UNIVERSITY OF COLOMBO – SRI LANKA

DEPARTMENT OF ECONOMICS

Masters in Economics – 2013/2014

Final Examination (Semester -III)

MECON 510: Project Planning and Appraisal

Time: 03 Hours

Answer **Question No. 1** and any other **THREE (03) Questions**.
(Calculator is permitted. Discount Factor Table will be provided)

Question No. 01.

Question No. 1 consisted of 25 Multiple Choice Questions (MCQ). *Mark a Tick (√) in appropriate box in the provided Answer Sheet against the MCQ question No to mark your answer* **(02 x 20 = 40 Marks).**

1. According to the PMI, "a Project is a temporary endeavor undertaken to create a unique product, service or result". In the PMI definition of Project, the term 'Temporary' refers to;

   (a) Cash flows of a project considered for appraisal
   (b) Every project that has a definite beginning and a definite end
   (c) A period of less than three years
   (d) Life span of a product, service or result created by a project

2. "Paretian Improvement Criterion is a fundamental basis for Social Cost Benefit Analysis". Paretian Improvement Criterion refers to;

   (a) A state in change as a result of a change in the use of resource some individuals in the society are made better off with some individuals are being worse off,
   (b) A state in change as a result of a change in the use of resource some individuals in the society are made better off without anyone being worse off,
   (c) A state in change as a result of a change in the use of resource all individuals in the society are made worse off,
   (d) A state in change as a result of a change in the use of resource no individual in the society are made better off or being worse off.

3. On the basis of cost behaviour, which of following would be a variable cost in the context of a project?

   (a) Registration Fee
   (b) Depreciation Allowance
   (c) Fuel Cost
   (d) Municipal Tax

appraisal of project 'A' has concluded that Net Present Value of the project 'A' is positive ($NPV_A>0$) but according to the economic appraisal, carried out on the same project by a Government agency, has concluded that the Net Present Value of the Project 'A' is negative ($NPV_A<0$). If the Project A is accepted for implementation;

(a) It will bring benefits to the society and the project owner
(b) It will bring benefits to the project owner but not for the society
(c) It will bring benefits to the society but not for owner
(d) It will not bring benefits to either society or owner

5. Gross Investment to the GDP ratio of Republic of Moonland is 35% and the annual growth rate in real term is 11.5%. What is the ICOR of the Republic of Moonland?

(a) 3.12
(b) 3.08
(c) 3.04
(d) 3.02

6. ABC Co Ltd has obtained a loan of Rs.150.00 Mn at the interest rate of 18% from a Bank to finance its Rs. 450 Mn Property Development Project. Balance has been financed by equity capital, which has an opportunity cost of 15% per annum. Rate of return of the Project is 24% and Corporate Tax Rate of the Company is 40%. Weighted Average Cost of Capital of the Project is;

(a) 13.851%
(b) 14.802%
(c) 15.990%
(d) 13.614%

7. Project appraisal is an important stage in the project cycle management process, because it is;

(a) leading to formulation of project for implementation
(b) providing guidance for decision making on the project proposals
(c) requiring analytical skills of exports
(d) requiring additional financial resources for deployment of a team of experts

8. Logical Framework Approach (LFA) is a popular planning and project management tool. In the LFA process, the results of a project will be identified by

(a) Logframe indicators
(b) Impact indicators
(c) Output indicators
(d) Outcome indicators

9. According to Adam Smith, capital is *"that part of a man's stock which he expects to afford him revenue is called his capital."* Identify core characteristics of capital which creates monetary value of the capital from the list below?
a) Property right and transferability
b) Property right and non-excludability
c) Location and movability
d) Private ownership and non-rivalry

10. Capital soft rationing is an option for a project agency, when, there is a;

    (a) regulatory requirement for capital rationing by the project agency,
    (b) management decision to minimize the weighted average cost of capital,
    (c) demand for capital exceeds the available capital to finance the candidate projects,
    (d) loan obtained for financing the project

11. An investor has obtained a bank loan for his property development project and asked his project analyst to make provisions to include monthly instalments of loan repayment in the estimated cash flows. It will lead to ;

    (a) improve financial viability
    (b) avoid cost omission
    (c) double counting
    (d) ensure repayment of loan

12. Discounted Payback Period criterion is preferred than the Simple Payback Period criterion because:

    (a) It represents the liquidity aspect
    (b) It represents the return on investment aspect
    (c) It represents the time value for money aspect
    (d) It represents the profitability aspect

13. In the development project analysis, if the acceptance of a project leads to acceptance of the another project beforehand or simultaneously, these projects are known as:

    a) Independent Projects
    b) Contingent Projects
    c) Mutually Exclusive Projects
    d) Substitutive Projects

14. ABC Project Ltd has opted to implement one of two mutually exclusive projects having different size of initial investment requirements. Which of the following appraisal techniques, you will apply to appraise those mutually exclusive projects

    (a) Replacement chain (Chain Replication) approach
    (b) Logical framework approach
    (c) Incremental analysis approach
    (d) Equivalent annual NPV (EANPV) approach

15. Which of the following characteristics represent public goods and distinguish the public goods from private goods?

    (a) Non rivalry and excludability
    (b) Rivalry and non-excludability
    (c) Rivalry and excludability
    (d) Non-rivalry and non-excludability

company asks you to recommend two most appropriate criteria to assess the profitability and liquidity aspects of the said project. Which of the following criteria set, you would recommend:

(a) Modified Internal Rate of Return and Internal Rate of Return
(b) Net Present Value and Internal Rate of Return
(c) Net Present Value and Discounted Pay Back Period
(d) Simple Pay Back Period and Discounted Pay Back Period

17. ABC Project Ltd sells its Product X at Rs.50.00 per Unit. If the fixed cost is Rs.4,000,000 and variable cost is Rs.42.75 per Unit. How many units must be sold to be in BEP

(a) 516,452 Units,
(b) 516,130 Units,
(c) 561,452 Units
(d) 561,130 Units

18. Assume that Project A with a positive NPV of Rs. 24 Mn at the Discount Rate of 10% and Negative NPV of (Rs.15 Mn) at the Discount Rate of 20%. What would be the Internal Rate of Return of the Project A?,

(a) 36.67%
(b) 19.60%
(c) 16.15%
(d) 16.50%

19. If the official exchange rate is US$ 1 = Rs 145, exchange rate conversation factor is 0.895 and the market price is Rs. 2,205/- per Kg of Ceylon tea. What is the shadow price of the Ceylon tea?

a) Rs. 2,205.00 per Kg
b) US $ 15.21 per Kg
c) Rs. 1,973.48 per Kg
d) Rs. 1,993.48 per Kg

20. NPV of a Project is Rs. 45,500 and the initial investment of the Project is Rs. 200,000. What is the Profitability Index of the Project?

a) PI = 1.30
b) PI = 1.13
c) PI = 1.33
d) PI = 1.23

End of the Question No. 1

Question No. 02.

Consider the following investment description and answer the questions given below to the description

M/s KAV Agri Foods Ltd has decided to appraise two mutually exclusive investment opportunities A and B to establish Soya milk powder production facility. Dept of Agriculture has agreed to allocate 02 Acres of Land to KAV Agri Foods Ltd on a 99 year lease arrangement for construction of the facility in Anuradhapura. Opportunity cost of capital is 14% per annum. Specific information related to the investment alternatives are given below.

Description	Alternative A	Alternative B
Initial Investment (Rs. Mn)	35	28
Plant Production Capacity (Kg / Day)	3,000	2,000
Annual Lease Payment of (Rs. Mn / Acre)	1.50	1.20
Remuneration Payment (Rs. Mn / Month)	0.40	0.60
Factory Electricity (Rs/ Day)	110,000	100,000
Food Quality License Fee (Rs. Mn / Year)	1.50	1.50

The common features of the above two investment alternatives are as follows. Useful life span of the Soya milk powder making facility will be 05 years in both alternatives. No residual value will be existed at the end of useful life span of the facility. Soya milk powder making facility will operate for 06 hours a day and 210 days a year. Guaranteed price of Soya-bean seeds, which is the raw material for Soya milk powder is Rs. 145/- per Kg. Soya milk powder will be packed in industry size pack of 1000g box and cost of packaging is Rs. 35/- per 1000g. For production of every kilogram of Soya milk powder, 02 Kg of Soya bean seeds is required. Payable Nation Building Tax (*which is paid on the selling price*) is 04% per for every Kg of Soya milk powder. An Excise duty of Rs. 125/- per Kg of Soya milk powder is required to be paid. Transport cost between the production facility and the market will be Rs.14,000 for each batch of 1,000 Boxes of 1 Kg of Soya milk powder. KAV Agri Foods Ltd must have an annual insurance with premium of 06% of the investment value of the facility. Expected market price of 1000g of Soya milk powder will be Rs. 750/-

You are required to provide answer for following questions

a) Estimate the variable cost per box of one Kilogram of Soya milk powder sold under each investment alternative and their respective contribution per Kg? **(04 Marks)**

b) Estimate the cash flow breakeven levels of sales (in Kg per year) pertaining to these investment alternatives and comment on their implication towards viability of appraisal among these alternatives **(04 Marks)**

c) Forecast the Profit and Loss Statement for an operational year pertaining to relevant investment alternatives, you would consider for detailed viability appraisal and estimate their Accounting Rate of Return (**04 Marks)**

d) Estimate appropriate the Net Present Value and the Benefit Cost Ratio of the relevant investment alternatives in view of identifying the most advantageous alternative for investment and advise KAV Agri Foods Ltd on the best alternative **(08 Marks)**

(a)   What do you understand by *'Project Life Cycle'*? Explain based on the main stages of Baum's Project Life Cycle **(06 Marks)**

(b)   *"Planning is a process and a useful tool to facilitate project appraisal"* Explain as to how could the planning process facilitate the project appraisal **(07 Marks)**

(c)   *"Inappropriate human activities are the major causal factors for severity of damages by recent flood situation in Colombo Area"*. Critically evaluate this statement using the Problem Tree Analysis **(07 Marks)**

Question No. 4

(a)   What do you understand by the concept of *"Shadow Price"* that is used in the economic analysis of development projects **(03 Marks)**

(b)   Why is it argued that market price is not appropriate in determining the economic costs and benefits of a development project? Explain briefly **(05 Marks)**

(c)   XYZ Property Developers Ltd of Banana Islands has entered into an Agreement to import of Cement for its Property Development Project from PQR Cement Industry Ltd in the Kingdom of Cape Town. According to the Agreement, the CIF Value of Cement is US$ 150 / MT. Importation of Cement is subject to an Import Tariff (CID) of 30%, Value Added Tax (VAT) of 15% and Port and Airport Levy (PAL) of 07%. Official exchange rate is US $ 1 = Rs. 145/- and the estimated Foreign Exchange Premium is 0.15 in the Banana Islands. Estimate following parameters of import of cement. (*VAT will be collected on the total of CIF Price, CID and PAL*) **(06 Marks)**.

    i.   What is the Economic Exchange Rate for Cement Imports?

    ii.   What is Financial Price of Cement per MT at Port in local currency?

    iii. What is the Economic Price of Cement per MT at Port in local currency?

(d)   Assume that Ministry of Disaster Management is considering a multipurpose dam construction project. The project would supply water for irrigation, generate electricity and provide a measure of protection against floods. The project is expected to have a 25 year life time and opportunity cost of the investment is 10%. According to the project analysis team, estimated the financial and economic cost and benefits of the project are as follows.

Description	Financial Basis	Economic Basis
Initial Investment	Rs. 158 Mn	Rs. 145 Mn
Annual Operation Cost	Rs. 13 Mn	Rs. 11 Mn
Annual Estimated Benefits	Rs. 30 Mn	Rs. 72 Mn

Estimate the Social Net Present Value of the proposed Multi-Purpose Dam Project using the UNIDO Approach and make your recommendation to the Ministry of Disaster Management **(06 Marks)**

Question No. 5

(a) Define the concept *"time value for money"* and explain briefly factors which influence the time value for money **(04 Marks)**

(b) *"Net Present Value (NPV) and Internal Rate of Return (IRR) Criteria could lead to conflicting ranking of projects"*. Explain factors that are leading to conflicting ranking of mutually exclusively projects by NPV and IRR criteria? **(06 Marks)**

(c) ABC Agri Products Ltd is considering an investment opportunity to produce Soya-bean oil with an initial investment of Rs. 25 Mn. The productive life of investment will be 5 years with no residual value at the end. The estimated annual operational cost and financial benefits of soya bean oil production are as follows:

Description	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6
Annual Operational Cost (Rs. Mn)	02.5	03.2	03.5	03.0	03.8	03.5
Annual Financial Benefits (Rs. Mn)	06.5	08.7	12.5	15.0	11.3	10.5

Minimum required rate of return of ABC Agri Products Ltd is 15%. Estimate the NPV and Profitability Index of the proposed Soya-bean oil production and provide recommendation to ABC Agri Products Ltd **(10 Marks)**

Question No. 6

Write brief note on any of four (4) aspects given below. Your note should explain the concept with appropriate illustration. **(5 x 4 Marks)**

a) Border Parity Pricing

b) Incremental Analysis of Projects

c) Discounted Payback Period

d) Modified Internal Rate of Return

e) Logical Framework Approach

f) Depreciation

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ANSWER SHEET

ALL Multiple Choice Questions (MCQ) in the Question No: 1are to be answered. Mark Tick (√) in the appropriate box against the MCQ Question No to mark your answer.

Question No	Answer (a)	Answer (b)	Answer (c)	Answer (d)
1				
2				
3				
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20				

Discount Factor Table

DISCOUNT FACTOR (p.a.) FOR A RANGE OF DISCOUNT RATES

Present Value of $1 in the Future at Discount Rate r%

Year	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
0	1	1	1	1	1	1	1	1	1	1	1	1	1
1	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696
2	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561
3	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575
4	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718
5	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972
6	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5346	0.5066	0.4803	0.4556	0.4323
7	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759
8	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269
9	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843
10	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3522	0.3220	0.2946	0.2697	0.2472
11	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.3173	0.2875	0.2607	0.2366	0.2149
12	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869
13	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625
14	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2320	0.2046	0.1807	0.1597	0.1413
15	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.2090	0.1827	0.1599	0.1401	0.1229
16	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1883	0.1631	0.1415	0.1229	0.1069
17	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1696	0.1456	0.1252	0.1078	0.0929
18	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1528	0.1300	0.1108	0.0946	0.0808
19	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1377	0.1161	0.0981	0.0829	0.0703
20	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240	0.1037	0.0868	0.0728	0.0611
21	0.5375	0.4388	0.3589	0.2942	0.2415	0.1987	0.1637	0.1351	0.1117	0.0926	0.0768	0.0638	0.0531
22	0.5219	0.4220	0.3418	0.2775	0.2257	0.1839	0.1502	0.1228	0.1007	0.0826	0.0680	0.0560	0.0462
23	0.5067	0.4057	0.3256	0.2618	0.2109	0.1703	0.1378	0.1117	0.0907	0.0738	0.0601	0.0491	0.0402
24	0.4919	0.3901	0.3101	0.2470	0.1971	0.1577	0.1264	0.1015	0.0817	0.0659	0.0532	0.0431	0.0349
25	0.4776	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0736	0.0588	0.0471	0.0378	0.0304
26	0.4637	0.3607	0.2812	0.2198	0.1722	0.1352	0.1064	0.0839	0.0663	0.0525	0.0417	0.0331	0.0264
27	0.4502	0.3468	0.2678	0.2074	0.1609	0.1252	0.0976	0.0763	0.0597	0.0469	0.0369	0.0291	0.0230
28	0.4371	0.3335	0.2551	0.1956	0.1504	0.1159	0.0895	0.0693	0.0538	0.0419	0.0326	0.0255	0.0200
29	0.4243	0.3207	0.2429	0.1846	0.1406	0.1073	0.0822	0.0630	0.0485	0.0374	0.0289	0.0224	0.0174
30	0.4120	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0437	0.0334	0.0256	0.0196	0.0151
31	0.4000	0.2965	0.2204	0.1643	0.1228	0.0920	0.0691	0.0521	0.0394	0.0298	0.0226	0.0172	0.0131
32	0.3883	0.2851	0.2099	0.1550	0.1147	0.0852	0.0634	0.0474	0.0355	0.0266	0.0200	0.0151	0.0114
33	0.3770	0.2741	0.1999	0.1462	0.1072	0.0789	0.0582	0.0431	0.0319	0.0238	0.0177	0.0132	0.0099
34	0.3660	0.2636	0.1904	0.1379	0.1002	0.0730	0.0534	0.0391	0.0288	0.0212	0.0157	0.0116	0.0086
35	0.3554	0.2534	0.1813	0.1301	0.0937	0.0676	0.0490	0.0356	0.0259	0.0189	0.0139	0.0102	0.0075
36	0.3450	0.2437	0.1727	0.1227	0.0875	0.0626	0.0449	0.0323	0.0234	0.0169	0.0123	0.0089	0.0065
37	0.3350	0.2343	0.1644	0.1158	0.0818	0.0580	0.0412	0.0294	0.0210	0.0151	0.0109	0.0078	0.0057
38	0.3252	0.2253	0.1566	0.1092	0.0765	0.0537	0.0378	0.0267	0.0190	0.0135	0.0096	0.0069	0.0049
39	0.3158	0.2166	0.1491	0.1031	0.0715	0.0497	0.0347	0.0243	0.0171	0.0120	0.0085	0.0060	0.0043
40	0.3066	0.2083	0.1420	0.0972	0.0668	0.0460	0.0318	0.0221	0.0154	0.0107	0.0075	0.0053	0.0037

Discount Factor = $1 / (1 + r)^n$ Where   r = Discount rate   and   n = length of time

Reproduced from. *The Farmers Forest: Multipurpose Forestry for Australian Farmers* p121