



COLLEGE OF ENGINEERING & TECHNOLOGY

Department :Construction and Building Engineering

Course :Construction Management I

Course No:CB 311

Lecturer : Dr. Ahmed Elyamany

ASSIGNMENT 3

Submission Dead Line: 30/4/2014

1. Make a present-worth comparison of the equal-service life projects for which costs are shown below, if $i = 8\%$. Which project would you select?

	Project A	Project B
First cost, P	LE 2,500,000	LE3,500,000
Annual operating cost, A	LE 900,000	LE 700,000
Salvage value, F	LE 200,000	LE 350,000
Project service life (years)	4	4

2. A firm is considering which of two mechanical devices to install to reduce costs in a particular situation. Both devices cost LE4000 and have useful lives of 7 years and no salvage value. Device A is expected to result in LE500 savings annually. Device B will provide savings for LE700 the first year but will decline LE50 annually. With interest rate 6%, which device should the firm purchase?
3. A purchasing agent is considering the purchase of new equipment for the mailroom. Two different quotations have been provided. Which equipment should be selected? Assume 8% interest rate and equal maintenance cost.

Manufacturer	Cost	Useful life, years	End-of-useful-life salvage value
A	LE5500	5	LE400
B	LE8500	10	EL550

4. A company is trying to decide between two different garbage disposals. A regular (RS) disposal has an initial cost of LE100 and a life of 4 years. The alternative is a corrosion-resistant disposal constructed of stainless steel (SS). The initial cost of the SS disposal is LE220, but it is expected to last 10 years. The SS disposal is expected to cost LE15 per year more than the RS disposal. If the interest rate is 7%, which disposal should be selected, assuming both have no salvage value?

5. A city plans a pipeline to transport water from a distant watershed area to the city. The pipeline will cost LE8 million and have an expected life of seventy years. The city anticipates it will need to keep the water line in service indefinitely. Compute the capitalized cost assuming 6% interest.
6. If the minimum required rate of return is 12% which project should be selected?

	Project A	Project B
First cost	LE26,000,000	LE36,000,000
Annual maintenance cost	LE800,000	LE300,000
Annual labor cost	LE11,000,000	LE7,000,000
Extra income taxes		LE2,600,000
Salvage value	LE2,000,000	LE3,000,000
Project service life (years)	6	10

7. An asset depreciates uniformly from a first cost of LE50,000 to zero over a 20-year time frame. If operating costs are initially LE1,500 but increase by LE2,000 per year and revenues are LE20,000 per year but decrease by LE1,000 per year what is the EAW if the machine is replaced every 10 years and the interest rate is 4%.
8. Suppose that you invested in 1970 LE1,650 in a savings account at 6% per year. Then, you could have LE10,648 on Jan., 2002 . What is the meaning of this 5% interest here?
9. We might invest LE5000 in a machine with a 5 year useful life and annual payments of LE1250. What rate of return would we receive on this investment? The least IRR is the one that makes the NPV of all payments equal to zero
10. An investment resulted in the following cash flow. Compute the rate of return.

Year	0	1	2	3	4
Cash flow	-LE600	+LE200	+LE275	+LE250	+LE350

11. If LE5,000 is invested now, this is expected to yield LE100 per year for 10 years and LE7,500 at the end of 10 years, what is the rate of return?
12. You are given the choice of selecting one of two alternatives. The cash flows of the alternatives as shown in the following table. If the MARR is 7%, Using Rate of Return Method, which one you select?

Year	Alternative 1	Alternative 2
0	-LE10	-LE20
1	+15	+28

13. The following information showing the cash flows for two alternatives. If the MARR is 12%, which one is preferred using Rate of Return Method?

	Alternative 1	Alternative 2
Initial cost	LE8000	LE13000
Annual costs	3500	1600
Salvage value	-	2000
Useful life	10	5

14. A small company is looking at expanding its business by purchasing a small new store that will operate for 10 years before being sold and replaced with a newer larger store. Three sites have been recommended to the owner each with different costs and expected revenues based on its location. The company operates with a MARR of 12% before taxes. Rate the alternatives based on a) PW comparison and b) IRR comparison

	Site 1	Site 2	Site 3
Land Purchase Price	100,000	150,000	160,000
Renovations	40,000	40,000	60,000
Resale	125,000	155,000	175,000
Expected Revenue	125,000	195,000	300,000
Annual Power Costs	35,000	55,000	75,000
Annual O & M cost	66,000	109,000	184,000

15. Two routes are considered for a new highway, Road A, costing LE4,000,000 to build, will provide annual benefits of LE750,000 to local businesses. Road B would cost LE6,000,000 but will provide EL700,000 in benefits. The annual cost of maintenance is LE300,000 for Road A and LE320,000 for Road B. If the service life of Road A is 20 years, and for Road B is 30 years, which alternative should be selected if the interest rate is 8% (using B/C ratios method)?

16. Two machines are being considered for purchase. If the interest rate is 8%, which machine should be bought (using B/C ratios method)?

	Machine X	Machine Y
Initial cost	LE200	LE700
Annual benefits	95	120
Salvage value	50	150
Useful life, years	6	12

17. A company has decided to build a factory on a particular site. There are two mutually exclusive proposals that have been developed for the main factory. There are also three secondary proposals for the main project. The present worth of the benefits and costs are shown below. Which combinations of

projects are best if the company can only spend LE400,000 (using B/C ratios method)?

Main Proposals

Project	Benefits	Costs	B/C
A	300,000	150,000	2.0
B	450,000	250,000	1.8

Secondary Proposals

Project	Benefits	Costs
1	75,000	50,000
2	140,000	100,000
3	300,000	150,000

18. A company has decided to buy new equipment for a project with 4-year duration. There are two different equipment can be used for this project. The cash flows of those types are shown in the table below. What is the payback period for each equipment and which one should be selected using Payback Period Method?

Year	Cash flows	
	Equipment A	Equipment B
0	-LE35,000	-LE35,000
1	20,000	10,000
2	15,000	10,000
3	10,000	15,000
4	10,000	20,000

19. Calculate the payback period for the following two alternatives shown in the next table if the investment rate is 12%. Which one do you recommend?

	Alternate 1	Alternate 2
Initial cost	LE12000	LE8000
Annual benefits	3000	1500 (years 1-5)
Useful life, years	7	15

20. What is the amount of money a company should save now to buy a new equipment costs LE65,000 after three years from now. The interest rate is 12% and the inflation rate is 6%.

21. Which of the following revenues is preferred, if the interest rate is 10% and the inflation rate is 8%?

- A. LE60,000 now.
- B. LE16,000 annually starting one year from now for a period of 10 years.
- C. LE45,000 after three years from now and LE70,000 after 5 years from now.