re: Attractiveness of M12 and M14 mini-motors
Date: ZZZZ

This memo briefs senior management on improving the attractiveness of M12 and M24 mini-motors.

On the financial side, our company may source low-cost material without giving up quality. This would reduce the material cost. Streamlining the manufacturing process may reduce the direct labour cost and the overheads. With reduced costs, competitiveness can be enhanced.

On the non-financial side, we may incorporate better design, durability and energy efficiency. In addition, improved customer service such as hotline handling, and detailed briefing to the customers in oral and written format. These contribute to attractiveness.

The above improvements may have cost implications and we may explore these further.

Best regards,
YYY
Chief Financial Analyst

Answer 2(a)

The loss of the retail outlet is:

Revenue	$900,000
Variable cost	$300,000
Fixed cost	$680,000
Corporate cost	$150,000
Loss	($230,000)

Answer 2(b)

To decide if the outlet is closed, all relevant costs should be identified. Contribution margin of $600,000 is lost. Fixed cost of $544,000 ($680,000 x 80%) could be saved. Closure cost is $50,000. The allocated corporate overhead is irrelevant. The closure would lead to additional costs of $106,000. The conclusion is to keep the outlet.

Contribution margin	-$600,000
Fixed cost avoided	$544,000
Closure cost	-$50,000
Incremental cost	-$106,000

Answer 2(c)

Management should consider qualitative factors as well in making decisions regarding the closure. Maintaining a retail outlet complements the supply chain and also serves as a marketing tool to customers. In addition, the outlet is manned by disabled employees, and so maintaining the outlet would be a form of social responsibility.

Answer 2(d)

Besides financial objective, shareholders of PBE Industries should consider performance in other areas such as customer services, operational efficiency, social responsibility and corporate governance. Good performance in these aspects would imply sustainable development.

* * * END OF SECTION A * * *

SECTION B (ANSWER THREE QUESTIONS ONLY) (Total: 60 marks)

Answer 3(a)

The Miller Orr Model assumes that many companies do not use cash flows uniformly and the model allows them to have daily cashflow variations. The cash balance is allowed to fluctuate between the upper limit and the lower limit. The purchase and sales of marketable securities can only be made when one of these limits is reached.

Answer 3(b)

In Miller-Orr Model, Target Cash Balance Z

$Z = [(3 \times TC \times V) / (4 \times R)]^{1/3} + L$

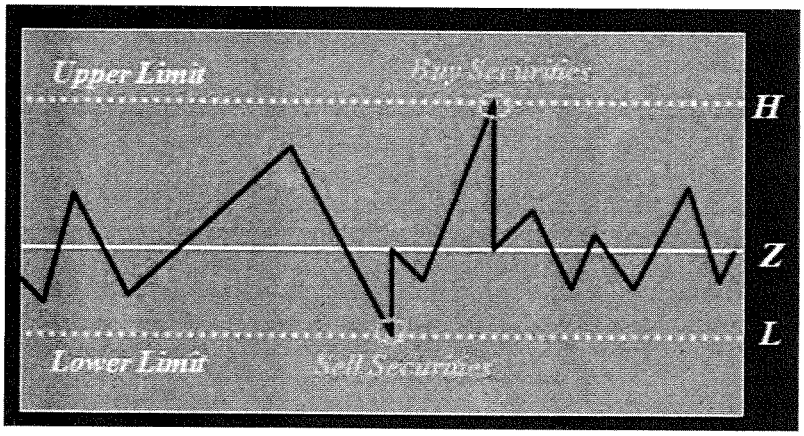
Where
TC = transaction cost of buying and selling securities
V = variance of daily cash flows
R = daily return on short-term investments
L = minimum cash requirements

Now, R = 5%/365, TC = $50,000, V = $1,000,000 , L = $1,000,000, Z = $1,064,930.9

Answer 3(c)

Upper limit for the cash balance H = 3Z – 2L = $1,194,793.7

Answer 3(d)



Z is the target cash balance. L is the lower limit and H is the upper limit. When cash level reaches the upper limit, it indicates purchase of securities to reduce cash. When cash level reaches the lower limit, it indicates sales of securities to get cash.

Answer 3(e)

To improve cash cycle, management may consider the following methods:

1. Offer discount to customers to encourage early collection.
2. Factor the accounts receivable at banks and get immediate cash.
3. Implement cash sales instead of credit sales.
4. Get credit line from banks.
5. Diversify to cash business like retail.

Answer 4(a)

The segmented income statements are as follows:

	3G	4G	Company
Sales	$15,000,000	$18,000,000	$33,000,000
Variable cost	$4,500,000	$4,680,000	$9,180,000
Contribution margin	$10,500,000	$13,320,000	$23,820,000
Fixed cost	$6,300,000	$9,450,000	$15,750,000
Segment margin	$4,200,000	$3,870,000	$8,070,000
Corporate fixed cost			$7,080,000
Net Profit			$990,000

Answer 4(b)

Segment reporting lists the revenue, expense and profit for each segment. Responsibility accounting requires each individual centre to be accountable for its revenue, expense and/or profit, hence management needs such information for feedback, control and evaluation. The segment margins of $4,200,000 and $3,870,000 for 3G and 4G respectively are relevant for responsibility accounting as it is related to the performance of individual segments.

Answer 4(c)

A decentralised structure allows management to be flexible and responsive to the market and production. The director of the 3G product is responsible for the production and marketing of the products, therefore a decentralised structure allows him to make quick decisions without reverting back to and waiting for central corporate decisions. It also provides a good training ground for the divisional managers for their advancement to senior management in the future.

Answer 4(d)

The THREE levels of responsibility include cost centre where management is responsible for the incurrence of cost. It also includes profit centre where management is accountable for both revenue and cost, hence profit. Lastly, it includes investment centre where management is responsible for cost, revenue and the investment return of shareholders'

funds. Management needs to ensure that the investment return is greater than the cost of funds. The 3G business most likely belongs to profit centre as the director needs to take care of its revenue and cost, hence profit.

Answer 5(a)

Land cost per sq.ft. = $10,000,000,000/1,250,000	=	$8,000
Construction cost per sq. ft.	=	$2,000
Total borrowing = $10,000,000,000 + 1,250,000 x $2,000	=	$12,500,000,000
Total interest = $12,500,000,000 x 5% x 3	=	$1,875,000,000
Total cost of development	=	$14,375,000,000

Dollar cost of development per sq. ft. = $14,375,000,000/1,250,000 = $11,500

Answer 5(b)

When the floor area can be increased by 30%, it becomes 1,625,000 sq. ft.

Total cost = $14,375,000,000

Dollar cost of development per sq. ft. = $14,375,000,000/1,625,000 = $8,846

Sales price per sq. ft. = $8,846 x 1.25 = $11,058

Answer 5(c)

$'million	0	1	2	3	4	5
Land	-$10,000					
Interest and construction cost		-$1,458	-$1,458	-$1,458		
Sales				$5,989.6	$5,989.6	$5,989.6
Total		-$1,458	-$1,458	$4,531.6	$5,989.6	$5,989.6

Answer 5(d)

WACC = 0.3 x 5% x (1 - 16.5%) + 0.7 x 7% = 6.1525%

$'million	0	1	2	3	4	5
Land	-$10,000					
Interest and construction cost		-$1,458	-$1,458	-$1,458		
Sales				$5,989.6	$5,989.6	$5,989.6
Total		-$1,458	-$1,458	$4,531.6	$5,989.6	$5,989.6
PV	-$10,000	-$1,374	-$1,294	$3,788	$4,717	$4,444

By using WACC = 6.1525%, NPV = $281 million

Answer 5(e)

The cost of capital is calculated by referring to the capital structure of the company. This real estate development project may not be financed accordingly. In addition, the risk level of the project means certain additional premium needs to be included in the weighted average cost of capital calculated in (d).

Answer 6(a)

Return on equity (ROE) is defined as net profit/equity. It measures how well a company makes use of shareholders' equity in earning a profit. Return on asset (ROA) is defined as net profit/asset. Since asset is greater than equity by accounting equation, ROE is greater than ROA.

Answer 6(b)

Since Bank H explicitly announced that its dividend per share will unlikely increase in the coming few years, according to the dividend growth model:

P0 = D1/ (r-g) where r is the required return, g is the dividend growth rate, D1 is the dividend in period 1 and P0 is the current price. The price will become stagnant or at least will not increase significantly.

Answer 6(c)

Return on equity (ROE) is often used by analysts in comparing the performance of a listed company because listed companies make use of equity contributed by shareholders to earn a profit. Assessing the ability in using shareholders' money is essential as shareholders may invest their money in other sources rather than a particular listed company.

Answer 6(d)

ROE = net profit/equity

= net profit/sales x sales/asset x asset/equity

= net profit margin x asset turnover x equity multiplier

If a company has a good net profit margin, high asset turnover and better use of equity in borrowing, its ROE can be improved.

Answer 6(e)

Banks have high leverage due to their nature as a regulated intermediary in accepting deposits which are a liability in their statement of financial position. Close to 90% of their assets is debt. Thus, they have a high equity multiplier and thus high ROE compared with other industries.

* * * END OF EXAMINATION PAPER * * *

(The main purpose of the following report is to summarise candidates' common weaknesses and make recommendations to help future candidates improve their performance in the examination.)

General Comments

Candidates performed quite well in this paper. They were able to master the basic concept of management accounting and finance. Though this was mentioned many times in previous reports, it was still observed that some students did not have good answering techniques. For example, they answered different parts of a question in a different order and split their answer to a question between different pages, putting themselves at risk of failing.

Specific Comments

Section A – Compulsory Questions

Question 1 – 25 marks

Candidates basically knew the argument behind the questions on the situation of having limited machine time. In part (c), some students used alternative arguments by performing various scenarios of producing M12 first and M24 first. Credit was given as this gave the same conclusion and demonstrated that candidates could use their problem solving skills rather than merely memorising all the formulae and steps. In part (d), it was a bit surprising that quite a number of candidates did not know the meaning of value chain. Improvement was seen in preparing the memo, particularly in the correct style.

Question 2 – 15 marks

This question tested candidates' abilities in solving problems relating to closure of a branch. The performance was quite satisfactory and candidates showed both good quantitative skills and sound qualitative reasoning.

Section B – Optional Questions

Question 3 – 20 marks

This question tested candidates' knowledge of cash management and the Miller Orr Model. The performance was satisfactory. Most candidates knew the arguments behind the model regarding having excessive cash and insufficient cash. There was significant improvement in sketching a graph when compared with previous exams.

Question 4 – 20 marks

This question was not answered satisfactorily. Candidates could derive the overall profit correctly but did not understand the requirement of segmented income statement and failed to prepare the report in the correct format, such as including a segment profit margin. In part (d), candidates failed to distinguish the three levels of responsibility in responsibility accounting.

Question 5 – 20 marks

This question related to property development in Hong Kong and was answered satisfactorily. Mistakes were found in some scripts regarding $10 billion which is ($10,000,000,000). Identifying the correct dimension of dollar value is essential in working as an accountant.

Question 6 – 20 marks

This question tested candidates' knowledge on return of equity for various businesses. It was not a popular question but the performance was satisfactory, particularly in the part "Du Pont Identity" and the difference in equity level for manufacturing firms and banks.

* * * END OF EXAMINATION PANELIST'S REPORT * * *