Q-5)

Daffodil International University
Department of Software Engineering
Faculty of Science & Information Technology
Final Examination, Spring 2024
Course Code: SE 113; Course Title: Introduction to Software Engineering
Sections: A, B, C, D, E, F, G, H, I, J, and K
Course Teachers: DAKM, MKS, MSA, RHH, and MS

Marks: 40

Time: 2 Hours

Answer ALL Questions
[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	a)	Describe various methods of Black box testing, providing an example for each technique.	5	
	b)	Estimate the Cyclomatic complexity of the following flow chart. Verify your answer using Graph matrix theory.	5	CLO-1 C2

2.	a)	Demonstrate characteristics of a good software design with examples.	5	
	b)	Illustrate the different phases or activities of Software project management.	5	CLO-2 C3
	c)	Demonstrate the seven principles of risk management in software engineering briefly and provide real-life examples to illustrate each one.	5	
3.	a)	Discuss various techniques of software cost estimation briefly.	5	
	b)	Consider a software project for a hospital management system. The software is designed to manage patient records, appointments, and billing. The major software functions identified are: • Patient registration • Appointment scheduling • Billing and invoicing	5	CLO3 C2

For patient registration:

S_{opt}: 2500
S_m: 3500
S_{pess}: 5500

For appointment scheduling:

S_{opt}: 4200
S_m: 6300
S_{pess}: 8400

For billing and invoicing:

S_{opt}: 1800
S_m: 2400
S_{pess}: 4800

Kawsher HRidoy

In this software project, the productivity rate is estimated at 4000 lines of code (LOC) per person-month, and the development cost is $6000 per person-month. **Estimate** the following:

   i.   Person required per month. — 1.64

   ii.   Total cost of the software development. — 9840

   iii.   Cost per LOC. — 2.46 $

c) Consider the following project schedule with activity labels, durations (in weeks), and their respective precedents: **5**

Activity	Duration (weeks)	Precedents
A	7	-
B	5	-
C	3	A
D	6	A, B
E	4	B, C
F	9	A
G	4	E, F
H	3	D, G

Apply the critical path method to find the critical path and the activities involved. **Estimate** the earliest start time (ES), earliest finish time (EF), latest start time (LS), latest finish time (LF), and also identify the critical path. Kawsher HRidoy