

# Bangladesh Army University of Science and Technology

## Department of Computer Science and Engineering

### Referred/Improvement/Backlog Examination, Winter/Summer 2023

Course Code: CSE 3101(Syllabus 2021)

Level-3 Term- I

Time: 03 (Three) hours

Full Marks: 180

#### Course Title: Software Engineering

- N.B.
- The questions are of equal value.
  - Figures in the margin indicate full marks allotted to each question.
  - Symbols and abbreviations bear their standard meaning.
  - Use separate answer script for each PART.
  - The corresponding course learning outcomes (CLOs) are given in the right most column.

#### PART- A (Marks: 90)

(Answer any three questions including Q. No. 1)

	Marks	CLOs
1. a) Briefly explain the importance of Systems Analysis and Design Life Cycle (SDLC).	5	CLO1
b) Elaborately explain the impact of information system on society.	10	CLO1
c) Suppose, you are a project manager of "X Technical Solutions", a software development company. Your client is expecting a design of software which can deal with different interfaces for similar behavior. i) Determine the best suited design pattern in this situation. ii) Explain the reason behind your choice. iii) Give an example of the pattern with necessary diagram.	15	CLO2
2. a) Briefly describe the elements of class diagram.	10	
b) A popular online shopping app is called "Easy Shop". The app involves many customers, seller, admin etc. Moreover, the system performs many actions. Now draw a use case diagram of the shopping app.	20	
3. a) Suppose, you are assigned as an analyst in a software company called "ABC Informatics". Describe your responsibilities towards the company.	15	
b) Elaborately describe architectural pattern and explain its working process with example.	15	
4. a) Elaborately describe SOLID principles.	20	
b) Differentiate between coupling and cohesion with example.	10	

#### PART- B (Marks: 90)

(Answer any three questions including Q. No. 5)

	Marks	CLOs
5. a) Differentiate between White Box Testing and Black Box Testing.	10	CLO3

b) Draw a flow graph of the following program code:

20 CLO3

```
i) void finding_large()
ii) {
iii) int x=0;
iv) int y=19;
v) A:x++;
vi) if(x>999)
vii) goto D;
viii) if(x%11==0)
ix) goto B;
x) else goto A;
xi) B: if (x % y == 0)
xii) goto C;
xiii) else goto A;
xiv) C: printf("%d\n", x);
xv) goto A;
xvi) D: printf("End of list\n");
xvii) return 0;
xviii) }
```

6. a) Derive the equation of software reliability theory. 15
- b) Briefly describe waterfall model including its workflow diagram. 10
- c) Explain the effect of cohesion on maintenance. 5
7. a) Elaborately describe following key terms: 20
- i) Types of quality
  - ii) Kinds of quality cost
  - iii) Causes of defects
- b) Differentiate between the user requirements and system requirements with example. 10
8. a) Suppose, you are a software developer at "ABC". Your client wants a system to be prepared very fast and initially they do not want to invest much. 20
- i) Choose an appropriate model to develop the system.
  - ii) Elaborately describe the system model with necessary diagram.
  - iii) Write some pros and cons of the model.
- b) Briefly state the essential attributes of a good software. 10