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1-1 Final

Daffodil International University

Department of Software Engineering
Faculty of Science & Information Technology
Semester Final Examination Spring 2026
Course Code: SE113; Course Title: Introduction to Software Engineering
Sections & Teachers: IM (47-A), RM (47-B, 47-C, 47-D, 47-E), NML (47-F), FF (47-G)
Duration: 2:00 Hours | Full Marks: 40

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 company, *TechNova Solutions*, is developing an **Online Healthcare Management System (OHMS)** for multiple hospitals. The system includes modules for patient registration, appointment scheduling, electronic medical records, billing, and reporting. The team consists of developers, testers, and a project manager. During development, the team faces requirement changes, tight deadlines, and integration risks.

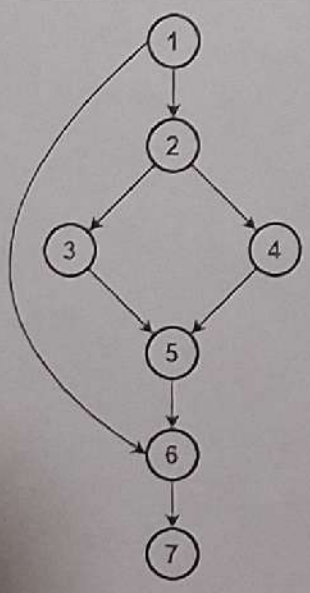
a)	**Explain** the phases of **software project management** in the context of the OHMS project.	[Marks – 5]	CLO1 Level 2
b)	**Define software testing** and **explain its importance** for this system.	[Marks – 3]	
c)	The **OHMS appointment scheduling system** allows booking appointments between **1 and 30 days** in advance. **Explain** how **Boundary Value Analysis** (BVA) can help in identifying important test cases at the limits of this input range.	[Marks – 2]	

2. *a)* The project consists of the following tasks:

Task	Duration (weeks)	Dependency
A	3	—
B	4	A
C	3	A
D	5	B
E	4	B, C
F	3	C
G	2	D, E, F
H	4	G

Draw the task dependency diagram and **demonstrate the critical path** and **total project duration**. [Marks – 8]

b) [Marks – 7] CLO2 Level 3



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		Calculate the **Cyclomatic Complexity** using **adjacency matrix** and **predicated nodes** from the above **Control Flow Graph (CFG)**.		
3.	*a)*	**Outline three risks** in the **OHMS** project from Question 1 and **discuss mitigation strategies** for any one of them.	[Marks – 5]	CLO3 Level 2
	b)	**Explain** any two appropriate software testing techniques with examples from the scenario described in Question 1.	[Marks – 5]	
	c)	Assume that the expected size of an **organic software project** is **43.1 KLOC**. Using the coefficients in the table below and the **Basic COCOMO** model, **calculate Effort**, **Development Time** and **Number of People** required to complete the project.	[Marks – 5]	

Project Class	a_b	b_b	c_b	d_b
Organic	2.4	1.05	2.5	0.38
Semidetached	3.0	1.12	2.5	0.38
Embedded	3.6	1.20	2.5	0.12