INSTITUTE OF COST AND MANAGEMENT ACCOUNTANTS OF PAKISTAN

Spring (August) 2012 Examinations

Thursday, the 6th September 2012

MANAGEMENT ACCOUNTING–DECISION MAKING – (S-502)
STAGE-5

Extra Reading Time:	15 Minutes	Maximum Marks: 90	Roll No.:
Writing Time:	02 Hours 45 Minutes		

(i) Attempt all questions.
(ii) Answers must be neat, relevant and brief.
(iii) In marking the question paper, the examiners take into account clarity of exposition, logic of arguments, effective presentation, language and use of clear diagram/ chart, where appropriate.
(iv) Read the instructions printed inside the top cover of answer script CAREFULLY before attempting the paper.
(v) Use of non-programmable scientific calculators of any model is allowed.
(vi) DO NOT write your Name, Reg. No. or Roll No. anywhere inside the answer script.
(vii) Question No.1 – "Multiple Choice Question" printed separately, is an integral part of this question paper.
(viii) **Question Paper must be returned to invigilator before leaving the examination hall.**

Answer Script will be provided after lapse of 15 minutes Extra Reading Time (9:30 a.m. or 2:30 p.m. [PST] as the case may be).

Marks

Q. 2 (a) Only variable costs can be differential costs. Do you agree? Explain. **02**

(b) Most recent income statement of a small manufacturing company is shown below:

	Total (Rs. '000')	Per Unit (Rs.)
Sales (3,000 units)	1,500	500
Less: Variable expenses	900	300
Contribution margin	600	200
Less: Fixed expenses	500	–
Net operating income	100	–

Required:

Prepare a new income statement under each of the following conditions (consider each case independently):

(i) The sales volume increases by 15%. **01**

(ii) The selling price decreases by Rs. 50 per unit, and the sales volume increases by 20%. **02**

(iii) The selling price increases by Rs. 50 per unit, fixed expenses increase by Rs. 100,000, and the sales volume decreases by 5%. **03**

(iv) Variable expenses increase by Rs. 20 per unit, the selling price increases by 12%, and the sale volume decreases by 10%. **03**

(c) What is meant by term sales mix? What assumption is usually made concerning sales mix in CPV analysis? **02**

Q. 3 ACMA manufactures a variety of domestic appliances. The company is currently manufacturing all of its own component parts. An outside supplier has offered to sell a component to ACMA for Rs. 1,000 per unit. To evaluate this offer, ACMA has gathered the following information relating to its own cost of producing the component internally:

	Per Unit (Rs.)	1,500 Units Per Year (Rs. '000')
Direct materials	300	450
Direct labour	400	600
Variable manufacturing overhead	50	75
Fixed manufacturing overhead, traceable*	250	375
Fixed manufacturing overhead, common, but allocated	500	750
Total cost	1,500	2,250

*40% supervisory salaries; 60% depreciation of special equipment (no resale value).

Required:

  (i) Assuming that the company has no alternate use for the facilities now being used to produce the components, should the outside supplier's offer be accepted? Show all computations.   **11**

  (ii) Suppose that if the components were purchased, ACMA could use the vacant capacity to launch a new product. The segment margin of the new product would be Rs. 3,250,000 per year. Should ACMA accept the offer to buy the components from the outside supplier for Rs. 1,000 each? Show your computations.   **06**

Q. 4 A company produces three products 'G', 'P' and 'S'. The selling price and variable costs for one unit of each product are as follow:

		Rupees	
		Product	
	G	**P**	**S**
Selling price	750	1,125	1,000
Less: Variable costs:			
Direct materials	337	175	500
Direct labour	150	400	200
Variable manufacturing overhead	38	100	50
Total variable cost	525	675	750

Due to a strike in the plant of one of its competitors, demand for the company's products far exceeds its capacity to produce. Management is trying to determine which product(s) to concentrate on next week in filling its backlog of orders. The direct labour rate is Rs. 100 per hour, and only 3,000 hours of labour time are available each week.

Required:

  (i) Calculate contribution margin and contribution margin ratio.   **03**

  (ii) Compute the amount of contribution margin that will be obtained by spending per hour of labour time on each product.   **07**

  (iii) Which orders would you recommend that the company work on next week – the orders for product 'G', product 'P' or product 'S'? Show your computations.   **06**

Q. 5 **(a)** Al-Jibran is a family-owned mango-squash manufacturing unit located in Sindh, which is headed by Mr. Furqan. The early summer is the busiest part of the year for mango production, and many part-time workers are hired to process mangoes. Mr. Furqan is investigating the purchase of a juice extracting machine that would significantly reduce the amount of labour required in this process. He has gathered the following information for making decision whether to purchase the machine or not:

- The juice extraction would save Rs. 190,000 per year in labour costs with the installation of new machine. In addition, the company would no longer have to purchase consumable tools which results an annual saving of Rs. 10,000.

- The juice extracting machine would cost Rs. 480,000. It would have an estimated 12-year useful life having no salvage value. The manufacturer uses straight-line method for calculating depreciation.

- Annual out-of-pocket costs associated with the juice extracting machine would be:

        - Insurance   Rs. 1,000
        - Fuel   Rs. 9,000
        - Maintenance contract   Rs.12,000

    In addition, an operator would be hired and trained for the machine on seasonal basis, and he would be paid a total of Rs. 70,000 per year, including all benefits.

- Mr. Furqan feels that the investment in the machine should earn at least a 16% rate of return.

Required:

(i) Determine the annual net savings in cash operating costs that would be realized, if the machine is purchased.   **03**

(ii) Compute the simple rate of return expected from the machine.   **03**

(iii) Compute the present value payback period of the juice extracting machine. Mr. Furqan will not purchase equipment unless it has a present value payback period of nine years or less. Under this criterion, should the machine be purchased?   **03**

(iv) Compute the internal rate of return promised by the machine.   **04**

(v) Based on above computations, does it appear that the simple rate of return is an accurate guide for investment decisions? Argue.   **02**
(Ignore income taxes.)

(b) Mechatronics company manufactures electronic components for its machines. The company has developed a device that management believes could be modified and marketed as new videogame.

The following information for the new product has been derived from the best estimates of the marketing and production managers:

Annual sales volume	10,000	units
Selling price	Rs. 1,000	per unit
Cash variable costs	Rs. 400	per unit
Cash fixed costs	Rs. 2,000,000	per year
Investment required	Rs.12,000,000	
Project life	5	years

At the end of the five-year useful life, there will be a zero terminal disposal value. The company's required rate of return on this project is 14%.

The videogame is a new market for the company, and management is concerned about the reliability of the estimates. The management accountant has proposed applying sensitivity analysis to selected factors.

Required:

(i) Estimate the net present value of this investment proposal.   **04**

(ii) Considering the following assumptions workout the effect on the net present value, (treat each item independently of the other):

- 10% reduction in the selling price.   **03**
- 10% increase in the variable cost per unit.   **03**

(iii) Discuss how management would use the data developed in requirements (i) and (ii) above in its consideration of the proposed capital investment.   **04**
(Ignore income taxes in your computations.)

Q. 6 (a) What is learning curve? Describe two models that can be used when incorporating learning into the estimation of cost function.   **04**

(b) A company manufactures a specialised equipment for energy conservation. Direct labour required to make the first equipment is 2,000 hours. Learning curve is 80%. Direct labour cost is Rs. 600 per hour. Direct material needed for making one equipment is Rs. 1,080,000. Fixed overheads are Rs. 4,800,000.

Required:

(i) Using the learning curve concept calculate the expected average unit cost of making 4 equipments and 8 equipments. **08**

(ii) After manufacturing 8 equipments, if a repeat order for manufacturing of another 8 equipments is received, what would be the lowest price that can be quoted for the repeat order? **03**

THE END

PRESENT VALUE FACTOR															
Year	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%
1	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8547	0.8475	0.8403	0.8333	0.8264	0.8197	0.8130	0.8065	0.8000
2	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561	0.7432	0.7305	0.7182	0.7062	0.6944	0.6830	0.6719	0.6610	0.6504	0.6400
3	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575	0.6407	0.6244	0.6086	0.5934	0.5787	0.5645	0.5507	0.5374	0.5245	0.5120
4	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718	0.5523	0.5337	0.5158	0.4987	0.4823	0.4665	0.4514	0.4369	0.4230	0.4096
5	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972	0.4761	0.4561	0.4371	0.4190	0.4019	0.3855	0.3700	0.3552	0.3411	0.3277
6	0.5645	0.5346	0.5066	0.4803	0.4556	0.4323	0.4104	0.3898	0.3704	0.3521	0.3349	0.3186	0.3033	0.2888	0.2751	0.2621
7	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759	0.3538	0.3332	0.3139	0.2959	0.2791	0.2633	0.2486	0.2348	0.2218	0.2097
8	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269	0.3050	0.2848	0.2660	0.2487	0.2326	0.2176	0.2038	0.1909	0.1789	0.1678
9	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843	0.2630	0.2434	0.2255	0.2090	0.1938	0.1799	0.1670	0.1552	0.1443	0.1342
10	0.3855	0.3522	0.3220	0.2946	0.2697	0.2472	0.2267	0.2080	0.1911	0.1756	0.1615	0.1486	0.1369	0.1262	0.1164	0.1074
11	0.3505	0.3173	0.2875	0.2607	0.2366	0.2149	0.1954	0.1778	0.1619	0.1476	0.1346	0.1228	0.1122	0.1026	0.0938	0.0859
12	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869	0.1685	0.1520	0.1372	0.1240	0.1122	0.1015	0.0920	0.0834	0.0757	0.0687
13	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625	0.1452	0.1299	0.1163	0.1042	0.0935	0.0839	0.0754	0.0678	0.0610	0.0550
14	0.2633	0.2320	0.2046	0.1807	0.1597	0.1413	0.1252	0.1110	0.0985	0.0876	0.0779	0.0693	0.0618	0.0551	0.0492	0.0440
15	0.2394	0.2090	0.1827	0.1599	0.1401	0.1229	0.1079	0.0949	0.0835	0.0736	0.0649	0.0573	0.0507	0.0448	0.0397	0.0352

CUMULATIVE PRESENT VALUE FACTOR															
Year	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%
1	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8547	0.8475	0.8403	0.8333	0.8264	0.8197	0.8130	0.8065	0.8000
2	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052	1.5852	1.5656	1.5465	1.5278	1.5095	1.4915	1.4740	1.4568	1.4400
3	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459	2.2096	2.1743	2.1399	2.1065	2.0739	2.0422	2.0114	1.9813	1.9520
4	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982	2.7432	2.6901	2.6386	2.5887	2.5404	2.4936	2.4483	2.4043	2.3616
5	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522	3.2743	3.1993	3.1272	3.0576	2.9906	2.9260	2.8636	2.8035	2.7454	2.6893
6	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845	3.6847	3.5892	3.4976	3.4098	3.3255	3.2446	3.1669	3.0923	3.0205	2.9514
7	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604	4.0386	3.9224	3.8115	3.7057	3.6046	3.5079	3.4155	3.3270	3.2423	3.1611
8	5.3349	5.1461	4.9676	4.7988	4.6389	4.4873	4.3436	4.2072	4.0776	3.9544	3.8372	3.7256	3.6193	3.5179	3.4212	3.3289
9	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	4.4506	4.3030	4.1633	4.0310	3.9054	3.7863	3.6731	3.5655	3.4631
10	6.1446	5.8892	5.6502	5.4262	5.2161	5.0188	4.8332	4.6586	4.4941	4.3389	4.1925	4.0541	3.9232	3.7993	3.6819	3.5705
11	6.4951	6.2065	5.9377	5.6869	5.4527	5.2337	5.0286	4.8364	4.6560	4.4865	4.3271	4.1769	4.0354	3.9018	3.7757	3.6564
12	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206	5.1971	4.9884	4.7932	4.6105	4.4392	4.2784	4.1274	3.9852	3.8514	3.7251
13	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423	5.1183	4.9095	4.7147	4.5327	4.3624	4.2028	4.0530	3.9124	3.7801
14	7.3667	6.9819	6.6282	6.3025	6.0021	5.7245	5.4675	5.2293	5.0081	4.8023	4.6106	4.4317	4.2646	4.1082	3.9616	3.8241
15	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474	5.5755	5.3242	5.0916	4.8759	4.6755	4.4890	4.3152	4.1530	4.0013	3.8593