

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY
THE DEPARTMENT OF ARCHITECTURE AND CONSTRUCTION MANAGEMENT
SECOND SEMESTER EXAMINATION
BACHELOR OF CONSTRUCTION MANAGEMENT
THIRD YEAR
CM 324 – CONSTRUCTION ECONOMICS III

Room: L2
Date: Tuesday 25th October 2022
DURATION: 3 Hours
Time: 12:50 – 4:00 pm

Instructions to Candidates

1. You have 10 minutes to read the paper.
Do not begin writing during this time.
2. Fill in the Attendance Slip with your name and student I.D. number now
3. **There are Ten Questions** and you are to **answer all questions**.
4. ALL ANSWERS MUST BE WRITTEN IN THE ANSWER BOOK (S) PROVIDED.
5. Each question must be answered starting on a New Page.
6. Notes and Textbooks are not allowed in the Test Room.
Only materials allowed and to be brought in by students are;
 - Calculators

WRITE YOUR NAME AND IDENTIFICATION NUMBER CLEARLY ON THE FRONT PAGE. DO IT NOW!

TOTAL MARKS = 100 MARKS

Question One [5 marks]

Calculate the approximate cost using the **UNIT Method** of the following scenario.

Enga Provincial Government are required to construct permanent buildings for 300 public servants who lost their residential building from fire due to Election related matters this year 2022. The Provincial Government built 20 houses at a cost of K2.2 million in 2017 which houses 20 public servants. Calculate the current approximate cost for housing 300 public servants. The inflation rate has increased to 25.3% from 2017 to 2022.

Question Two: [35 marks]

Calculate the approximate cost using the **CUBIC Method** of the following information.

- 1) Calculate the approximate cost of the following not occupied building **(10 marks)**
 - a) The proposed building 25m x 20m wide x 3.6m wall height with 1.5m ceiling height. The previous project of the similar type is 40m x 25m wide x 3.9m height with 2.0m ceiling height costing K1,250,000.
 - b) If previous project in (a) was constructed in 1996. How much will the proposed building will cost today. (Note: inflation between 1996 to 2022 is 465.3%)

- 2) Calculate the approximate cost for the following Mansard roof **(10 marks)**
 - a) The proposed building 30m x 15m wide with $h_1=700\text{mm}$, $h_2=1.2$, $h_3=4\text{m}$, with $B=1\text{m}$. The previous project is 35m x 20m wide with $h_1=800\text{mm}$, $h_2=1.4\text{m}$ and $h_3=5\text{m}$, with $B=1.5\text{m}$ costing K900,000 in 1996.
 - b) How much will the previous project and proposed building cost today? (Note: inflation between 1996 to 2022 is 465.3%)

- 3) Calculate the approximate cost for the flat roof **(15 marks)**
 - (a) The proposed building 25m x 20m wide x 3.6m wall height with 600mm ceiling height. The previous project with 25 x 15m x 3.6m wall height and 600mm ceiling costing K450,000 in 1996.
 - (b) How much will the proposed building with 40m x 25m x 4m wall height with 500mm ceiling height will cost today. (Note: inflation between 1996 to 2022 is 465.3%)
 - (c) How much will the proposed building with 45m x 20m x 4.9m wall height with 1.2m ceiling height cost today? (Note: inflation between 1996 to 2022 is 465.3%)

Question Three: [10 marks]

Calculate the approximate cost using the **Floor Area Method** of the following information.

- a) The cost of building a 15m x 6m single classroom for Omili Primary School in 2017 was K120,000.00. The board of management have proposed to build a double classroom of 16m x 12m. Calculate the approximate current estimate of the proposed classroom today. (Note: inflation between 2017 to 2022 is 25.3%)

- b) A client wants a proposed cost of a standard house of 15m x 9m wide. You have done a similar house of 15.2m x 7.0m and it costs K150,000.00 in 1996. Calculate the approximate current estimate of the proposed building. (Note: inflation between 1996 to 2022 is 465.3%)

Question Four [6 Marks]

An investor pays K4.5 million for a building site in Lae City and it remains undeveloped for seven years. Calculate the cost of the land to him at the end of this period, assuming a seven percent rate of interest.

Question Five [6 Marks]

A developer has been given the option to purchase a building site which, it is estimated, will be worth K8 million in nine years' time. The provision of public services will delay its use until that time. What sum could the developer be expected to pay now assuming an interest rate of eight percent?

Question Six [6 Marks]

What sum will be obtained if K15 000 is invested every year for twenty-five years at ten percent compound interest.

Question Seven [6 Marks]

A building client expects to have to carry out certain alterations to a building in five years' time and these are expected to cost K150 000. What sum should he invest now to provide sufficient funds at an operative interest rate of nine percent?

Question Eight [6 Marks]

Owing to unsatisfactory trading conditions an industrial concern ceased production for six years. Throughout this period, repair and maintenance work was carried out and this cost K20 000 per annum. Calculate the accumulated sum involved at the end of the six-year period, assuming a compound interest rate of nine percent.

Question Nine [10 Marks]

A building client will need to replace an office complex at the end of twenty years, and the replacement cost is estimated at K1.5 million. Calculate the amount of the annual sinking fund assuming an interest rate of ten percent is obtainable. It is also advisable to check.

Question Ten [10 Marks]

A building client wishes to compare the cost of purchasing one type of air conditioning installation costing K100 000, having a 10-year life, with another type having the same length of life but costing K55 000 initially and K5700 per annum for servicing and replacement of certain components. It is necessary to calculate the present value of the two installations for comparison purposes. Interest is to be taken at ten percent.

APPENDIX 1: AMOUNT OF K1 TABLE

Years	2	2½	3	3½	4	4½	Rate per cent 5
1	1.0200	1.0250	1.0300	1.0350	1.0400	1.0450	1.0500
2	1.0403	1.0506	1.0608	1.0712	1.0815	1.0920	1.1024
3	1.0612	1.0768	1.0927	1.1087	1.1248	1.1411	1.1576
4	1.0824	1.1038	1.1255	1.1475	1.1698	1.1925	1.2155
5	1.1040	1.1314	1.1592	1.1876	1.2166	1.2461	1.2762
6	1.1261	1.1596	1.1940	1.2292	1.2653	1.3022	1.3400
7	1.1486	1.1886	1.2298	1.2722	1.3159	1.3608	1.4071
8	1.1716	1.2184	1.2667	1.3168	1.3685	1.4221	1.4774
9	1.1950	1.2488	1.3047	1.3628	1.4233	1.4860	1.5513
10	1.2189	1.2800	1.3439	1.4105	1.4802	1.5529	1.6288
11	1.2433	1.3120	1.3842	1.4599	1.5394	1.6228	1.7103
12	1.2682	1.3448	1.4257	1.5110	1.6010	1.6958	1.7958
13	1.2936	1.3785	1.4685	1.5639	1.6650	1.7721	1.8856
14	1.3194	1.4129	1.5125	1.6186	1.7316	1.8519	1.9799
15	1.3458	1.4482	1.5579	1.6753	1.8009	1.9352	2.0789
16	1.3727	1.4845	1.6047	1.7339	1.8729	2.0223	2.1828
17	1.4002	1.5216	1.6528	1.7946	1.9479	2.1133	2.2920
18	1.4282	1.5596	1.7024	1.8574	2.0258	2.2084	2.4066
19	1.4568	1.5986	1.7535	1.9225	2.1068	2.3078	2.5269
20	1.4859	1.6386	1.8061	1.9897	2.1911	2.4117	2.6532
21	1.5156	1.6795	1.8602	2.0594	2.2787	2.5202	2.7859
22	1.5459	1.7215	1.9161	2.1315	2.3699	2.6336	2.9252
23	1.5768	1.7646	1.9735	2.2061	2.4647	2.7521	3.0715
24	1.6084	1.8087	2.0327	2.2833	2.5633	2.8760	3.2250
25	1.6406	1.8539	2.0937	2.3632	2.6658	3.0054	3.3863
26	1.6734	1.9002	2.1565	2.4459	2.7724	3.1406	3.5556
27	1.7068	1.9477	2.2212	2.5315	2.8833	3.2820	3.7834
28	1.7410	1.9964	2.2879	2.6201	2.9987	3.4296	3.9201
29	1.7758	2.0464	2.3565	2.7118	3.1180	3.5840	4.1161
30	1.8113	2.0975	2.4272	2.8067	3.2433	3.7453	4.3219
35	1.9998	2.3732	2.8138	3.3335	3.9460	4.6673	5.5160
40	2.2080	2.6850	3.2620	3.9592	4.8010	5.8163	7.0399
45	2.4378	3.0379	3.7815	4.7023	5.8411	7.2482	8.9850
50	2.6915	3.4371	4.3839	5.5849	7.1066	9.0326	11.4673
55	2.9717	3.8887	5.0821	6.6331	8.6463	11.2563	14.6356
60	3.2810	4.3997	5.8916	7.8780	10.5196	14.0274	18.6791
65	3.6225	4.9779	6.8299	9.3566	12.7987	17.4807	23.8398
70	3.9995	5.6321	7.9178	11.1128	15.5716	21.7841	30.4264
75	4.4158	6.3722	9.1789	13.1985	18.9452	27.1469	38.8326
80	4.8754	7.2095	10.6408	15.6757	23.0497	33.8300	49.5614
85	5.3828	8.1569	12.3357	18.6178	28.0436	42.1584	63.2543
90	5.9431	9.2288	14.3004	22.1121	34.1193	52.5371	80.7303
95	6.5616	10.4416	16.5781	26.2623	41.5113	65.4707	103.6346
100	7.2446	11.8137	19.2186	31.1914	50.5049	81.5885	131.5012

Appendix 1

years	compound interest							
	5½	6	6½	7	7½	8	9	10
1	1.0550	1.0600	1.0650	1.0700	1.0750	1.0800	1.0900	1.1000
2	1.1130	1.1235	1.1342	1.1448	1.1556	1.1663	1.1880	1.2099
3	1.1742	1.1910	1.2079	1.2250	1.2422	1.2597	1.2950	1.3309
4	1.2388	1.2624	1.2864	1.3107	1.3354	1.3604	1.4115	1.4640
5	1.3069	1.3382	1.3700	1.4025	1.4356	1.4693	1.5386	1.6105
6	1.3788	1.4185	1.4591	1.5007	1.5433	1.5868	1.6771	1.7715
7	1.4546	1.5036	1.5589	1.6057	1.6590	1.7138	1.8280	1.9487
8	1.5346	1.5938	1.6549	1.7181	1.7834	1.8509	1.9925	2.1435
9	1.6190	1.6894	1.7625	1.8384	1.9172	1.9990	2.1718	2.3579
10	1.7081	1.7908	1.8771	1.9671	2.0610	2.1581	2.3673	2.5937
11	1.8020	1.8982	1.9991	2.1048	2.2156	2.3316	2.5804	2.8531
12	1.9012	2.0121	2.1290	2.2521	2.3817	2.5189	2.8126	3.1384
13	2.0057	2.1329	2.2674	2.4098	2.5604	2.7196	3.0658	3.4522
14	2.1160	2.2609	2.4148	2.5785	2.7524	2.9371	3.3417	3.7974
15	2.2324	2.3965	2.5718	2.7590	2.9588	3.1721	3.6424	4.1772
16	2.3552	2.5403	2.7390	2.9521	3.1807	3.4259	3.9703	4.5949
17	2.4848	2.6927	2.9170	3.1588	3.4193	3.7000	4.3276	5.0544
18	2.6214	2.8543	3.1066	3.3799	3.6758	3.9960	4.7171	5.5599
19	2.7656	3.0255	3.3085	3.6165	3.9514	4.3157	5.1416	6.1159
20	2.9177	3.2071	3.5236	3.8696	4.2478	4.6609	5.6044	6.7274
21	3.0782	3.3995	3.7526	4.1405	4.5664	5.0338	6.1088	7.4002
22	3.2475	3.6035	3.9966	4.4304	4.9089	5.4365	6.6586	8.1402
23	3.4261	3.8197	4.2563	4.7405	5.2770	5.8714	7.2578	8.9543
24	3.6145	4.0489	4.5330	5.0723	5.6728	6.3411	7.9110	9.8497
25	3.8133	4.2918	4.8276	5.4274	6.0983	6.8484	8.6230	10.8347
26	4.0231	4.5493	5.1414	5.8073	6.5557	7.3963	9.3991	11.9181
27	4.2444	4.8223	5.4756	6.2138	7.0473	7.9880	10.2450	13.1099
28	4.4778	5.1116	5.8316	6.6488	7.5759	8.6271	11.1671	14.4209
29	4.7241	5.4183	6.2106	7.1142	8.1441	9.3172	12.1721	15.8630
30	4.9839	5.7434	6.6143	7.6122	8.7549	10.0626	13.2676	17.4494
35	6.5138	7.6860	9.0622	10.6765	12.5688	14.7853	20.4139	28.1024
40	8.5133	10.2857	12.4160	14.9744	18.0442	21.7245	31.4094	45.2592
45	11.1265	13.7646	17.0110	21.0024	25.9048	31.9204	48.3272	72.8904
50	14.5419	18.4201	23.3066	29.4570	37.1897	46.9016	74.3575	117.3908
55	19.0057	24.6503	31.9321	41.3149	53.3906	68.9138	114.4082	189.0591
60	24.8397	32.9876	43.7498	57.9464	76.6492	101.2570	176.0312	304.4816
65	32.4645	44.1449	59.9410	81.2728	110.0398	148.7798	270.8459	490.3706
70	42.4299	59.0759	82.1244	113.9893	157.9764	218.6063	416.7300	789.7468
75	55.4542	79.0569	112.5176	159.8760	226.7956	321.2045	641.1908	1271.8952
80	72.4764	105.7959	154.1589	224.2343	325.5945	471.9547	986.5515	2048.4000
85	94.7237	141.5788	211.2110	314.5002	467.4330	693.4564	1517.9319	3298.9687
90	123.8002	189.4645	289.3774	441.1029	671.0605	1018.9149	2335.5264	5313.0221
95	161.8019	253.5462	396.4721	618.6696	963.3942	1497.1203	3593.4969	8556.6753
100	211.4686	339.3020	543.2012	867.7162	1383.0771	2199.7612	5529.0406	13780.6110

APPENDIX 2: PRESENT VALUE OF K1 TABLE

Years	2	2½	3	3½	4	4½	Rate per cent 5
1	0.98039	0.97560	0.97087	0.96618	0.96153	0.95693	0.95238
2	0.96116	0.95181	0.94259	0.93351	0.92455	0.91573	0.90702
3	0.94232	0.92859	0.91514	0.90194	0.88899	0.87629	0.86383
4	0.92384	0.90595	0.88848	0.87144	0.85480	0.83856	0.82270
5	0.90573	0.88385	0.86260	0.84197	0.82192	0.80245	0.78352
6	0.88797	0.86229	0.83748	0.81350	0.79031	0.76789	0.74621
7	0.87056	0.84126	0.81309	0.78599	0.75991	0.73482	0.71068
8	0.85349	0.82074	0.78940	0.75941	0.73069	0.70318	0.67683
9	0.83675	0.80072	0.76641	0.73373	0.70258	0.67290	0.64460
10	0.82034	0.78119	0.74409	0.70891	0.67556	0.64392	0.61391
11	0.80426	0.76214	0.72242	0.68494	0.64958	0.61619	0.58467
12	0.78849	0.74355	0.70137	0.66178	0.62459	0.58966	0.55683
13	0.77303	0.72542	0.68095	0.63940	0.60057	0.56427	0.53032
14	0.75787	0.70772	0.66111	0.61778	0.57747	0.53997	0.50506
15	0.74301	0.69046	0.64186	0.59689	0.55526	0.51672	0.48101
16	0.72844	0.67362	0.62316	0.57670	0.53390	0.49446	0.45811
17	0.71416	0.65719	0.60501	0.55720	0.51337	0.47317	0.43629
18	0.70015	0.64116	0.58739	0.53836	0.49362	0.45280	0.41552
19	0.68643	0.62552	0.57028	0.52015	0.47464	0.43330	0.39573
20	0.67297	0.61027	0.55367	0.50256	0.45638	0.41464	0.37688
21	0.65977	0.59538	0.53754	0.48557	0.43383	0.39678	0.35894
22	0.64683	0.58086	0.52189	0.46915	0.42195	0.37970	0.34184
23	0.63415	0.56669	0.50669	0.45328	0.40572	0.36335	0.32557
24	0.62172	0.55287	0.49193	0.43795	0.39012	0.34770	0.31006
25	0.60953	0.53939	0.47760	0.42314	0.37511	0.33273	0.29530
26	0.59757	0.52623	0.46369	0.40883	0.36068	0.31840	0.28124
27	0.58586	0.51339	0.45018	0.39501	0.34681	0.30469	0.26784
28	0.57437	0.50087	0.43707	0.38165	0.33347	0.29157	0.25509
29	0.56311	0.48866	0.42434	0.36874	0.32065	0.27901	0.24294
30	0.55207	0.47674	0.41198	0.35627	0.30831	0.26700	0.23137
35	0.50002	0.42137	0.35538	0.29997	0.25341	0.21425	0.18129
40	0.45289	0.37243	0.30655	0.25257	0.20828	0.17192	0.14204
45	0.41019	0.32917	0.26443	0.21265	0.17119	0.13796	0.11129
50	0.37152	0.29094	0.22810	0.17905	0.14071	0.11070	0.08720
55	0.33650	0.25715	0.19676	0.15075	0.11565	0.08883	0.06832
60	0.30478	0.22728	0.16973	0.12693	0.09506	0.07128	0.05353
65	0.27605	0.20088	0.14641	0.10687	0.07813	0.05720	0.04194
70	0.25002	0.17755	0.12629	0.08998	0.06421	0.04590	0.03286
75	0.22645	0.15693	0.10894	0.07576	0.05278	0.03683	0.02575
80	0.20510	0.13870	0.09397	0.06379	0.04338	0.02955	0.02017
85	0.18577	0.12259	0.08106	0.05371	0.03565	0.02372	0.01580
90	0.16826	0.10835	0.06992	0.04522	0.02930	0.01903	0.01238
95	0.15239	0.09577	0.06032	0.03807	0.02408	0.01527	0.00970
100	0.13803	0.08464	0.05203	0.03206	0.01980	0.01225	0.00760

Appendix 2

Years	compound interest							
	5½	6	6½	7	7½	8	9	10
1	0.94786	0.94339	0.93896	0.93457	0.93023	0.92592	0.91743	0.90909
2	0.89845	0.88999	0.88165	0.87343	0.86533	0.85733	0.84168	0.82644
3	0.85161	0.83961	0.82784	0.81629	0.80496	0.79383	0.77218	0.75131
4	0.80721	0.79209	0.77732	0.76289	0.74880	0.73502	0.70842	0.68301
5	0.76513	0.74725	0.72988	0.71208	0.69655	0.68058	0.64993	0.62092
6	0.72524	0.70496	0.68933	0.66634	0.64796	0.63016	0.59626	0.56447
7	0.68743	0.66505	0.64350	0.62274	0.60275	0.58349	0.54703	0.51315
8	0.65159	0.62741	0.60423	0.58200	0.55070	0.54026	0.50186	0.46650
9	0.61762	0.59189	0.56735	0.54393	0.52158	0.50024	0.46042	0.42409
10	0.58543	0.55839	0.53272	0.50834	0.48519	0.46319	0.42241	0.38554
11	0.55491	0.52678	0.50021	0.47509	0.45134	0.42888	0.38753	0.35049
12	0.52598	0.49696	0.46968	0.44401	0.41985	0.39711	0.35553	0.31863
13	0.49856	0.46883	0.44101	0.41496	0.39056	0.36769	0.32617	0.28966
14	0.47256	0.44230	0.41410	0.38781	0.36331	0.34046	0.29924	0.26333
15	0.44793	0.41726	0.38882	0.36244	0.33796	0.31524	0.27453	0.23939
16	0.42458	0.39364	0.36509	0.33873	0.31438	0.29189	0.25186	0.21762
17	0.40244	0.37136	0.34281	0.31657	0.29245	0.27026	0.23107	0.19784
18	0.38146	0.35034	0.32188	0.29586	0.27204	0.25024	0.21199	0.17985
19	0.36157	0.33051	0.30224	0.27650	0.25306	0.23171	0.19448	0.16350
20	0.34272	0.31180	0.28379	0.25841	0.23541	0.21454	0.17843	0.14864
21	0.32486	0.29415	0.26647	0.24151	0.21898	0.19865	0.16369	0.13513
22	0.30792	0.27750	0.25021	0.22571	0.20371	0.18394	0.15018	0.12284
23	0.29187	0.26179	0.23494	0.21094	0.18949	0.17031	0.13778	0.11167
24	0.27665	0.24697	0.22060	0.19714	0.17627	0.15769	0.12640	0.10152
25	0.26223	0.23299	0.20713	0.18424	0.16397	0.14601	0.11596	0.09229
26	0.24856	0.21981	0.19449	0.17219	0.15253	0.13520	0.10639	0.08390
27	0.23560	0.20736	0.18262	0.16093	0.14189	0.12518	0.09760	0.07627
28	0.22332	0.19563	0.17147	0.15040	0.13199	0.11591	0.08954	0.06934
29	0.21167	0.18455	0.16101	0.14056	0.12278	0.10732	0.08215	0.06303
30	0.20064	0.17411	0.15118	0.13136	0.11422	0.09937	0.07537	0.05730
35	0.15351	0.13010	0.11034	0.09366	0.07956	0.06763	0.04898	0.03558
40	0.11746	0.09722	0.08054	0.06678	0.05541	0.04603	0.03183	0.02209
45	0.08987	0.07265	0.05878	0.04761	0.03860	0.03132	0.02069	0.01371
50	0.06876	0.05428	0.04290	0.03394	0.02688	0.02132	0.01344	0.00851
55	0.05261	0.04056	0.03131	0.02420	0.01872	0.01451	0.00874	0.00528
60	0.04025	0.03031	0.02285	0.01725	0.01304	0.00987	0.00568	0.00328
65	0.03080	0.02265	0.01668	0.01230	0.00908	0.00672	0.00369	0.00203
70	0.02356	0.01692	0.01217	0.00877	0.00633	0.00457	0.00239	0.00126
75	0.01803	0.01264	0.00888	0.00525	0.00440	0.00311	0.00155	0.00078
80	0.01379	0.00945	0.00648	0.00445	0.00307	0.00211	0.00101	0.00048
85	0.01055	0.00706	0.00473	0.00317	0.00213	0.00144	0.00065	0.00030
90	0.00807	0.00527	0.00345	0.00226	0.00149	0.00098	0.00042	0.00018
95	0.00618	0.00394	0.00252	0.00161	0.00103	0.00066	0.00027	0.00011
100	0.00472	0.00294	0.00184	0.00115	0.00072	0.00045	0.00018	0.00007

APPENDIX 3: AMOUNT OF K1 PER ANNUM TABLE

Years	2	2½	3	3½	4	4½	Rate per cent 5
1	1.000	1.000	1.000	1.000	1.000	1.000	1.200
2	2.019	2.024	2.029	2.034	2.039	2.044	1.049
3	3.060	3.075	3.090	3.106	3.121	3.137	3.152
4	4.121	4.152	4.183	4.214	4.246	4.278	4.310
5	5.204	5.256	5.309	5.362	5.416	5.470	5.525
6	6.308	6.387	6.468	6.550	6.632	6.716	6.801
7	7.434	7.547	7.662	7.779	7.898	8.019	8.142
8	8.582	8.736	8.892	9.051	9.214	9.380	9.549
9	9.754	9.954	10.159	10.368	10.582	10.802	11.026
10	10.949	10.203	11.463	11.731	12.006	12.288	12.577
11	12.168	12.483	12.807	13.141	13.486	13.841	14.206
12	13.412	13.795	14.192	14.601	15.025	15.464	15.917
13	14.680	15.140	15.617	16.113	16.626	17.159	17.712
14	15.973	16.518	17.086	17.676	18.291	18.932	19.598
15	17.293	17.931	18.598	19.295	20.023	20.784	21.578
16	18.639	19.380	20.156	20.971	21.824	22.719	23.657
17	20.012	20.864	21.761	22.705	23.697	24.741	25.840
18	21.412	22.386	23.414	24.499	25.645	26.855	28.132
19	22.840	23.946	25.116	26.357	27.671	29.063	30.539
20	24.297	25.544	26.870	28.279	29.778	31.371	33.065
21	25.783	27.183	28.676	30.269	31.969	33.783	35.719
22	27.298	28.862	30.536	32.328	34.247	36.303	38.505
23	28.844	30.584	32.452	34.460	36.617	38.937	41.430
24	30.421	32.349	34.426	36.666	39.082	41.689	44.501
25	32.030	34.157	36.459	38.949	41.645	44.565	47.727
26	33.670	36.011	38.553	41.313	44.311	47.570	51.113
27	35.344	37.911	40.709	43.759	47.084	50.711	54.669
28	37.051	39.859	42.930	46.290	49.967	53.993	58.402
29	38.792	41.856	45.218	48.910	52.966	57.423	62.322
30	40.568	43.902	47.575	51.622	56.083	61.007	66.438
35	49.994	54.928	60.462	66.674	73.652	81.496	90.320
40	60.401	67.402	75.401	84.550	95.025	107.030	120.799
45	71.892	81.516	92.719	105.781	121.029	138.849	159.700
50	84.579	97.484	112.796	130.997	152.667	178.503	209.347
55	98.586	115.550	136.071	160.946	191.159	227.917	272.712
60	114.051	135.991	163.053	196.516	237.990	289.497	353.583
65	131.126	159.118	194.332	238.762	294.968	366.237	456.797
70	149.977	185.284	230.594	288.937	364.290	461.869	588.528
75	170.791	214.888	272.630	348.529	448.631	581.044	756.653
80	193.771	248.382	321.362	419.306	551.244	729.557	971.228
85	219.143	286.278	377.856	503.367	676.090	914.632	1245.086
90	247.156	329.154	443.348	603.204	827.983	1145.268	1594.607
95	278.084	377.664	519.271	721.780	1012.784	1432.684	2040.693
100	312.232	432.548	607.287	862.611	1237.623	1790.855	2610.025

Appendix 3

Years	compound interest							
	5½	6	6½	7	7½	8	9	10
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.054	2.059	2.064	2.069	2.074	2.079	2.089	2.099
3	3.168	3.183	3.199	3.214	3.230	3.246	3.278	3.309
4	4.342	4.374	4.407	4.439	4.472	4.506	4.573	4.640
5	5.581	5.637	5.693	5.750	5.808	5.866	5.984	6.105
6	6.888	6.975	7.063	7.153	7.244	7.335	7.523	7.715
7	8.266	8.393	8.522	8.654	8.787	8.922	9.200	9.487
8	9.721	9.897	10.076	10.259	10.446	10.636	11.028	11.435
9	11.256	11.491	11.731	11.977	12.229	12.487	13.021	13.579
10	12.875	13.180	13.494	13.816	14.147	14.486	15.192	15.937
11	14.583	14.971	15.371	15.783	16.208	16.645	17.560	18.531
12	16.385	16.869	17.370	17.888	18.423	18.977	20.140	21.384
13	18.286	18.882	19.499	20.140	20.805	21.495	22.953	24.522
14	20.292	21.015	21.767	22.550	23.365	24.214	26.019	27.974
15	22.408	23.275	24.182	25.129	26.118	27.152	29.360	31.772
16	24.641	25.672	26.754	27.888	29.077	30.324	33.003	35.949
17	26.996	28.212	29.493	30.840	32.258	33.750	36.973	40.544
18	29.481	30.905	32.410	33.999	35.677	37.450	41.301	45.599
19	32.102	33.759	35.516	37.378	39.358	41.446	46.018	51.159
20	34.863	36.785	38.825	40.995	43.304	45.761	51.160	57.274
21	37.786	39.992	42.348	44.865	47.552	50.422	56.764	64.002
22	40.864	43.392	46.101	49.005	52.118	55.456	62.873	71.402
23	44.111	46.995	50.098	53.436	57.027	60.893	69.531	79.543
24	47.537	50.815	54.354	58.176	62.304	66.764	76.789	88.497
25	51.152	54.864	58.887	63.249	67.977	73.105	84.700	98.347
26	54.965	59.156	63.715	68.676	74.070	79.954	93.323	109.181
27	58.989	63.705	68.856	74.483	80.631	87.350	102.723	121.099
28	63.233	68.528	74.332	80.697	87.679	95.338	112.968	134.209
29	67.711	73.639	80.164	87.346	95.255	103.965	124.135	148.630
30	72.435	79.058	86.374	94.460	103.399	113.283	136.307	164.494
31	100.251	111.434	124.034	138.236	154.251	172.316	215.710	271.024
32	136.605	154.761	175.631	199.635	227.256	259.056	337.882	442.592
33	184.119	212.743	246.324	285.749	332.064	386.505	525.858	718.904
34	246.217	290.335	343.179	406.528	482.529	573.770	815.083	1163.908
35	327.377	394.172	475.879	575.928	698.542	848.923	1260.091	1880.591
36	433.450	533.128	657.689	813.520	1008.656	1253.213	1944.791	3034.816
37	575.083	719.082	906.785	1146.755	1453.865	1847.247	2998.288	4893.706
38	753.271	967.932	1248.068	1614.134	2093.019	2720.079	4619.223	7887.468
39	990.076	1300.948	1715.655	2269.657	3010.608	4002.556	7113.232	12708.952
40	1299.571	1746.599	2356.290	3189.062	4327.926	5886.934	10950.572	20474.000
41	1704.068	2342.981	3234.016	4478.575	6219.107	8655.705	16854.798	32979.687
42	2232.730	3141.075	4436.576	6287.185	8934.140	12723.936	25939.182	53120.221
43	2932.730	4209.103	6084.187	8823.852	12831.922	18701.503	39916.632	85556.753
44	3826.702	5638.367	8341.557	12381.661	18427.694	27484.515	61422.673	137796.110

APPENDIX 4: ANNUAL SINKING FUND TABLE

Years	2	2½	3	3½	4	4½	Rate per cent 5
1	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	0.49505	0.49382	0.49261	0.49140	0.49019	0.48899	0.48780
3	0.32675	0.32513	0.32353	0.32195	0.32034	0.31877	0.31720
4	0.24262	0.24081	0.23902	0.23725	0.23549	0.23374	0.23201
5	0.19215	0.19024	0.18835	0.18648	0.18462	0.18279	0.18097
6	0.15852	0.15654	0.15459	0.15266	0.15076	0.14867	0.14701
7	0.13451	0.13249	0.13050	0.12894	0.12660	0.12470	0.12281
8	0.11650	0.11446	0.11245	0.11047	0.10852	0.10660	0.10472
9	0.10251	0.10045	0.09843	0.09644	0.09449	0.09257	0.09069
10	0.09132	0.08925	0.08723	0.08524	0.08329	0.08137	0.07950
11	0.08217	0.08010	0.07807	0.07609	0.07414	0.07224	0.07038
12	0.07455	0.07248	0.07046	0.06848	0.06655	0.06466	0.06282
13	0.06811	0.06604	0.06402	0.06206	0.06014	0.05827	0.05645
14	0.06260	0.06053	0.05852	0.05657	0.05466	0.05292	0.05102
15	0.05782	0.05576	0.05376	0.05182	0.04994	0.04811	0.04634
16	0.05565	0.05159	0.04961	0.04768	0.04582	0.04401	0.04226
17	0.04996	0.04792	0.04595	0.04404	0.04219	0.04041	0.03869
18	0.04670	0.04467	0.04270	0.04081	0.03899	0.03723	0.03554
19	0.04378	0.04176	0.03981	0.03794	0.03613	0.03440	0.03274
20	0.04115	0.03914	0.03721	0.03536	0.03358	0.03187	0.03024
21	0.03878	0.03678	0.03487	0.03303	0.03128	0.02960	0.02799
22	0.03663	0.03464	0.03274	0.03093	0.02919	0.02754	0.02597
23	0.03460	0.03269	0.03081	0.02901	0.02730	0.02568	0.02413
24	0.03287	0.03091	0.02904	0.02727	0.02558	0.02398	0.02247
25	0.03122	0.02927	0.02742	0.02567	0.02401	0.02243	0.02095
26	0.02969	0.02776	0.02593	0.02420	0.02256	0.02102	0.01956
27	0.02829	0.02637	0.02456	0.02285	0.02123	0.01971	0.01829
28	0.02698	0.02508	0.02329	0.02160	0.02001	0.01852	0.01712
29	0.02577	0.02389	0.02211	0.02044	0.01887	0.01741	0.01604
30	0.02464	0.02277	0.02101	0.01937	0.01783	0.01639	0.01505
35	0.02000	0.01820	0.01653	0.01499	0.01357	0.01227	0.01107
40	0.01655	0.01483	0.01326	0.01182	0.01052	0.00934	0.00827
45	0.01390	0.01226	0.01078	0.00945	0.00826	0.00720	0.00626
50	0.01182	0.01025	0.00886	0.00763	0.00655	0.00560	0.00477
55	0.01014	0.00865	0.00734	0.00621	0.00523	0.00438	0.00366
60	0.00876	0.00735	0.00613	0.00508	0.00420	0.00345	0.00282
65	0.00762	0.00628	0.00514	0.00418	0.00339	0.00273	0.00218
70	0.00666	0.00539	0.00433	0.00346	0.00274	0.00216	0.00169
75	0.00585	0.00465	0.00366	0.00286	0.00222	0.00172	0.00132
80	0.00516	0.00402	0.00311	0.00238	0.00181	0.00137	0.00102
85	0.00456	0.00349	0.00264	0.00198	0.00147	0.00109	0.00080
90	0.00404	0.00303	0.00225	0.00165	0.00120	0.00087	0.00062
95	0.00359	0.00264	0.00192	0.00138	0.00098	0.00069	0.00049
100	0.00320	0.00231	0.00164	0.00115	0.00080	0.00055	0.00038

Appendix 4

Years	compound interest							
	5½	6	6½	7	7½	8	9	10
1	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	0.48661	0.48543	0.48426	0.48309	0.48192	0.48076	0.47846	0.47619
3	0.31565	0.31410	0.31257	0.31105	0.30953	0.30803	0.30505	0.30211
4	0.23029	0.22859	0.22690	0.22522	0.22356	0.22192	0.21866	0.21547
5	0.17917	0.17739	0.17563	0.17389	0.17216	0.17045	0.16709	0.16379
6	0.14517	0.14336	0.14156	0.13979	0.13804	0.13631	0.13291	0.12960
7	0.12096	0.11913	0.11733	0.11555	0.11380	0.11207	0.10869	0.10540
8	0.10286	0.10103	0.09923	0.09746	0.09572	0.09401	0.09067	0.08744
9	0.08883	0.08702	0.08523	0.08348	0.08176	0.08007	0.07679	0.07364
10	0.07766	0.07586	0.07410	0.07237	0.07068	0.06902	0.06582	0.06274
11	0.06857	0.06679	0.06505	0.06335	0.06169	0.06007	0.05694	0.05396
12	0.06102	0.05927	0.05756	0.05590	0.05427	0.05269	0.04965	0.04676
13	0.05468	0.05296	0.05128	0.04965	0.04806	0.04652	0.04356	0.04077
14	0.04927	0.04758	0.04594	0.04434	0.04279	0.04129	0.03843	0.03574
15	0.04462	0.04296	0.04135	0.03979	0.03828	0.03682	0.03405	0.03147
16	0.04058	0.03895	0.03737	0.03585	0.03439	0.03297	0.03029	0.02781
17	0.03704	0.03544	0.03390	0.03242	0.03100	0.02962	0.02704	0.02466
18	0.03391	0.03235	0.03085	0.02941	0.02802	0.02670	0.02421	0.02193
19	0.03115	0.02962	0.02815	0.02675	0.02541	0.02412	0.02173	0.01954
20	0.02867	0.02718	0.02575	0.02439	0.02309	0.02185	0.01954	0.01745
21	0.02646	0.02500	0.02361	0.02228	0.02102	0.01983	0.01761	0.01562
22	0.02447	0.02304	0.02169	0.02040	0.01918	0.01803	0.01590	0.01400
23	0.02266	0.02127	0.01996	0.01871	0.01753	0.01642	0.01438	0.01257
24	0.02103	0.01967	0.01839	0.01718	0.01605	0.01497	0.01302	0.01129
25	0.01954	0.01822	0.01698	0.01581	0.01471	0.01367	0.01180	0.01016
26	0.01819	0.01690	0.01569	0.01456	0.01349	0.01250	0.01071	0.00915
27	0.01695	0.01569	0.01452	0.01342	0.01240	0.01144	0.00973	0.00825
28	0.01581	0.01459	0.01345	0.01239	0.01140	0.01048	0.00885	0.00745
29	0.01476	0.01357	0.01247	0.01144	0.01049	0.00961	0.00805	0.00672
30	0.01380	0.01264	0.01157	0.01058	0.00967	0.00882	0.00733	0.00607
31	0.00997	0.00897	0.00806	0.00723	0.00648	0.00580	0.00463	0.00368
32	0.00732	0.00646	0.00569	0.00500	0.00440	0.00386	0.00295	0.00225
33	0.00543	0.00470	0.00405	0.00349	0.00301	0.00258	0.00190	0.00139
34	0.00406	0.00344	0.00291	0.00245	0.00207	0.00174	0.00122	0.00085
35	0.00305	0.00253	0.00210	0.00173	0.00143	0.00117	0.00079	0.00053
36	0.00230	0.00187	0.00152	0.00122	0.00099	0.00079	0.00051	0.00032
37	0.00174	0.00139	0.00110	0.00087	0.00068	0.00054	0.00033	0.00020
38	0.00132	0.00103	0.00080	0.00061	0.00047	0.00036	0.00021	0.00012
39	0.00101	0.00076	0.00058	0.00044	0.00033	0.00024	0.00014	0.00007
40	0.00076	0.00057	0.00042	0.00031	0.00023	0.00016	0.00009	0.00004
41	0.00058	0.00042	0.00030	0.00022	0.00016	0.00011	0.00005	0.00003
42	0.00044	0.00031	0.00022	0.00015	0.00011	0.00007	0.00003	0.00001
43	0.00034	0.00023	0.00016	0.00011	0.00007	0.00005	0.00002	0.00001
44	0.00026	0.00017	0.00011	0.00008	0.00005	0.00003	0.00001	0.00000

APPENDIX 5: PRESENT VALUE OF K₁ PER ANNUM OR YEARS' PURCHASE TABLE

Years	2	2½	3	3½	4	4½	Rate per cent 5
1	0.9803	0.9756	0.9708	0.9661	0.9615	0.9569	0.9523
2	1.9415	1.9274	1.9134	1.8996	1.8860	1.8726	1.8594
3	2.8838	2.8560	2.8286	2.8016	2.7750	2.7489	2.7232
4	3.8077	3.7619	3.7170	3.6730	3.6296	3.5875	3.5459
5	4.7134	4.6458	4.5797	4.5150	4.4518	4.3899	4.3294
6	5.6014	5.5081	5.4171	5.3285	5.2421	5.1578	5.0756
7	6.4719	6.3493	6.2302	6.1145	6.0020	5.8927	5.7863
8	7.3254	7.1701	7.0196	6.8739	6.7827	6.5958	6.4632
9	8.1622	7.9708	7.7861	7.6076	7.4353	7.2687	7.1078
10	8.9825	8.7520	8.5302	8.3166	8.1108	7.9127	7.7217
11	9.7868	9.5142	9.2326	9.0015	8.7604	8.5289	8.3064
12	10.5753	10.2577	9.9540	9.6633	9.3850	9.1185	8.8632
13	11.3483	10.9831	10.6349	10.3027	9.9856	9.6828	9.3935
14	12.1062	11.6909	11.2960	10.9205	10.5631	10.2228	9.8996
15	12.8492	12.3813	11.9379	11.5174	11.1183	10.7395	10.3796
16	13.5777	13.0550	12.5611	12.0941	11.6522	11.2340	10.8377
17	14.2918	13.7121	13.1661	12.6513	12.1656	11.7071	11.2740
18	15.9920	14.3533	13.7535	13.1896	12.6592	12.1599	11.6895
19	15.6784	14.9788	14.3237	13.7098	13.1339	12.5932	12.0853
20	16.3514	15.5891	14.8774	14.2124	13.5903	13.0079	12.4622
21	17.0112	16.1845	15.4150	14.6979	14.0291	13.4047	12.8211
22	17.6580	16.7654	15.9369	15.1671	14.4511	13.7844	13.1630
23	18.2922	17.3321	16.4436	15.6204	14.8568	14.1477	13.4885
24	18.9139	17.8849	16.9355	16.0583	15.2469	14.4954	13.7986
25	19.5234	18.4243	17.4131	16.4815	15.6220	14.8282	14.0939
26	20.1210	18.9506	17.8768	16.8903	15.9827	15.1466	14.3751
27	20.7068	19.4640	18.3270	17.2853	16.3295	15.4513	14.6430
28	21.2812	19.9648	18.7641	17.6670	16.6630	15.7428	14.8981
29	21.8443	20.4535	19.1884	18.0357	16.9837	16.0218	15.1410
30	22.3964	20.9302	19.6004	18.3920	17.2920	16.2888	15.3724
35	24.9986	23.1451	21.4872	20.0006	18.6646	17.4610	16.3741
40	27.3554	25.1027	23.1147	21.3550	19.7927	18.4015	17.1590
45	29.4901	26.8330	24.5187	22.4954	20.7200	19.1563	17.7740
50	31.4236	28.3623	25.7297	23.4556	21.4821	19.7620	18.2559
55	33.1747	29.7139	26.7744	24.2640	22.1086	20.2480	18.6334
60	34.7608	30.9086	27.6755	24.9447	22.6234	20.6380	18.9292
65	36.1974	31.9645	28.4528	25.5178	23.0466	20.9509	19.1610
70	37.4986	32.8978	29.1234	26.0003	23.3945	21.2021	19.3426
75	38.6771	33.7227	29.7018	26.4066	23.6804	21.4036	19.4849
80	39.7445	34.4518	30.2007	26.7487	23.9153	21.5653	19.5964
85	40.7112	35.0962	30.6311	27.0368	24.1085	21.6951	19.6838
90	41.5869	35.6657	31.0024	27.2793	24.2672	21.7992	19.7522
95	42.3800	36.1691	31.3226	27.4835	24.3977	21.8827	19.8058
100	43.0983	36.6141	31.5989	27.6554	24.5049	21.9498	19.8479

Appendix 5

Years	compound interest							
	5½	6	6½	7	7½	8	9	10
1	0.9478	0.9433	0.9389	0.9345	0.9302	0.9259	0.9174	0.9090
2	1.8463	1.8333	1.8206	1.8080	1.7956	1.7832	1.7591	1.7355
3	2.6979	2.6730	2.6484	2.6243	2.6003	2.5770	2.5312	2.4868
4	3.5051	3.4651	3.4257	3.3872	3.3493	3.3121	3.2397	3.1698
5	4.2702	4.2123	4.1556	4.1001	4.0458	3.9927	3.8896	3.7907
6	4.9955	4.9178	4.8410	4.7665	4.6938	4.6228	4.4859	4.3552
7	5.6829	5.5823	5.4845	5.3892	5.2966	5.2063	5.0329	4.8684
8	6.3345	6.2097	6.0887	5.9712	5.8573	5.7466	5.5348	5.3349
9	6.9521	6.8016	6.6561	6.5152	6.3788	6.2468	5.9952	5.7590
10	7.5376	7.3600	7.1888	7.0235	6.8640	6.7100	6.4176	6.1445
11	8.0925	7.8868	7.6890	7.4986	7.3154	7.1389	6.8051	6.4950
12	8.6185	8.3838	8.1587	7.9426	7.7352	7.5360	7.1607	6.8136
13	9.1176	8.8526	8.5997	8.3576	8.1258	7.9037	7.4869	7.1033
14	9.5896	9.2949	9.0138	8.7454	8.4891	8.2442	7.7861	7.3666
15	10.0375	9.7122	9.4026	9.1079	8.8271	8.5594	8.0606	7.6060
16	10.4621	10.1058	9.7677	9.4465	9.1415	8.8513	8.3125	7.8237
17	10.8646	10.4772	10.1105	9.7632	9.4339	9.1216	8.5436	8.0215
18	11.2460	10.8276	10.4324	10.0590	9.7060	9.3718	8.7556	8.2014
19	11.6076	11.1581	10.7347	10.3355	9.9590	9.6035	8.9501	8.3649
20	11.9503	11.4690	11.0185	10.5940	10.1944	9.8181	9.1285	8.5135
21	12.2752	11.7640	11.2849	10.8355	10.4134	10.0168	9.2922	8.6486
22	12.5831	12.0415	11.5351	11.0612	10.6171	10.2007	9.4424	8.7715
23	12.8750	12.3033	11.7701	11.2721	10.8066	10.3710	9.5802	8.8832
24	13.1516	12.5503	11.9907	11.4693	10.9829	10.5287	9.7066	8.9847
25	13.4139	12.7833	12.1978	11.6535	11.1459	10.6747	9.8225	9.0770
26	13.6824	13.0031	12.3923	11.8257	11.2994	10.8099	9.9289	9.1609
27	13.8980	13.2105	12.5749	11.9867	11.4413	10.9351	10.0265	9.2372
28	14.1214	13.4061	12.7464	12.1371	11.5733	11.0510	10.1161	9.3065
29	14.3331	13.5907	12.9074	12.2776	11.6961	11.1584	10.1982	9.3696
30	14.5837	13.7648	13.0586	12.4090	11.8103	11.2577	10.2736	9.4296
35	15.3905	14.4982	13.6869	12.9476	12.2725	11.6545	10.5668	9.6441
40	16.0461	15.0462	14.1455	13.3317	12.5944	11.9246	10.7573	9.7790
45	16.5477	15.4558	14.4802	13.6055	12.8186	12.1084	10.8811	9.8628
50	16.9315	15.7618	14.7246	13.8007	12.9748	12.2334	10.9616	9.9148
55	17.2251	15.9905	14.9028	13.9399	13.0836	12.3186	11.0139	9.9471
60	17.4498	16.1614	15.0329	14.0391	13.1593	12.3765	11.0479	9.9671
65	17.6217	16.2891	15.1279	14.1099	13.2121	12.4159	11.0700	9.9796
70	17.7533	16.3845	15.1972	14.1603	13.2489	12.4428	11.0844	9.9873
75	17.8539	16.4558	15.2478	14.1963	13.2745	12.4610	11.0937	9.9921
80	17.9309	16.5091	15.2848	14.2220	13.2923	12.4735	11.0998	9.9951
85	17.9898	16.5489	15.3117	14.2402	13.3048	12.4819	11.1037	9.9969
90	18.0348	16.5786	15.3314	14.2533	13.3134	12.4877	11.1063	9.9981
95	18.0694	16.6009	15.3458	14.2626	13.3194	12.4916	11.1080	9.9988
100	18.0958	16.6175	15.3562	14.2692	13.3236	12.4943	11.1091	9.9992