UNIVERSITY OF COLOMBO
FACULTY OF ARTS

THIRD YEAR EXAMINATION IN ARTS (ECONOMICS) 2017/2018
END OF THE SECOND SEMESTER

ECN 3256: INVESTMENT PLANNING AND APPRAISAL

TIME ALLOWED: THREE (03) HOURS

Calculators Permitted. Discount Tables Provided

Answer the Compulsory Question No. 1 and any number of other questions such that the total full marks allocated for the attempted questions will be 100.

The project description given below is applicable to both the Questions No. 1 and No. 2

Palathuru Ltd is considering a proposal to invest in a fruit growing project by leasing out the required land from the State. The maximum area available for cultivation is 20 hectares, but the Company may decide to plant any extent below this maximum limit. The estimated initial capital outlay for land preparation and machinery would be Rs 3 Mn, plus an additional Rs 100000 for each hectare brought under cultivation. The opportunity cost of capital is estimated to be 20% per year. The plants will start bearing fruit from their first year in life, and will give yield annually until they complete five years of age. The average yield is estimated to be 10 Tons of fruits per hectare. The average price at which fruits are purchased by the buyers at the plantation would be Rs 25 per Kg, and a tax of 20% on sales value would have to be payable to the Government.

The cost of management of the plantation would have an annual cash outflow of Rs 200000 for the entire plantation, which would essentially be human resource costs. In addition, each hectare planted would have a fertilizer cost of Rs 16000 per year. Lease payment on State land that would be brought under cultivation (presently unused) would be Rs 2000 per hectare per month. There will be an additional harvesting cost of energy of Rs 1000 per Tonne for each harvest. There will be no residual value of assets by the end of the fifth year.

Question No. 1 [40 Marks] - ***This question is COMPULSORY***

While stating your assumptions clearly,

(a) Estimate the annual variable costs and contributions per hectare of operation with regard to the above described fruit plantation project. What are the cost and revenue items which do not depend on the area planted? (8 Marks)

(b) Estimate the annual cash-flows of this investment, as a function of the number of hectares brought under cultivation. (10 Marks)

(c) Estimate the Net Present Value, Internal Rate of Return and the Benefit/Cost Ratio of this venture under the assumption that the Company would bring 5 hectares under cultivation. (12 Marks)

(d) Advise the Company as to the minimum number of hectares that should be planted for the venture to be viable for the Company. (10 Marks)

➔ p.t.o.

Question No. 2 [40 Marks]

With regard to the fruit plantation project described above, you are provided with the following additional information:

- Palathuru Ltd has decided that it brings 5 hectares under cultivation, and no more
- Fertilizer required will be imported at a CIF price of USD 300 per Tonne, which would be subject to an import duty of 10% on CIF value at the Port. Transportation of fertilizer from the Port to the Plantation, a distance of 100 km, would cost Rs 140 per Tonne per kilometre. Each hectare planted would need 200 kg of fertilizer per year.
- Fruits produced could be exported at an FOB value of USD 0.25 per kg, through the same Port. No taxation will be applicable on export sales. Market cost of transport of fruits from the Plantation to the Port would be Rs 200 per tonne per kilometer.
- Conversion Factors applicable to costs of Human Resources, Energy, Investments and Transportation would be 0.5, 0.8, 1.2, and 1.0, respectively. The economic discount factor would be 12% per annum. Official Exchange Rate would be Rs 200 per USD, and assumed would remain unchanged over the project life.

Estimate the following, while being explicit on any assumption you may make:

(a) The Border Price of imported fertilizer, and exported fruits; and the Boarder Parity Prices of the same items at the Plantation gate. [8 Marks]

(b) Shadow price Conversion factor you would think applicable for land lease costs, and for the locally produced fruits [7 Marks]

(c) Determine whether this venture is economically viable, by calculating the Economic Net Present Value (ENPV), and advise the Government as to the strategy it may adopt regarding this project. [15 Marks]

(d) Fertilizer application has been found generating negative externalities in terms of water pollution. What economic cost of pollution per kilogramme of fertilizer use that the extended economic viability parameters would not socio-economically justify this venture at the plantation extent of 5 hectares, if the extended economic discount rate is 9% per annum? [10 Marks]

Question No. 3 [20 Marks]

A developing country with capital scarcity and high budget deficits, having a market opportunity cost of capital of 20% and opportunity cost of capital to the economy of 10% per annum, needs a minimum additional power generating capacity of 400 MW to meet its demand within the next few years. The Government has decided that the economy should not spend more than Rs 275 Mn for this additional power generating capacity.

Following potential mutually non-exclusive and indivisible power projects have been identified for this purpose :

Plant	A	B	C	D	E	F
Capacity (MW)	400	300	200	100	100	100
Investment (Rs Mn)	300	170	100	80	80	100
NPV @ 20% (Rs Mn)	-5	-60	-30	-20	-10	+10
NPV @ 15% (Rs Mn)	+86	+11	+9	+8	+15	+24

(i) Workout the necessary viability parameters from the angle of the national economy, and advise the Government regarding the best strategy (plant combination) it should adopt. Present the logic behind your recommendation. (12 Marks)

(ii) Examine as to what would happen if the Government decides to increase the upper investment limit to Rs 300 Mn? Analyse. (8 Marks)

Question No. 4 [20 Marks]

(i) What are the reasons you believe that are behind the frequently considered failure of public sector development projects in delivering the intended benefits? (6 Marks)

(ii) "Failure of public sector projects is more damaging to the national economy compared to private sector project failure". Critically analyse. (8 Marks)

(iii) What procedural strategies you may suggest for the Government to adopt in view of overcoming this situation? (6 Marks)

Question No. 5 [20 Marks]

(i) Briefly discuss why the identification of alternatives is considered extremely important in developing and appraising projects. (8 Marks)

(ii) You have just assumed duties as the Director of Investment Planning of a developing economy, where you are aware that the investment appraisal tools have rarely been used in deciding upon investment projects. Prepare a brief report to be submitted to the Minister of Planning highlighting the possible causes of this situation, and your recommendations as to how you propose to deal with it. (12 Marks)

Question No. 6 [20 Marks]

Write short notes on Four (4) of the following:

(i) Zig-Zag logic in Logical Frameworks Matrix
(ii) "With and Without Analysis" in project evaluation
(iii) Possibility of Double Counting in investment appraisal
(iv) Importance of consistency verification in Multi-Criteria Analysis
(v) Principle of Incremental Analysis in selection of projects among alternatives
(vi) Potentials and limitations of Travel Cost Method in valuing environmental services
(vii) "Three-staged project appraisal procedure" in relation to Public Investment Planning

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