

## National University of Computer and Emerging Sciences, Lahore Campus



Course: Software Engineering  
Program: BS (Computer Science)  
Duration: 20 Minutes  
Quiz Date: 27-March-23  
Section: 6E

Course Code: CS-3009  
Semester: Spring 2023  
Total Marks: 10  
Roll No.  
Name:

### Question 1:

(10 Marks)

While evaluating the design alternatives, some estimated costs and benefits have been calculated and given in the following table. Determine the extent to which this design will benefit the organization after 5 years?

**Hint:** Identify each item as cost or benefit. Calculate total costs, benefits and return on investment (ROI) after 5 years. Also calculate payback period.

Item	Amount (\$)	Cost or Benefit?
Connectivity	1000 per year	Cost
Salaries/Wages	300,000	Cost
Increased earnings due to web presence	200,000	Benefit
Equipment/installation	50,000	Cost
Equipment maintenance	1000 per year	Cost
Increased efficiency due to new IS	200,000 per year	Benefit
Utilities (s.a. electricity, water)	200,000	Cost
Other savings	10,000 per year	Benefit

Solution:

Total Cost:  $1000 \times 5 + 300,000 + 50,000 + 1000 \times 5 + 200,000 = 560,000$

Benefits:  $200,000 + 200,000 \times 5 + 10,000 \times 5 = 1,250,000$

Payback Period = Cost/Benefits =  $560,000 / 1,250,000 = 0.4$  of a year (approx. 6 months)

Or  $552,000 / 410,000 = 1.34$  of a year (approx. 16 months)

ROI = Benefits/Cost =  $1,250,000 / 560,000 = 2.23$

