



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2012/2013
INSTITUTIONAL BASED PROGRAMME (IBP)
APRIL 2013 SESSION EXAMINATION FOR THE DEGREE OF MASTER OF
BUSINESS ADMINISTRATION
BMS 605: PROJECT FINANCING AND RESOURCE SCHEDULING

DATE: WEDNESDAY, 28TH AUGUST 2013

TIME: 2.00 P.M – 5.00 P.M

INSTRUCTIONS: Answer any FOUR questions

QUESTION ONE [25 MARKS]

- (a) During the month of June 2013, ABC Ltd produced and sold 20,000 units of a product. The cost details were as follows:-

Sh.

Sales	4,000,000
Variable cost	<u>3,000,000</u>
Contribution	1,000,000
Fixed cost	<u>800,000</u>
Profit	<u>200,000</u>

It is expected that the cost relationship will hold in the month of July 2013. The company would like to increase its sales for the month of July 2013. In order to be able to do so, it has the following mutually exclusive options:-

- Reduce the selling price per unit by 20%
- Improve the quality of the product. This would result in an increase in the variable cost per unit by Sh. 30.
- Spend Sh. 300,000 on an advertising campaign
- Improve production efficiency. This would result in additional fixed cost of Sh. 450,000 per month.

Required:-

- i. Determine the breakeven point in units for each of the four options [8 Marks]
 - ii. Which option would you recommend and why? [2 Marks]
- (b) “Budgets in project management should be abolished because they introduce rigidity and hamper creativity”. Discuss [15 Marks]

QUESTION TWO [25 MARKS]

Hatcher Enterprises uses chemical called Rbase in production operations at five divisions. Only six suppliers of Rbase meet Hatcher's quality control standards. All six suppliers can produce Rbase in sufficient quantities to accommodate the needs of each division. The quantity of Rbase needed by each Hatcher division and the price per gallon charged by each supplier are as follows:-

Division	Demand (000's of gallons)	Supplier	Price per gallon (Sh.)
1	40	1	12.60
2	45	2	14.00
3	50	3	10.20
4	35	4	14.20
5	45	5	12.00
		6	13.00

The cost per gallon (Sh.) for shipping from each supplier to each division is provided in the following table

Division	Supplier					
	1	2	3	4	5	6
1	2.75	2.50	3.15	2.80	2.75	2.75
2	0.80	0.20	5.40	1.20	3.40	1.00
3	4.70	2.60	5.30	2.80	6.00	5.60
4	2.60	1.80	4.40	2.40	5.00	2.80
5	3.40	0.40	5.00	1.20	2.60	3.60

Hatcher believes in spreading its business among suppliers so that the company will be less affected by supplier problems (e.g. labour strikes or resource availability). Company policy requires that each division have a separate supplier.

Required:-

- For each supplier – division combination, compute the total cost of supplying the division demand [9 Marks]
- Determine the optimal assignment of suppliers to divisions [10 Marks]
- Briefly explain FOUR characteristics of the Assignment problem [6 Marks]

QUESTION THREE [25 MARKS]

- Discuss the various constraints that inhibit a project manager from achieving his / her objectives fully. [10 Marks]
- Identify and discuss FIVE sources of finance that a project manager can use to finance projects. [15 Marks]

QUESTION FOUR [25 MARKS]

As the project manager of Quick Construction Company, you are involved in drawing a PERT network for laying the foundation of a new art museum. The relevant information for all the activities of this project is given in the following table;-

Activity	Time estimates in weeks			Normal cost for expected duration (Sh.)	Crash cost (Sh)	Immediate predecessor
	t_o	t_m	t_p			
A	2	3	4	6,000	8,000	-
B	4	5	6	12,000	13,500	A
C	3	5	7	16,000	22,000	A
D	2	4	6	8,000	10,000	A
E	1	2	3	6,000	7,500	C, D
F	1	3	5	14,000	20,000	B, E

Required:-

- Calculate the expected duration and the variance of each activity [5 Marks]
- Construct the PERT network for the project [3 Marks]
- Determine the critical path and the expected duration of the project [2 Marks]
- Find the total, independent and free floats for each activity [5 Marks]
- The director of your company is not impressed by your PERT analysis. He draws your attention that the project must be completed by seven weeks and refers to the penalty clause in the agreement which provides for payment of penalty at the rate of Sh. 2, 500 for every week or part thereof exceeding seven weeks. Your director also strongly believes that the time duration of various activities of the project can be crashed to their optimistic time estimates with the crashing costs mentioned in the above table. Determine the optimal duration of the project if your objective is to minimize the sum of the project execution cost and the penalty cost. [10 Marks]

QUESTION FOUR [25 MARKS]

A company is considering two mutually exclusive projects requiring an initial cash outlay of Sh 10,000 each and with a useful life of 5 years. The company required rate of return is 10% and the appropriate corporate tax rate is 50%. The projects will be depreciated on a straight line

basis. The before depreciation and taxes cash flows expected to be generated by the projects are as follows.

YEAR	1	2	3	4	5
Project A	Shs 4,000	4,000	4,000	4,000	4,000
Project B	Shs 6,000	3,000	2,000	5,000	5,000

Required:

- (a) For each project, prepare a schedule to show the cash flows generated by the project [6 Marks]
- (b) Advise the management on which of the two projects they should invest in using:
 - i. The Payback Period [2 Marks]
 - ii. The Average Rate of Return [3 Marks]
 - iii. The Net Present Value [3 Marks]
 - iv. Profitability Index [3 Marks]
 - v. The Internal Rate of Return [5 Marks]
 - vi. Discounted payback method [3 Marks]

QUESTION FIVE [25 MARKS]

- (c) Discuss the various constraints that inhibit a project manager from achieving his / her objectives fully. [10 Marks]
- (d) Identify and discuss FIVE sources of finance that a project manager can use to finance projects. [15 Marks]

Appendix: Present-Value Tables

Present Value of One Dollar due at the End of n Years

N	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	.99010	.98039	.97007	.96154	.95238	.94340	.93458	.92593	.91743	.90909	.90090	.89286	.88496	.87719	.86957
2	.98030	.96117	.94260	.92456	.90703	.89000	.87344	.85734	.84168	.82645	.81162	.79719	.78315	.76947	.75614
3	.97059	.94232	.91514	.88900	.86384	.83962	.81630	.79383	.77218	.75131	.73119	.71178	.69305	.67497	.65752
4	.96098	.92385	.88849	.85480	.82270	.79209	.76290	.73503	.70843	.68301	.65873	.63552	.61332	.59208	.57175
5	.95147	.90573	.86261	.82193	.78353	.74726	.71299	.68058	.64993	.62092	.59345	.56746	.54276	.51937	.49718
6	.94204	.88797	.83748	.79031	.74622	.70496	.66634	.63017	.59627	.56447	.53464	.50663	.48032	.45559	.43233
7	.93272	.87056	.81309	.75992	.71068	.66506	.62275	.58349	.54703	.51316	.48166	.45235	.42506	.39964	.37594
8	.92348	.85349	.78941	.73069	.67684	.62741	.58201	.54027	.50187	.46651	.43393	.40388	.37616	.35056	.32690
9	.91434	.83675	.76642	.70259	.64461	.59190	.54393	.50025	.46043	.42410	.39092	.36061	.33288	.30751	.28426
10	.90529	.82035	.74409	.67556	.61391	.55839	.50835	.46319	.42241	.38554	.35218	.32197	.29459	.26974	.24718
11	.89632	.80426	.72242	.64958	.58468	.52679	.47509	.42888	.38753	.35049	.31728	.28748	.26070	.23662	.21494
12	.88745	.78849	.70138	.62460	.55684	.49697	.44401	.39711	.35553	.31863	.28584	.25667	.23071	.20756	.18691
13	.87866	.77303	.68095	.60057	.53032	.46884	.41496	.36770	.32618	.28966	.25751	.22917	.20416	.18207	.16253
14	.86996	.75787	.66112	.57747	.50507	.44230	.38782	.34046	.29925	.26333	.23199	.20462	.18068	.15971	.14133
15	.86135	.74301	.64186	.55526	.48102	.41726	.36245	.31524	.27454	.23939	.20900	.18270	.15989	.14010	.12289
16	.85282	.72845	.62317	.53391	.45811	.39365	.33873	.29189	.25187	.21763	.18829	.16312	.14150	.12289	.10686
17	.84438	.71416	.60502	.51337	.43630	.37136	.31657	.27027	.23107	.19784	.16963	.14564	.12522	.10780	.09293
18	.83602	.70016	.58739	.49363	.41552	.35034	.29586	.25025	.21199	.17986	.15282	.13004	.11081	.09456	.08080
19	.82774	.68643	.57029	.47464	.39573	.33051	.27651	.23171	.19449	.16351	.13768	.11611	.09806	.08295	.07026
20	.81954	.67297	.55367	.45639	.37689	.31180	.25842	.21455	.17843	.14864	.12403	.10367	.08678	.07276	.06110
21	.81143	.65978	.53755	.43883	.35894	.29415	.24151	.19866	.16370	.13513	.11174	.09256	.07680	.06383	.05313
22	.80340	.64684	.52189	.42195	.34185	.27750	.22571	.18394	.15018	.12285	.10067	.08264	.06796	.05599	.04620
23	.79544	.63416	.50669	.40573	.32557	.26180	.21095	.17031	.13778	.11168	.09069	.07379	.06014	.04911	.04017
24	.78757	.62172	.49193	.39012	.31007	.24698	.19715	.15770	.12640	.10153	.08170	.06588	.05322	.04308	.03493
25	.77977	.60953	.47760	.37512	.29530	.23300	.18425	.14602	.11597	.09230	.07361	.05882	.04710	.03779	.03038

Tables:

1

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N	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	.86207	.85470	.84746	.84034	.83333	.82645	.81967	.81301	.80645	.80000	.79365	.78740	.78125	.77519	.76923
2	.74316	.73051	.71818	.70616	.69444	.68301	.67186	.66098	.65036	.64000	.62988	.62000	.61035	.60093	.59172
3	.64066	.62437	.60863	.59342	.57870	.56447	.55071	.53738	.52449	.51200	.49991	.48819	.47684	.46583	.45517
4	.55229	.53365	.51579	.49867	.48225	.46651	.45140	.43690	.42297	.40906	.39675	.38440	.37253	.36111	.35013
5	.47611	.45611	.43711	.41905	.40188	.38554	.37000	.35520	.34111	.32768	.31488	.30268	.29104	.27993	.26933
6	.41044	.38984	.37043	.35214	.33490	.31863	.30328	.28878	.27509	.26214	.24991	.23833	.22737	.21700	.20718
7	.35383	.33320	.31392	.29592	.27908	.26333	.24859	.23478	.22184	.20972	.19834	.18766	.17764	.16822	.15937
8	.30503	.28478	.26604	.24867	.23257	.21763	.20376	.19088	.17891	.16777	.15741	.14776	.13878	.13040	.12259
9	.26295	.24340	.22546	.20897	.19381	.17986	.16702	.15519	.14428	.13422	.12493	.11635	.10842	.10109	.09430
10	.22668	.20804	.19106	.17560	.16151	.14864	.13690	.12617	.11635	.10737	.09915	.09161	.08470	.07836	.07254
11	.19542	.17781	.16192	.14756	.13459	.12285	.11221	.10258	.09383	.08590	.07869	.07214	.06617	.06075	.05580
12	.16846	.15197	.13722	.12400	.11216	.10153	.09198	.08339	.07567	.06872	.06245	.05680	.05170	.04709	.04292
13	.14523	.12989	.11629	.10420	.09346	.08391	.07539	.06780	.06103	.05498	.04957	.04472	.04039	.03650	.03302
14	.12520	.11102	.09855	.08757	.07789	.06934	.06180	.05512	.04921	.04398	.03934	.03522	.03155	.02830	.02540
15	.10793	.09489	.08352	.07359	.06491	.05731	.05065	.04481	.03969	.03518	.03122	.02773	.02465	.02194	.01954
16	.09304	.08110	.07078	.06184	.05409	.04736	.04152	.03643	.03201	.02815	.02478	.02183	.01926	.01700	.01503
17	.08021	.06932	.05998	.05196	.04507	.03914	.03403	.02962	.02581	.02252	.01967	.01719	.01505	.01318	.01156
18	.06914	.05925	.05083	.04367	.03756	.03235	.02789	.02408	.02082	.01801	.01561	.01354	.01175	.01022	.00889
19	.05961	.05064	.04308	.03669	.03130	.02673	.02286	.01958	.01679	.01441	.01239	.01066	.00918	.00792	.00684
20	.05139	.04328	.03651	.03084	.02608	.02209	.01874	.01592	.01354	.01153	.00983	.00839	.00717	.00614	.00526
21	.04430	.03699	.03094	.02591	.02174	.01826	.01536	.01294	.01102	.00922	.00780	.00661	.00561	.00476	.00405
22	.03819	.03162	.02622	.02178	.01811	.01509	.01259	.01052	.00880	.00738	.00619	.00520	.00438	.00369	.00311
23	.03292	.02702	.02222	.01830	.01509	.01247	.01032	.00855	.00710	.00590	.00491	.00410	.00342	.00286	.00239
24	.02838	.02310	.01883	.01538	.01258	.01031	.00846	.00695	.00573	.00472	.00390	.00323	.00267	.00222	.00184
25	.02447	.01974	.01596	.01292	.01048	.00852	.00693	.00565	.00462	.00378	.00310	.00254	.00209	.00172	.00142

Appendix: Present-Value Tables of an Annuity of \$1 per period for n periods

	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	.9901	.9804	.9709	.9615	.9524	.9434	.9346	.9259	.9174	.9091	.9009	.8929	.8850	.8772	.8696
2	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	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4868	2.4437	2.4018	2.3612	2.3216	2.2832
4	3.9020	3.8077	3.7171	3.6299	3.5459	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550
5	4.8535	4.7134	4.5797	4.4518	4.3295	4.2123	4.1002	3.9927	3.8896	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9976	3.8887	3.7845
7	6.7282	6.4720	6.2302	6.0020	5.7863	5.5824	5.3893	5.2064	5.0329	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604
8	7.6517	7.3254	7.0196	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	8.5661	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9852	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716
10	9.4714	8.9825	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4176	6.1446	5.8892	5.6502	5.4262	5.2161	5.0188
11	10.3677	9.7868	9.2526	8.7604	8.3064	7.8868	7.4987	7.1389	6.8052	6.4951	6.2065	5.9377	5.6869	5.4527	5.2337
12	11.2552	10.5753	9.9539	9.3850	8.8632	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206
13	12.1338	11.3483	10.6349	9.9856	9.3935	8.8527	8.3576	7.9038	7.4869	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831
14	13.0038	12.1062	11.2960	10.5631	9.8986	9.2950	8.7454	8.2442	7.7861	7.3667	6.9819	6.6282	6.3025	6.0021	5.7245
15	13.8651	12.8492	11.9379	11.1183	10.3796	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474
16	14.7180	13.5777	12.5610	11.6522	10.8377	10.1059	9.4466	8.8514	8.3125	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542
17	15.5624	14.2918	13.1660	12.1656	11.2740	10.4772	9.7632	9.1216	8.5436	8.0215	7.5488	7.1196	6.7291	6.3729	6.0472
18	16.3984	14.9920	13.7534	12.6592	11.6895	10.8276	10.0591	9.3719	8.7556	8.2014	7.7016	7.2497	6.8399	6.4674	6.1280
19	17.2261	15.6784	14.3237	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.19
20	18.0457	16.3514	14.8774	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5136	7.9633	7.4694	7.0248	6.6231	6.2593
21	18.8571	17.0111	15.4149	14.0291	12.8211	11.7640	10.8355	10.0168	9.2922	8.6487	8.0751	7.5620	7.1016	6.6870	6.3125
22	19.6605	17.6580	15.9368	14.4511	13.1630	12.0416	11.0612	10.2007	9.4424	8.7715	8.1757	7.6446	7.1695	6.7429	6.3587
23	20.4559	18.2921	16.4435	14.8568	13.4885	12.3033	11.2722	10.3710	9.5802	8.8832	8.2664	7.7184	7.2297	6.7921	6.3988
24	21.2435	18.9139	16.9355	15.2469	13.7986	12.5503	11.4693	10.5287	9.7066	8.9847	8.3481	7.7843	7.2829	6.8351	6.4338
25	22.0233	19.5234	17.4131	15.6220	14.0939	12.7833	11.6536	10.6748	8.8226	9.0770	8.4217	7.8431	7.3300	6.8729	6.4641

Notes:

3

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	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	.8621	.8547	.8475	.8403	.8333	.8264	.8197	.8130	.8065	.8003	.7937	.7874	.7813	.7752	.7692
2	1.6052	1.5852	1.5656	1.5465	1.5278	1.5095	1.4915	1.4740	1.4568	1.4400	1.4235	1.4074	1.3916	1.3761	1.3609
3	2.2459	2.2096	2.1743	2.1399	2.1065	2.0739	2.0422	2.0114	1.9813	1.9520	1.9234	1.8956	1.8684	1.8420	1.8161
4	2.7982	2.7432	2.6901	2.6386	2.5887	2.5404	2.4936	2.4483	2.4043	2.3616	2.3202	2.2800	2.2410	2.2031	2.1662
5	3.2743	3.1993	3.1272	3.0576	2.9906	2.9260	2.8636	2.8035	2.7454	2.6893	2.6351	2.5827	2.5320	2.4830	2.4356
6	3.6847	3.5892	3.4976	3.4098	3.3255	3.2446	3.1669	3.0923	3.0205	2.9514	2.8850	2.8210	2.7594	2.7000	2.6427
7	4.0386	3.9224	3.8115	3.7057	3.6046	3.5079	3.4155	3.3270	3.2423	3.1611	3.0833	3.0087	2.9370	2.8682	2.8021
8	4.3436	4.2072	4.0776	3.9544	3.8372	3.7256	3.6193	3.5179	3.4212	3.3289	3.2407	3.1564	3.0758	2.9986	2.9247
9	4.6065	4.4506	4.3030	4.1633	4.0310	3.9054	3.7863	3.6731	3.5655	3.4631	3.3657	3.2728	3.1842	3.0997	3.0190
10	4.8332	4.6586	4.4941	4.3389	4.1925	4.0541	3.9232	3.7993	3.6819	3.5705	3.4648	3.3644	3.2689	3.1781	3.0915
11	5.0286	4.8364	4.6560	4.4865	4.3271	4.1769	4.0354	3.9018	3.7757	3.6564	3.5435	3.4365	3.3351	3.2388	3.1473
12	5.1971	4.9884	4.7932	4.6105	4.4392	4.2785	4.1274	3.9852	3.8514	3.7251	3.6060	3.4933	3.3868	3.2859	3.1903
13	5.3423	5.1183	4.9095	4.7147	4.5327	4.3624	4.2028	4.0530	3.9124	3.7801	3.6555	3.5381	3.4272	3.3224	3.2233
14	5.4675	5.2293	5.0081	4.8023	4.6106	4.4317	4.2646	4.1082	3.9616	3.8241	3.6949	3.5733	3.4587	3.3507	3.2487
15	5.5755	5.3242	5.0916	4.8759	4.6755	4.4890	4.3152	4.1530	4.0013	3.8593	3.7261	3.6010	3.4834	3.3726	3.2682
16	5.6685	5.4053	5.1624	4.9377	4.7296	4.5364	4.3567	4.1894	4.0333	3.8874	3.7509	3.6228	3.5026	3.3896	3.2832
17	5.7487	5.4746	5.2223	4.9897	4.7746	4.5755	4.3908	4.2190	4.0591	3.9099	3.7705	3.6400	3.5177	3.4028	3.2948
18	5.8178	5.5339	5.2732	5.0333	4.8122	4.6079	4.4187	4.2431	4.0799	3.9279	3.7861	3.6536	3.5294	3.4130	3.3037
19	5.8775	5.5845	5.3162	5.0700	4.8435	4.6346	4.4415	4.2627	4.0967	3.9424	3.7985	3.6642	3.5386	3.4210	3.3105
20	5.9288	5.6278	5.3527	5.1009	4.8696	4.6567	4.4603	4.2786	4.1103	3.9539	3.8083	3.6726	3.5458	3.4271	3.3158
21	5.9731	5.6648	5.3837	5.1268	4.8913	4.6750	4.4756	4.2916	4.1212	3.9631	3.8161	3.6792	3.5514	3.4319	3.3198
22	6.0113	5.6964	5.4099	5.1486	4.9094	4.6900	4.4882	4.3021	4.1300	3.9705	3.8223	3.6844	3.5558	3.4356	3.3230
23	6.0442	5.7234	5.4321	5.1668	4.9245	4.7025	4.4985	4.3106	4.1371	3.9764	3.8273	3.6885	3.5592	3.4384	3.3254
24	6.0726	5.7465	5.4509	5.1822	4.9371	4.7128	4.5070	4.3176	4.1428	3.9811	3.8312	3.6918	3.5619	3.4406	3.3272
25	6.0971	5.7662	5.4669	5.1951	4.9476	4.7213	4.5139	4.3232	4.1474	3.9849	3.8342	3.6943	3.5640	3.4423	3.3286