

## CA - Intermediate Test

### CAPITAL BUDGETING 1 & 2, LEASING

**Maximum Time: 200 Minutes**

**Total Marks: 100**

**Question No. 1:** In the manufacture of a company's range of products, the processes gives rise to two main types of waste material.

Type A is the outcome of the company's original process. This wastage is sold at ₹2 per tonne, but this amount is treated as sundry income and no allowance for this is made in calculating product costs.

Type B is the outcome of newer process in the company's manufacturing activity. It is classified as hazardous, has needed one employee costing ₹9,000 per year specially employed to organise its handling in the factory, and has required special containers whose current resale value is assessed at ₹18,000. At present the company pays a contractor ₹14 per tonne for its collection and disposal. Company management has been concerned with both types of waste and after much research has developed the following proposals.

**Type A waste**

This could be further processed by installing plant and equipment costing ₹20,000 and incurring extra direct costs of ₹2.50 per tonne and extra fixed costs of ₹10,000 per annum.

Extra space would be needed, but this could be obtained by taking up some of the space currently used as a free car park for employees. The apportioned rental cost of that land is ₹2,500 per annum and a compensation payment totaling ₹500 per annum would need to be paid to those employees who would lose their car parking facilities.

The selling of the processed waste would be ₹12.50 per tonne and the quantity available would be 2,000 tonnes per annum.

**Type B waste**

Using brand new technology, this could be further processed into a non - hazardous product by installing a plant costing ₹1,20,000 on existing factory space whose apportioned rental cost is ₹12,500 per annum.

This plant cost includes a pipeline that would eliminate any special handling of the hazardous waste. Extra direct would be ₹13.50 per tonne and extra fixed cost of ₹20,000 per annum would be incurred.

This new product would be saleable to a limited number of customers only, but the company has been able to get the option of a contract for two years sales renewable for a further two years. This would be at price of ₹11 per tonne and the output over the next few years is expected to be 4,000 tonnes per year.

For Type A waste project, the board wants to achieve an 8% DCF return over four years. For Type B waste project, it wants a 15% DCF return over six years.

You are required to recommend whether the company should invest in either or both of the two projects.

Give supporting figures and comments.

Ignore taxation.

P.V. of an annuity for four years @ 8% is 3.31 and P.V. of an annuity for six years @ 15% is 3.78.

**(10 Marks)**

**Question No. 2:** An educational institute is planning to install airconditioners for its new computer centre. It has received proposals from 2 manufacturers. The first proposal is for the installation of 6 window airconditioners @ ₹25,000 each. The other is for the installation of split airconditioners of an equal capacity costing ₹2,00,000. The useful life of window airconditioners is 6 years and that of split airconditioners is 10 years. The cash operating costs associated with each proposal are given below:

Year	Proposal 1	Proposal 2
1	₹20,000	₹18,000
2	20,000	18,000
3	20,000	18,000
4	25,000	22,000
5	25,000	22,000
6	25,000	22,000
7		26,000
8		26,000
9		26,000
10		26,000

The salvage value of the window airconditioners at the end of 6 years is expected to be ₹10,000 and that of the split airconditioners ₹15,000. Advise the educational institute which proposal should be selected by it if its opportunity cost of funds is 10%.

(7 Marks)

**Question No. 3:** A Limited is a leading manufacturer of automotive component. It supplies to the original equipment manufacturers as well as the replacement market. Its projects typically have a short life as it introduces new models periodically.

You have recently joined A Limited as a financial analyst reporting to Abhishek, the CFO of the company. He has provided you the following information about three projects A, B and C that are being considered by the Executive Committee of A Limited:

- Project A is an extension of an existing line. Its cash flow will decrease over time.
- Project B involves a new product. Building its market will take some time and hence its cash flow will increase over time.
- Project C is concerned with sponsoring a pavilion at a Trade Fair. It will entail a cost initially which will be followed by a huge benefit for one year. However, in the year following that a substantial cost will be incurred to raze the pavilion.

The expected net cash flows of the three projects are as follows:

Year	Project A	Project B	Project C
0	(15,000)	(15,000)	(15,000)
1	11,000	3,500	42,000
2	7,000	8,000	(4,000)
3	4,800	13,000	--

Abhishek believes that all the three projects have risk characteristics similar to the average risk of the firm and hence the firm's cost of capital, viz. 12 percent, will apply to them. You are asked to evaluate the projects.

- Find the payback periods and the discounted payback periods of Projects A and B.
- Calculate the NPVs of projects A, B and C.
- Calculate the IRRs for Projects A, B and C.
- Calculate the MIRR for Projects A, B and C assuming that the intermediate cash flows can be reinvested at 12 percent rate of return.

(15 Marks)

**Question No. 4:** Fill in the blanks in the following table. Assume that there is no salvage values for the investments, and income taxes are to be ignored.

Life of the project (years)	Annual cash inflows	Initial investment	Cost of capital	IRR	NPV	Profitability index
10	1,00,000	--	--	0.20	--	1.1089

(6 Marks)

**Question No. 5:** Wisconsin The Charter Of Success Company manufactures Of different products. One of the firm's principal products sells for ₹20 per unit. The sales manager of Wisconsin Products has stated repeatedly that he could sell more units of this product if they were available. In an attempt to substantiate his claim the sales manager conducted a market research study last year at a cost of ₹44,000 to determine potential demand for this product. The study indicated that Wisconsin Products could sell 18,000 units of this product annually for the next 5 years.

The equipment currently in use has the capacity to produce 11,000 units annually. The variable production costs are ₹9 per unit. The equipment has a book value of ₹60,000 and a remaining useful life of 5 years. The salvage value of the equipment is ₹10,000 now and will be zero in 5 years.

A maximum of 20,000 units could be produced annually on the new machinery which can be purchased.

The new equipment costs ₹3,00,000 and has an estimated useful life of 5 years with no salvage value at the end of 5 years. Wisconsin Products production manager has estimated that the new equipment would provide increased production efficiencies that would reduce the variable production costs to ₹7 per unit.

Wisconsin Products Company uses straight line depreciation on all of its equipment for tax purposes. The firm is subject to a 40% tax rate, and its after tax cost of capital is 15%.

There is a tax delay of one year. That is, the tax payable/savings of Period 0 is payable/saved at end of Period 1, tax payable/savings of Period 1 is payable/saved at the end of Period 2, and so on.

The sales manager felt so strongly about the need for additional capacity that he attempted to prepare an economic justification for the equipment although this was not one of his responsibilities. His analysis, presented below, disappointed him because it did not justify acquiring the equipment.

**Required Investment**

Purchase price of new equipment

₹

3,00,000

Disposal of existing equipment		
Loss of disposal	60,000	
Less: tax benefit	<u>(24,000)</u>	36,000
Cost of market research study		44,000
<b>Total Investment</b>		<b>3,80,000</b>
<b>Annual Returns</b>		
Contribution margin from product:		
Using the new equipment [18,000 × (₹20-7)]		2,34,000
Using the existing equipment [11,000 × (₹20-9)]		1,21,000
<b>Increase in contribution margin</b>		<b>1,13,000</b>
Less: Depreciation		60,000
<b>Increase in before tax income</b>		<b>53,000</b>
Income tax (40%)		21,200
<b>Increase in income</b>		<b>31,800</b>
Less: 15% cost of capital on the additional Investment required (0.15 × ₹3,80,000)		(57,000)
<b>Net annual return of proposed investment in new equipment</b>		<b>(25,200)</b>

**Required:** The controller of Wisconsin Product Company plans to prepare discounted cash flows analysis for this investment proposal. (10 Marks)

**Question No. 6:** (1) Find all combinations of projects, which are feasible given the capital budget restriction of ₹30 lakhs and project interdependencies.

(2) Select the feasible combination having highest N.P.V.

Project	Outlay (₹ in lakhs)	N.P.V. (₹ in lakhs)
A	18.0	7.5
B	15.0	6.0
C	12.0	5.0
D	7.5	3.6
E	6.0	3.0

Projects B & C are mutually exclusive while other projects are independent

(4 Marks)

**Question No. 7:** Forward Planning Ltd. is considering whether to invest in a project which would entail immediate expenditure on capital equipment of ₹40,000. Expected sales from the project are as follows:

Probability	Sales Volume (Units)
0.10	2,000
0.25	6,000
0.40	8,000
0.15	10,000
0.10	14,000

Once sales are established at a certain volume in the first year, they will continue at that same volume in subsequent year. The unit selling prices will be ₹10, the unit variable cost ₹6 and the additional fixed costs will be ₹20,000 (all cash items). The project would have a life of 6 years after which the equipment would be sold for scrap which would fetch ₹3,000. You are required to find out:

- The expected value of the NPV of the project.
- The minimum volume of sales per annum required to justify the project.

The cost of capital of the company is 10%. Discount factor of ₹1 per annum for 6 years @ 10% is 4.355 and the discount factor of ₹1 at the end of the sixth year at 10% is 0.5645. Ignore taxation.

(10 Marks)

**Question No. 8:** XYZ Ltd. is considering a project for which the following estimates are available:

	₹
Initial Cost of the project	10,00,000
Sales price/unit	60
Cost/unit	40
Sales volumes	

Year 1	20,000 units
Year 2	30,000 units
Year 3	30,000 units

Discount rate 10% p.a. You are required to measure the sensitivity of the project in relation to each of the following parameters:

- (a) Sales Price/unit (b) Unit cost  
 (a) Sales volume (d) Initial outlay and  
 (a) Project lifetime

Taxation may be ignored.

(10 Marks)

**Question No. 9:** DL Services is in the business of providing home Services like plumbing, sewerage line cleaning etc. There is a proposal before the company to purchase a mechanised sewerage cleaning line for a sum of ₹20 lakh. The life of the machine is 10 years. The present system of the company is to use manual labour for the job. You are provided the following information:

Cost of machine	₹20 lakh
Depreciation	20% p.a. straight line
Operating cost	₹5 lakh per annum
Present system	
Manual labour	200 persons
Cost of Manual labour	₹10,000 (ten thousand) per person per annum

The company has an after tax cost of funds of 10% per annum. The applicable rate of tax inclusive of surcharge and cess is 35%. Based on the above you are required to:

- (i) State whether it is advisable to purchase the machine.  
 (ii) Compute the savings/additional cost as applicable, if the machine is purchased.

(8 Marks)

**Question No. 10:** Alfa Ltd. desires to acquire a diesel generating set costing ₹20 lakh which will be used for a period of 5 years. It is considering two alternatives (i) taking the generating set on lease or (ii) purchasing the asset outright by raising a loan. The company has been offered a lease contract with a lease payment of ₹5.2 lakh per annum for five years payable in advance. Company's banker requires the loan to be repaid @ 12% p.a. in 5 equal annual installments, each installment being due at the beginning of the each year. Tax relevant depreciation of the generator is 20% as per WDV method. At the end of 5<sup>th</sup> year the generator can be sold at ₹2,00,000. Marginal Tax rate of Alfa Ltd. is 30% and its post tax cost of capital is 10%. Ignore tax on capital profits/losses. Determine:

- (a) The Net Advantage of Leasing to Alfa Ltd. and recommend whether leasing is financially viable.  
 (b) Break Even Lease Rental.

(10 Marks)

**Question No. 11:** ABC Ltd. is contemplating having access to a machine for a period of 5 years. The company can have the use of the machine for the stipulated period through leasing arrangement or requisite amount can be borrowed to buy the machine. In case of leasing, the company received a proposal to pay annual end of year rent of ₹2.4 lakhs for a period of 5 years.

In case of purchase (which costs ₹10,00,000/-) the company would have a 12%, 5 year loan to be paid in equated installments, each installment becoming due at the beginning of each year. It is estimated that the machine can be sold for ₹2,00,000/- at the end of 5<sup>th</sup> year. The company uses straight line method of depreciation. Corporate tax rate is 30%. Post tax cost of capital of ABC Ltd. is 10% which is to be used for making the evaluation.

You are required to advice

- (i) Whether the machine should be bought or taken on lease.  
 (ii) Analyse the financial viability from the point of view of the lessor assuming 12% post tax cost of capital.

	PV of ₹1 @ 10% for 5 Years	PV of ₹1 @ 12% for 5 Years
1	.909	.893
2	.826	.797
3	.751	.712
4	.683	.636
5	.621	.567

(10 Marks)