UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualification:-

B.Sc.

ES3040: Financial Management

COURSE CODE	:	**ENVS3040**
UNIT VALUE	:	**0.50**
DATE	:	**14-MAY-04**
TIME	:	**10.00**
TIME ALLOWED	:	**3 Hours**

TURN OVER

ENVS3040 Financial Management

You must answer SIX questions: FOUR from Section A and TWO from Section B

Section A. Answer FOUR questions. Each question is worth 15 marks.

1. Please illustrate the development of business case in the context of Gateway Review and explain why this issue is important to ensure the efficiency of construction procurement?

2. (1) What is optimum bias in the project appraisal and why does it matter?
   (2) Use an example to illuminate how adjustments for optimum bias can be done.

3. (1) What are the pitfalls of the IRR (internal rate of return) rule?
   (2) Illuminate the best way to improve the soundness of this rule.

4. This year your company has a budget of £5,000,000 to make investments. Suppose the new investment projects submitted by different divisions of your company are as follows:

Project	NPV (£million)	Investment (£million)
A	4.4	4
B	2.8	2
C	3.6	3
D	7	3.5
E	3	1

Please use profitability index to determine the best allocation of the budget available to your company this year.

5. A. Fung Fashion, Inc. anticipates real net cash flows to be $100,000 this year. The real discount rate is 15% per year.
   (a) What is the present value of these cash flows if they are expected to continue forever.
   (b) What is the present value of these cash flows if the real net cash flows are expected to grow at 5% per year forever.
   (c) What is the present value of these cash flows if the expected growth rate is -5% per year.

6. Explain the effects of the following items on the value of a corporate bond:
(a) A call provision
(b) The bond is convertible into shares
(c) The bond is secured by a mortgage on real estate
(d) The bond is subordinated.

TURN OVER

Section B. Answer TWO questions. Each question is worth 20 marks

1. You are asked to evaluate the following four projects (A, B, and C), and provide a sound advice to your boss about which project should be given a go-ahead.

PROJECT	Cash Flows (1000 £)			
	year 0	year 1	year 2	year 3
A	-10	3	3	6
B	-5	4	1	1
C	-15	5	5	10

(a) Please calculate the net present value of these three projects, if the opportunity cost of capital is 10%. Which one is most desirable?
(b) What is the payback period on each of the projects? Given that you wish to use the payback rule with a cutoff period of two years, which projects would you accept?
(c) If the firm uses the discounted-payback rule, what is the payback period on each of the project?
(d) In this example, can the discounted-payback rule improve the payback rule? If a cutoff period of three years is used, will this approach accept any negative-NPV projects? Explain.

2. You are facing an uncertain investment decision: choosing the projects A and B. Projects A and B need to make an initial investment (C_0) of £20,000 and £50,000, respectively. In the following two years, the cash flows of these two projects are uncertain. For project A, the cash flow in the first year may be £10,000 or £20,000 with the same probabilities of 0.5. In the second year, the cash flow will be £5,000 or £10,000 with the probabilities of 0.2 and 0.8. The cash flows of project B are provided in the table below.

PROJECT	Cash flow (£1000)				
	C_0	C_1		C_2	
		Amount	Probability	Amount	Probability
A	-20	10	0.5	5	0.2
		20	0.5	10	0.8
B	-50	20	0.6	60	0.5
		10	0.4	30	0.5

CONTINUED

(1) Calculate the expected values of cash flows for projects A and B.
(2) If discounting is ignored, which project will be better?
(3) If the cash flows are discounted at 10%, which project will be better?
(4) If the answers of (2) and (3) are different, give an intuitive interpretation.

3. (1) What are the main differences between project financing and corporate financing?
(2) What are the main rationales of project financing?

END OF PAPER

ENVS 3040 - FINANCIAL MANAGEMENT

Formula for Financial Management

$$NPV = C_0 + \sum \frac{C_t}{(1+r)^t}$$

$$PV_t = \frac{C}{r} - (\frac{C}{r})\frac{1}{(1+r)^t} \qquad PV_t = (\frac{C}{r})\frac{1}{(1+r)^t}$$

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

PRESENT VALUE TABLES

Discount factors: Present value of $1 to be received after t years = $1/(1 + r)^t$.

Number of Years	Interest Rate per Year														
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	.990	.980	.971	.962	.952	.943	.935	.926	.917	.909	.901	.893	.885	.877	.870
2	.980	.961	.943	.925	.907	.890	.873	.857	.842	.826	.812	.797	.783	.769	.756
3	.971	.942	.915	.889	.864	.840	.816	.794	.772	.751	.731	.712	.693	.675	.658
4	.961	.924	.888	.855	.823	.792	.763	.735	.708	.683	.659	.636	.613	.592	.572
5	.951	.906	.863	.822	.784	.747	.713	.681	.650	.621	.593	.567	.543	.519	.497
6	.942	.888	.837	.790	.746	.705	.666	.630	.596	.564	.535	.507	.480	.456	.432
7	.933	.871	.813	.760	.711	.665	.623	.583	.547	.513	.482	.452	.425	.400	.376
8	.923	.853	.789	.731	.677	.627	.582	.540	.502	.467	.434	.404	.376	.351	.327
9	.914	.837	.766	.703	.645	.592	.544	.500	.460	.424	.391	.361	.333	.308	.284
10	.905	.820	.744	.676	.614	.558	.508	.463	.422	.386	.352	.322	.295	.270	.247
11	.896	.804	.722	.650	.585	.527	.475	.429	.388	.350	.317	.287	.261	.237	.215
12	.887	.788	.701	.625	.557	.497	.444	.397	.356	.319	.286	.257	.231	.208	.187
13	.879	.773	.681	.601	.530	.469	.415	.368	.326	.290	.258	.229	.204	.182	.163
14	.870	.758	.661	.577	.505	.442	.388	.340	.299	.263	.232	.205	.181	.160	.141
15	.861	.743	.642	.555	.481	.417	.362	.315	.275	.239	.209	.183	.160	.140	.123
16	.853	.728	.623	.534	.458	.394	.339	.292	.252	.218	.188	.163	.141	.123	.107
17	.844	.714	.605	.513	.436	.371	.317	.270	.231	.198	.170	.146	.125	.108	.093
18	.836	.700	.587	.494	.416	.350	.296	.250	.212	.180	.153	.130	.111	.095	.081
19	.828	.686	.570	.475	.396	.331	.277	.232	.194	.164	.138	.116	.098	.083	.070
20	.820	.673	.554	.456	.377	.312	.258	.215	.178	.149	.124	.104	.087	.073	.061
25	.780	.610	.478	.375	.295	.233	.184	.146	.116	.092	.074	.059	.047	.038	.030
30	.742	.552	.412	.308	.231	.174	.131	.099	.075	.057	.044	.033	.026	.020	.015

Note: For example, if the interest rate is 10 percent per year, the present value of $1 received at year 5 is $.621.

Annuity table: Present value of $1 *per year* for each of *t* years = $1/r - 1/[r(1 + r)^t]$.

Number of Years	Interest Rate per Year														
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	.990	.980	.971	.962	.952	.943	.935	.926	.917	.909	.901	.893	.885	.877	.870
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	1.713	1.690	1.668	1.647	1.626
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	2.444	2.402	2.361	2.322	2.283
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	3.102	3.037	2.974	2.914	2.855
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	3.696	3.605	3.517	3.433	3.352
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	4.231	4.111	3.998	3.889	3.784
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	4.712	4.564	4.423	4.288	4.160
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	5.146	4.968	4.799	4.639	4.487
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	5.537	5.328	5.132	4.946	4.772
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	5.889	5.650	5.426	5.216	5.019
11	10.37	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	6.207	5.938	5.687	5.453	5.234
12	11.26	10.58	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	6.492	6.194	5.918	5.660	5.421
13	12.13	11.35	10.63	9.986	9.394	8.853	8.358	7.904	7.487	7.103	6.750	6.424	6.122	5.842	5.583
14	13.00	12.11	11.30	10.56	9.899	9.295	8.745	8.244	7.786	7.367	6.982	6.628	6.302	6.002	5.724
15	13.87	12.85	11.94	11.12	10.38	9.712	9.108	8.559	8.061	7.606	7.191	6.811	6.462	6.142	5.847
16	14.72	13.58	12.56	11.65	10.84	10.11	9.447	8.851	8.313	7.824	7.379	6.974	6.604	6.265	5.954
17	15.56	14.29	13.17	12.17	11.27	10.48	9.763	9.122	8.544	8.022	7.549	7.120	6.729	6.373	6.047
18	16.40	14.99	13.75	12.66	11.69	10.83	10.06	9.372	8.756	8.201	7.702	7.250	6.840	6.467	6.128
19	17.23	15.68	14.32	13.13	12.09	11.16	10.34	9.604	8.950	8.365	7.839	7.366	6.938	6.550	6.198
20	18.05	16.35	14.88	13.59	12.46	11.47	10.59	9.818	9.129	8.514	7.963	7.469	7.025	6.623	6.259
25	22.02	19.52	17.41	15.62	14.09	12.78	11.65	10.67	9.823	9.077	8.422	7.843	7.330	6.873	6.464
30	25.81	22.40	19.60	17.29	15.37	13.76	12.41	11.26	10.27	9.427	8.694	8.055	7.496	7.003	6.566

Note: For example, if the interest rate is 10 percent per year, the present value of $1 received in each of the next 5 years is $3.791.