

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

SEMESTER FINAL EXAMINATION**SUMMER SEMESTER, 2020-2021****DURATION: 1 Hour 30 Minutes****FULL MARKS: 50****CSE 4407: System Analysis and Design****Programmable calculators are not allowed. Do not write anything on the question paper.**

Answer **all 3 (three)** questions. Marks of each question and corresponding CO and PO are written in the right margin.

1. The Dunder Mifflin Paper Company wants to introduce a new computer system in their company. For that they have hired you as a system analyst to compare the previous system with the proposed system. The Proposed system and present system costs are given in Table 1:

Table 1: System costs

	Item	Proposed System Cost	Present System Cost
Year 1	Equipment Lease	\$20,000	\$11,500
	Salaries	30,000	50,000
	Overhead	4,000	3,000
	Development	30,000	—
Year 2	Equipment Lease	\$20,000	\$10,500
	Salaries	33,000	55,000
	Overhead	4,400	3,300
	Development	12,000	—
Year 3	Equipment Lease	\$20,000	\$10,500
	Salaries	36,000	60,000
	Overhead	4,900	3,600
	Development	—	—
Year 4	Equipment Lease	\$20,000	\$10,500
	Salaries	39,000	66,000

Overhead	5,500	4,000
Development	—	—

- a) Using break-even analysis, identify the year in which Dunder Mifflin Paper Company will break-even. 5
(CO1)
(PO2)
- b) Using a graph/diagram estimate the break-even point. 3
The system benefits for Dunder Mifflin Paper Company is given in Table 2. (CO2)
(PO2)

Table 2: System benefits

Year	Benefits
1	\$55,000
2	75,000
3	80,000
4	85,000

- c) Use the costs of Dunder Mifflin Paper Company's proposed system from Table 1 and Table 2 to estimate and indicate the payback period. 5
(CO1)
(PO1)
- d) Define tangible costs and benefits. 4
(CO1)
(PO1)
2. Michael Scott, the Regional Manager of Dunder Mifflin Paper Company, wants to start his own paper company called Michael Scott Paper Company. Therefore, he wants to develop his own information system for tracking shipments to warehouses. Development timeline of this project is given in Table 3. Assume that you are in the 7th week now.

Table 3: Project development timeline

Description	Task	Must Follow	Time (Weeks)
Draw data flow	A	None	5
Draw decision tree	B	A	4
Revise tree	C	B	10
Write up project	D	C, I	4
Organize data dictionary	E	A	7

Do output prototype	F	None	2
Revise output Design	G	F	9
Write use cases	H	None	10
Design database	I	H, E, and G	8

- a) When is it appropriate to use a Gantt chart? Briefly describe the advantages and disadvantages of a Gantt chart. 4
(CO1)
(PO1, PO2)
 - b) Using the data in Table 3, prepare a Gantt chart to help Michael organize his design project. 6
(CO4)
(PO3)
 - c) Design a Pert diagram from Table 3 and find out the critical path. 7
(CO4)
(PO2)
3. “I’ve got the idea of the century!” proclaims Bea Kwicke, a new systems analyst with your systems group. “Let’s skip all this SDLC garbage and just prototype everything. Our projects will go a lot more quickly, we’ll save time and money, and all the users will feel as if we’re paying attention to them instead of going away for months on end and not talking to them.”
 - a) Briefly explain the reasons you (as a member of the same team as Bea) would give Bea to discourage her from trying to scrap the SDLC and prototype every project. 6
(CO2)
(PO1, PO2)
 - b) Knowing that Bea is disappointed with the reasons you gave her in question 3(a), write a paragraph, describing which cases can be used for prototyping in software development. 4
(CO1)
(PO2)
 - c) Does Scrum follow the agile development methodology? Justify your answer. 6
(CO1)
(PO2)