

THE OPEN UNIVERSITY OF SRI LANKA
 Department Of Civil Engineering
 Construction Management Programme - Level 7
 Post Graduate Diploma / Stand Alone Courses
 CEX7110/CEP 2110/CEE 7110 - Construction Project Appraisal



FINAL EXAMINATION - 2005

Time Allowed: Three Hours

Date: 2006 - 03 - 30 (Thursday)

Time: 1330 - 1630 hrs.

Answer any Four (04) questions.

Q1.

(a) "Lenders are the losers during a period of high inflation". Explain this statement.

(Marks 05)

(b) Explain what is understood by 'sinking fund deposit factor'. What is the use of this to a prospective investor?

(Marks 05)

(c) Explain 'Discounted cash flow' and state the benefits of this to the management of a company contemplating on a new investment.

(Marks 05)

(d) Briefly explain the concept of sensitivity analysis.

(Marks 05)

(e) Explain the advantages of Average annual rate of return as a project appraisal technique.

(Marks 05)

Q2

(a) An extract from a company's most recent balance sheet reveals following financial information:

	Rs.(in millions)
Issued ordinary shares of Rs.10	45
Retained profit	15
20% preference shares of Rs.10	30
Total	90



The cost of each individual elements of the company's capital along with its current market value is:

	Cost%	Current market value (Rs.)per share
Ordinary shares	20	45
20% preference shares of Rs.10	20	30

- (i) Determine the market value of company's total capital.
(Marks 05)
- (ii) Compute the total weighted average cost of capital (WACC) for the project.
(Marks 05)
- (b) Explain in detail the meaning of capital budgeting. Discuss the benefits of proper implementation of capital budgeting for a Sri Lankan building contractor.
(Marks 15)

Q3.

- (a) Sigma is a precast concrete production company that is intending to purchase a new 'cement sand block' casting machine at a cost of Rs.75,000 in a bid to diversify its business. The machine has an expected life of five years and can produce 100 blocks per day and will be used 260 days per year. Following information is given too;

Salvage value is Rs. 2,000

Maintenance required Rs.10, 000 at the end of the third year.

Sales price per block Rs. 12.75

Cash production cost per block

Direct materials Rs. 7.50

Variable labour and overhead cost Rs. 4.25

Assuming a 16 percent discount rate, related to Sigma's prospective investment, determine the net present value of the investment.

(Marks 15)

- (b) Discuss the advantages of 'Net Present Value' over 'Internal Rate of Return' in capital budgeting.

(Marks 05)



- (c) The inflation rate is 13% and a project is expected to generate 15% per annum return on nominal basis. Calculate the real return.

(Marks 05)

Q4.

- (a) List and explain advantages and disadvantages of 'Payback period' as a capital budgeting technique.

(Marks 07)

- (b) Mega manufacturing is a small company currently analyzing capital expenditure proposals for the purchase of equipment. The capital budgeting is limited to Rs. 50,000,000, which Mega believes is the maximum capital it can raise. An external financial adviser is preparing an analysis of four projects that Mega's president is considering. The former has projected the future cash flows for each potential purchase. The information concerning the four projects is as follows (all amounts are in Rupees);

Project	Project A	Project B	Project C	Project D
Net initial Investment	20,000,000	19,000,000	25,000,000	21,000,000
Projected cash inflows				
Year 1	5,000,000	4,000,000	7,500,000	7,500,000
Year 2	5,000,000	5,000,000	7,500,000	7,500,000
Year 3	5,000,000	7,000,000	6,000,000	6,000,000
Year 4	5,000,000	7,500,000	8,000,000	4,000,000
Year 5	5,000,000	7,500,000	10,000,000	2,000,000

Calculate the payback period for each of the four projects.

(Marks 08)

- (c) The following table shows two schedules of prospective operating cash inflows, each of which requires the same net initial investment of Rs. 1,000,000 now.

Year	Annual Cash Inflows (in Rupees)	
	Plan A	Plan B
1	100,000	500,000
2	200,000	400,000
3	300,000	300,000
4	400,000	200,000
5	500,000	100,000
Total	1,500,000	1,500,000

The required rate of return is 6% compounded annually. All cash inflows occur at the end of each year in terms of net present value, which plan is more desirable? Show your computations.

(Marks 10)



Q5.

The computing system used by a leading property developer is outdated. The developer has voted to purchase a new computing system to be funded through retained profits. The chairman has asked the company's finance director to make a recommendation as to which of two computing systems should be purchased. The two systems are equivalent in their ability to meet the company's needs and in their ease of use. The mainframe system consists of one large mainframe computer with remote terminals and printers located through out the sites located in the city. The personal computer system consists of a much smaller mainframe computer, a few remote terminals, and a dozen personal computers, which will be networked to the small frame. Each system would last five years. The finance director has decided to use 12 percent discount rate for the analysis.

Following table presents the data pertinent to the decision.

Description	Mainframe System	Personal Computer System
Salvage value of old computer (time 0)	250,000	250,000
Acquisition cost of new system (time 0)	4,000,000	3,000,000
Acquisition cost of software (time0)	400,000	750,000
Cost of updating system (time 3)	400,000	600,000
Salvage value of new system (time 5)	500,000	300,000
Operating costs (times 1,2,3,4,5)		
Personnel	3,000,000	2,200,000
Maintenance	250,000	100,000
Other	100,000	50,000
Data link service cost (times 1,2,3,4,5)	200,000	200,000
Revenue from time-share customers (times 1,2,3,4,5)	200,000	200,000

Note: Time 0 denotes 'immediately' Time 1 denotes the end of year 1 etc.

- (a) Determine the net present values of both the alternatives and thereby recommend the most cost effective computer system for the organisation.

(Marks 18)

- (a) Compare the advantages of 'Net Present Value' over Non discounting methods in capital budgeting.

(Marks 07)



Q6.

ABC Company operates a snack food center at the Airport. On January 1, 2000 ABC purchased a special cookie-cutting machine, which has been used for three years. ABC is considering purchasing a newer, more efficient machine. If purchased, the new machine would be acquired today, January 1, 2003. ABC expects to sell 300,000 cookies in each of the next four years. The selling price of each cookie is expected to average Rs.50.

ABC has two options (1) continue to operate the old machine or 2) sell the old machine and purchase the new machine. The seller of the new machine offered no trade in. The following information has been assembled to help management decide which option is more desirable (all values are given in Rs.):

	Old Machine	New Machine
Initial purchase costs of machine	8,000,000	12,000,000
Terminal disposal value at the end of useful life assumed for depreciation purposes	1,000,000	2,000,000
Useful life from date of acquisition	7 years	4 years
Expected annual cash operating costs:		
Variable cost per cookie	20	14
Total fixed costs	1,500,000	1,400,000
Depreciation method used for tax purposes	Straight line	Straight line
Estimated disposal prices of machines:		
January 1, 2003	4,000,000	12,000,000
December 31, 2006	700,000	2,000,000

ABC is subject to a 40% income tax rate. Assume that any gain or loss on the sale of machines is treated as an ordinary tax item and will affect the taxes paid by ABC in the year in which it occurs. ABC has an after tax required rate of return of 16%.

- (a) Using Net present value method determine whether ABC should retain the old machine or acquire the new machine.

(Marks 12)

- (b) How much more or less would the recurring after tax cash operating savings have to be for ABC to exactly earn the 16% after tax required rate of return? Assume all other data about the investment do not change.

(Marks 08)

- (c) Assume that the financial differences between the net present values of the two options are so slight that ABC is indifferent between the two proposals. Identify and discuss the non-financial and qualitative factors that ABC should consider.

(Marks 05)

