

**of Software
Project
Management
(SE4002)**

Do not write below this line

Attempt all the questions.

Single sided, A4 sized, hand written cheat sheet is allowed.

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Course Instructor(s)

Javeria Sadiq (BSE-7C)

Momna Zaneb (BSE-7A, BSE-7B)

Sessional-I Exam

Total Time (Hrs): 1
Total Marks: 50
Total Questions: 3

CLO #1: Understand project management principles and techniques

Q1: For each statement, write True or False clearly. No marks will be granted in case of over writing and cutting [10 marks]

Statement	True/False
A plan for an activity must be based on some idea of a method of work	True
Management in general, involves setting objectives for a system and then monitoring the performance of the system	True
In-house projects are always developed by outside contractors hired by the organization.	False

7	The level of complexity is updating the master file.	0	1	2	3	4	5
8	The level of complexity of the installation.	0	1	2	3	4	5
9	The level of complexity of application input, output, online queries and files.	0	1	2	3	4	5
10	The level of complexity of data processing.	0	1	2	3	4	5
11	The level of reuse of the code is not possible.	0	1	2	3	4	5
12	Level of complexity in changing / flexibility.	0	1	2	3	4	5
13	Usability Youth Level of User.	0	1	2	3	4	5
14	Software Frequency Usage Level.	0	1	2	3	4	5

Weights Table:

Measurement Parameters	Simple	Average	Complex
Inputs	3	4	6
Outputs	4	5	7
Queries	3	4	6
Files	7	10	15
Interfaces	5	7	10

A. Using the given table, calculate the Crude Function Points (CFP) for the payroll system.

B. Compute the Adjusted Function Points (FP) for the project.

C. Mark the given statements as True/False.

1. The HR manager argues: "Adding a new column in an already existing salary slip report should not increase project cost."

2. Suppose HR requests a new "Tax Deduction Report" as an additional output. This will not increase FP count.

Technical assessment only focuses on project costs and ignores whether functionality can be achieved.	False
Projects with longer payback periods are always preferred because they generate more income.	True
When calculating NPV you must discount the initial investment at year 0 by the discount rate.	False
In a fixed price contract, the customer knows the price at the start, as long as requirements don't change.	True
Wideband Delphi can only be used to estimate project size.	True
Parkinson's Law 'Work expands to fill the time available'	True
Time & Material contract type is highly popular among customers because it gives them a fixed price.	False

CLO 2: Apply approaches to manage and optimize the software development processes

Q2: The HR department of BrightMouth Pvt. Ltd. is planning to develop a new Payroll System. The system must handle employee records, salary processing, and report generation. [5+3+2]
The details of the required system components are given below:

Components	Simple	Average	Complex
User Inputs (Forms)	8	6	3
User Outputs (Reports)	4	3	2
User Online Queries	5	2	1
Logical Files	3	2	1
External Interfaces	2	1	0

Relative Complexity Adjustment Factors

No.	General System Characteristic	Rating Scale					
1	The level of complexity of backup / recovery reliability	0	1	2	3	4	5
2	The level of complexity of data communication	0	1	2	3	4	5
3	The level of complexity of distributed processing	0	1	2	3	4	5
4	The level of complexity of the need for performance	0	1	2	3	4	5
5	The level of operational environment requirements	0	1	2	3	4	5
6	Level of developer knowledge needs	0	1	2	3	4	5

CLO 2: Apply approaches to manage and optimize the software development processes

Q3: From the given data calculate the ROI and NPV using a 10% discount rate. Decide which project is worthwhile based on calculated results. Remember to show your working. [5+5+5+5+5]

Year	Project A (USD)	Project B (USD)	Project C (USD)
0	-220,000	-180,000	-300,000
1	75,000	40,000	120,000
2	60,000	70,000	80,000
3	95,000	30,000	140,000
4	80,000	100,000	100,000
5	110,000	60,000	160,000
Net profit			

ROI for project A

$$ROI = \frac{200,000}{220,000} \times 100$$

$$ROI = 90.90\%$$

ROI for project B

$$ROI = \frac{120,000}{180,000} \times 100$$

$$ROI = 66.6\%$$

ROI for project C

$$ROI = \frac{300,000}{300,000} \times 100$$

$$ROI = 100\%$$

Use the following for discount rate ranges

TABLE 2.2 NPV discount factors

Year	Discount rate (%)					
	5	6	8	10	12	15
1	0.9524	0.9434	0.9259	0.9091	0.8929	0.8696
2	0.9070	0.8900	0.8573	0.8264	0.7972	0.7561
3	0.8638	0.8396	0.7938	0.7513	0.7118	0.6575
4	0.8227	0.7921	0.7350	0.6830	0.6355	0.5718
5	0.7835	0.7473	0.6806	0.6209	0.5674	0.4972

Show working for NPV in provided tables:

Year	Project A cash flow (USD)	Discount factor @	Discounted cash flow (USD)
0			
1	75,000	0.9091	68,182.5
2	60,000	0.8264	49,584
3	95,000	0.7513	71,373.5
4	80,000	0.6830	54,640
5	110,000	0.6209	68,299
			312,079 USD

Year	Project B cash flow (USD)	Discount factor @	Discounted cash flow (USD)
0			
1	40,000	0.9091	36,364
2	70,000	0.8264	57,848
3	30,000	0.7513	22,539
4	100,000	0.6830	68,300
5	60,000	0.6209	37,254
			222,305 USD

Year	Project C cash flow (USD)	Discount factor @	Discounted cash flow (USD)
0			
1	120,000	0.9091	109,092
2	80,000	0.8264	66,112
3	140,000	0.7513	105,182
4	100,000	0.6830	68,300
5	160,000	0.6209	99,344
			448,030 USD

NPV = ?
Decision = ?