UNIVERSITY OF SWAZILAND
FACULTY OF SOCIAL SCIENCE
DEPARTMENT OF ECONOMICS

MAIN EXAMINATION PAPER: DECEMBER, 2017

TITLE OF PAPER: PROJECT DEVELOPMENT AND FINANCIAL ANALYSIS

COURSE CODE: ECO305/ECON 308

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS:

1. Answer QUESTION 1 and any other TWO Questions
2. You are expected to have the relevant annuity table provided in class

DO NOT OPEN THIS QUESTION PAPER UNTIL THE INVIGILATOR HAS GRANTED PERMISSION.

Question 1 (Compulsory)

a) Define the meaning of a project in the context of project appraisal
[3 marks]

b) Outline the stages involved in the critical path method (CPM) of project planning. [5 marks]

c) Why is project appraisal regarded as being "cyclic"? [2 marks]

d) Project appraisal becomes irrelevant when only one project is being considered. Critically examine this statement. [4 marks]

e) What is the difference between a cash flow and income? [3 marks]

f) Explain the concept of sensitivity analysis. [5 marks]

g) How do we use the net present value method to choose among competing alternatives?
[5 marks]

h) Discuss two drawbacks of the net present value method. [4 marks]

i) Explain the principle behind the discounted cash flow technique (DCF)
[5 marks]

j) Explain and give an example of each of independent projects, mutually exclusive projects, and contingent projects [6 marks]

k) Explain the multiple root problem and clearly explain the possible cause of this problem. [8 marks]

Total Marks: 50 marks

ANSWER ANY TWO (2) QUESTIONS FROM THE FOLLOWING:

Question 2

Jupiter and Pluto are a specialist food wholesaler. They purchase products in bulk from producers around the world and sell to local shops across the country. Their stock control is currently done manually, but they have found as the company has grown that more problems have occurred with stock-outs and food items going beyond their sell-by date. To solve this problem the company management is investigating two software options: a general stock control package (stockIT) and a specialist food stock control package (FoodStore). StockIT could be installed on the organization's existing file server and does not require specialist customization, so it is cheaper than FoodStore to install. However, FoodStore provides a better match to the organization's requirements and therefore is expected to deliver greater benefit. The anticipated costs and benefits are shown in the table to follow. The company is borrowing money to finance the purchase of the software. The cost of capital is 20%. Assume annual costs and benefits commence the year after the installation.

Table: Anticipated costs and benefits of software

	StockIT	FoodStore
Installation Costs		
Purchase Price	E2,000	E3,000
Consultancy costs	-	E2,000
Additional hardware	-	E2,000
Company time	E2,000	E3,000
Annual costs		
Licence/maintenance fee	E250	E500
Additiona manual processing costs	750	-
Annual Benefits		
Additional profit from sales from avoiding stock-outs	E2,000	E2,500
Reduced cost of food wasted due to out of date	-	E2,000

Perform the following types of cost-benefit analysis to show which package Jupiter and Pluto should buy.

a) Simple payback analysis to show the length of the payback period;

[8 marks]

b) Simple return-on-investment to show the average rate of return;

[8 marks]

c) The net present value from the discounted cash flow over the four years after implementation. [9 marks]

Total Marks: 25 marks

Question 3

a) Compare and contrast the project evaluation and review technique
(PERT) with the critical path method (CPM)   [15 marks]

b) Using the information in the table below, assuming that the project team
will work a standard working week (i.e. 5 working days in 1 week) and that
tasks will start as soon as possible:

Task	Description	Duration (working days)	Predecessor/s
A	Requirement analysis	5	
B	System Design	15	A
C	Programming	25	B
D	Telecoms	15	B
E	Hardware installation	30	B
F	Integration	10	C, D
G	System testing	10	E. F
H	Training/Support	5	G
I	Handover and go live	5	H

i.   Determine the critical path of the project.   [3 marks]
ii. Calculate the planned duration of the project in weeks.   [3 marks]
iii. Identify any non-critical and the float (free slack) on each. [4 marks]

Total Marks: 25 marks

Question 4

a) Explain the two fundamental principles underlying the determination of the
discount rate.   [6 marks]

b) Assume an investment with a required return of 10% is being considered.
The initial outlay for this investment is E45,555. If the investment is
undertaken, the after- tax cash flows are expected to be E15,000 p.a over
the project's 4 year life. Using the internal rate of return method, determine
the attractiveness of this investment.   [10 marks]

c) Explain why the net present value method and the internal rate of return
method may sometimes give conflicting results regarding the acceptability
or non-acceptability of a project.   [9 marks]

Table I Present Value of $1 Due at the End of *n* Years

n	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.970	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.299	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149
21	0.811	0.660	0.538	0.439	0.359	0.294	0.242	0.199	0.164	0.135
22	0.803	0.647	0.522	0.422	0.342	0.278	0.226	0.184	0.150	0.123
23	0.795	0.634	0.507	0.406	0.326	0.262	0.211	0.170	0.138	0.112
24	0.788	0.622	0.492	0.390	0.310	0.247	0.197	0.158	0.126	0.102
25	0.780	0.610	0.478	0.375	0.295	0.233	0.184	0.146	0.116	0.092
30	0.742	0.552	0.412	0.308	0.231	0.174	0.131	0.099	0.075	0.057
35	0.706	0.500	0.355	0.253	0.181	0.130	0.094	0.068	0.049	0.036
40	0.672	0.453	0.307	0.208	0.142	0.097	0.067	0.046	0.032	0.022
45	0.639	0.410	0.264	0.171	0.111	0.073	0.048	0.031	0.021	0.014
50	0.608	0.372	0.228	0.141	0.087	0.054	0.034	0.021	0.013	0.009

Table I (*continued*)

n	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.333
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065
16	0.188	0.163	0.142	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026
21	0.112	0.093	0.077	0.064	0.053	0.044	0.037	0.031	0.026	0.022
22	0.101	0.083	0.068	0.056	0.046	0.038	0.032	0.026	0.022	0.018
23	0.091	0.074	0.060	0.049	0.040	0.033	0.027	0.022	0.018	0.015
24	0.082	0.066	0.053	0.043	0.035	0.028	0.023	0.019	0.015	0.013
25	0.074	0.059	0.047	0.038	0.030	0.024	0.020	0.016	0.013	0.010
30	0.044	0.033	0.026	0.020	0.015	0.012	0.009	0.007	0.005	0.004
35	0.026	0.019	0.014	0.010	0.008	0.006	0.004	0.003	0.002	0.002
40	0.015	0.011	0.008	0.005	0.004	0.003	0.002	0.001	0.001	0.001
45	0.009	0.006	0.004	0.003	0.002	0.001	0.001	0.001		
50	0.005	0.003	0.002	0.001	0.001	0.001				

n	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	0.826	0.820	0.813	0.806	0.800	0.794	0.787	0.781	0.775	0.769
2	0.683	0.672	0.661	0.650	0.640	0.630	0.620	0.610	0.601	0.592
3	0.564	0.551	0.537	0.524	0.512	0.500	0.488	0.477	0.466	0.455
4	0.467	0.451	0.437	0.423	0.410	0.397	0.384	0.373	0.361	0.350
5	0.386	0.370	0.355	0.341	0.328	0.315	0.303	0.291	0.280	0.269
6	0.319	0.303	0.289	0.275	0.262	0.250	0.238	0.227	0.217	0.207
7	0.263	0.249	0.235	0.222	0.210	0.198	0.188	0.178	0.168	0.159
8	0.218	0.204	0.191	0.179	0.168	0.157	0.148	0.139	0.130	0.123
9	0.180	0.167	0.155	0.144	0.134	0.125	0.116	0.108	0.101	0.094
10	0.149	0.137	0.126	0.116	0.107	0.099	0.092	0.085	0.078	0.073
11	0.123	0.112	0.103	0.094	0.086	0.079	0.072	0.066	0.061	0.056
12	0.102	0.092	0.083	0.076	0.069	0.062	0.057	0.052	0.047	0.043
13	0.084	0.075	0.068	0.061	0.055	0.050	0.045	0.040	0.037	0.033
14	0.069	0.062	0.055	0.049	0.044	0.039	0.035	0.032	0.028	0.025
15	0.057	0.051	0.045	0.040	0.035	0.031	0.028	0.025	0.022	0.020
16	0.047	0.042	0.036	0.032	0.028	0.025	0.022	0.019	0.017	0.015
17	0.039	0.034	0.030	0.026	0.023	0.020	0.017	0.015	0.013	0.012
18	0.032	0.028	0.024	0.021	0.018	0.016	0.014	0.012	0.010	0.009
19	0.027	0.023	0.020	0.017	0.014	0.012	0.011	0.009	0.008	0.007
20	0.022	0.019	0.016	0.014	0.012	0.010	0.008	0.007	0.006	0.005
21	0.018	0.015	0.013	0.011	0.009	0.008	0.007	0.006	0.005	0.004
22	0.015	0.013	0.011	0.009	0.007	0.006	0.005	0.004	0.004	0.003
23	0.012	0.010	0.009	0.007	0.006	0.005	0.004	0.003	0.003	0.002
24	0.010	0.008	0.007	0.006	0.005	0.004	0.003	0.003	0.002	0.002
25	0.009	0.007	0.006	0.005	0.004	0.003	0.003	0.002	0.002	0.001
30	0.003	0.003	0.002	0.002	0.001	0.001	0.001	0.001		
35	0.001	0.001	0.001	0.001						
40										
45										
50										