

International Islamic University Chittagong

Department of Computer and Communication Engineering

Semester End Examination, Autumn-2024

Program: CCE Semester: 5th

Course Code: CCE-3507

Course Title: System Analysis, Design and Development

Time: 2 Hours 30 Minutes

Full Marks: 50

Course Outcomes (COs) of the Questions

- CLO1** Analyse the nature of information in systems analysis and design and its various components.
CLO2 Determine feasibility and handle managerial issues like data input and output related to the design.

Bloom's Levels of the Questions

Letter Symbols	R	U	Ap	An	E	C
Meaning	Remember	Understand	Apply	Analyze	Evaluate	Create

Part A

- Q.1(a) What is the importance of the context diagram in a DFD? Describe the steps to follow when creating a data flow diagram using a top-down approach. CLO1 An 4
- (b) Create a data flow diagram (DFD) for a typical payroll system that visually represents the processes for managing employee salaries, deductions, and payments. The diagram should include key components such as inputs, processes, outputs, and interactions with external entities like employees. CLO1 C 6
- Q.2(a) Name three system design strategies. Describe the key characteristic of modern structured design along with an example. CLO2 U 5
- (b) Develop a decision tree for an e-commerce website's order processing system. The system needs to handle conditions like 'Payment Method' (credit card, PayPal), 'Order Amount' (below \$50, above \$50), and actions such as 'Apply Discount,' 'Send Confirmation Email,' and 'Flag for Review.' Detail the process of identifying conditions and actions, and explain how you structure the tree. CLO2 C 5

OR

- Q.2(a) Design a dashboard for keeping track of a person's stock and portfolio. Think about how the dashboard could be used to make decisions about buying and selling stock. Remember that a client can have more than one stockbroker. CLO2 An 5
- (b) How does good form design contribute to the overall quality of an information system? Discuss the different types of captions used in form design. How do these captions enhance the usability and accuracy of forms? CLO2 Ap 5

Part B

- Q.3(a) What is the difference between white-box testing and black-box testing? Discuss the categories of errors that black-box testing aims to uncover. CLO2 An 4
- (b) Create a flow graph for the given function and apply basis path testing to design test cases that ensure all statements in the function are tested. CLO2 C 6

```
1  int functionZ(int y)
2  {
3  int x = 0;
4  while (x <= (y * y))
5      {
6      if ((x % 11 == 0) &&
7          (x % y == 0))
8          {
9          printf("%d", x);
10         x++;
11         } // End if
12     else if ((x % 7 == 0) ||
13              (x % y == 1))
14         {
15         printf("%d", y);
16         x = x + 2;
17         } // End else
18     printf("\n");
19     } // End while
20 printf("End of list\n");
21 return 0;
22 } // End functionZ
```

- Q.4(a) What is the main purpose of a procedure manual in software documentation? List three key features of a procedure manual. Discuss the typical sections found in a procedure manual and explain the importance of each section in helping users interact with the software. CLO2 U 6
An
- (b) List the four major activities in the process of maintaining information systems. What factors can influence the maintainability of a software system? CLO2 U 4
An
- Q.5(a) What is the primary focus of unit testing? Provide a schematic diagram of unit tests and briefly explain its components. Additionally, list some common errors encountered during unit testing. CLO2 An 6
- (b) Define software quality in one sentence. Describe the six quality attributes of software defined by ISO 9126. CLO2 An 4

OR

- Q.5(a) Analyze the various risks to hardware, data, and applications in an organization. How can these risks be mitigated through appropriate security measures? CLO2 An 6
- (b) Compare and contrast distributed denial-of-service (DDoS) attacks with traditional denial-of-service (DoS) attacks. How should companies balance the cost of security measures against the potential damage from security breaches? CLO2 An 4