

Q1. Consider that you are designing a College website using an incremental and iterative approach. For this design of the website, give examples of at least four increments of your design. Show how you will apply an iterative approach. (Hint: possible increments could be entire Home page, INNOVATION module, etc.)

Q2. A) Give three reasons as to why traditional projects fail. (Hint: non-agile)

B) Draw a neat labeled diagram for the various "Stages/phases of Scrum". What all happens in a typical sprint? (Hint: events etc.)

C) With examples show how estimation is typically done for an agile project.

D) Write any two user stories using the user story template, for a typical "Library application".

(Hint for template: Who is this story for, etc.)s

Q3. A) Give code to illustrate the need and use of "Move method" refactoring technique. What is the bad code smell here?

B) What are the 'load smells/problems associated with "Switch statement"? How do you refactor the code containing "Switch statement"? Give sample code example for the same.

Q4. A) Consider a salary calculation application. For this application, consider three classes: Employee, Part-time employee and Full-time employee. For this, apply a refactoring technique called "Replace inheritance with delegation" and give the sample code for the same.

B) Consider a system/application, where you need to keep Customer information and retrieve it. Define an Interface for this system. What is a refactoring technique called "Extract Interface"? Illustrate its working with a sample code for any application.

Q5. A) What examples can you give for Model, View and Controller parts of "MVC Architecture", for any application? What are the advantages of using "MVC pattern" for a web application?

B) Give two examples, for each of load testing and stress testing of any web application. Compare load testing and stress testing.

Q6. A) What makes typical websites like shopping websites slow for users? Where all can performance be lost/reduced/compromised? What quality sub-factors can be considered under performance? How does one test for performance of a website?

Q1. Explain any 2 characteristics of good user story. Consider, an "Online Railway Reservation system". Assume that the system will be implemented using an agile approach. Write a user story for "Book ticket" feature of this system, using the user story template. (Hint for template: Who is this story for, What they want to do, Why they want to do it)

Q2. Compare the Agile planning of projects with the traditional static planning.

(3)

Q3. A) What is the meaning, and importance of following terms in Agile planning? a) Master Story List b) Team Velocity

(2)

B) What are the advantages of Test Driven Development? Consider the requirement / function for "Addition of 2 numbers". For this function, apply and describe the 3 steps of Test Driven Development.

Q4. A code smell (for example: 'Long method', 'global variable', etc.) is an example of badly written code.

We refactor to improve the quality of code.

Give examples of any 2 bad code smells with explanation of why they are considered as bad programming practices.

Q5. When do you need to apply a refactoring technique called "Extract class"?

Refactor the following code using "Extract class" technique.

abstract class Shape

```
{
    public void Draw()
    {
        try {
            // draw
        }
        catch (Exception e)
        {
            LogError(e);
        }
    }
    public static void LogError(Exception e)
    {
        File.WriteAllText(@"c:\Errors\Exception.txt", e.ToString());
    }
}
```

Q 6. There is a refactoring technique called "Replace error code with exception". What is meant by error code and exception?

Give sample code examples to show use of error code and use of Java exceptions respectively.



# **CUMMINS COLLEGE OF ENGINEERING FOR WOMEN**

**(An Autonomous Institute affiliated to Savitribai Phule Pune  
University)**

## **Fourth Year Computer SOFTWARE ENGINEERING (CE4102)**

Duration : 02:00 Hours

Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Please read each question carefully.
3. **SHORT, PRECISE and CONCISE answers are expected.**
4. The ANSWER must be clear, lucid and SPECIFIC TO the QUESTION asked.
5. Most questions are based on hypothetical systems / examples. MAKE SUITABLE ASSUMPTIONS about scope of such systems / examples, wherever relevant. (IMPORTANT INSTRUCTION)
6. Draw neat diagrams wherever necessary.
7. Please Manage/Plan your time carefully for All Questions.
8. The answers should be in your OWN WORDS.

### Unit-1

Q No 1 a) A) In the context of OO Design, justify that low Coupling is better. (4)  
(02 Marks)

B) Consider a typical **College System**. Assume that system will be implemented using object-oriented classes. For this system, illustrate with ANY ONE appropriate example, the inheritance relationship amongst the classes.  
(02 Marks)

### Unit-2

Q No 2 a) A) Explain IN BRIEF, with a neat labelled diagram, the various **Stages/phases of Scrum Approach**. (7)  
(03 Marks)

B) Justify the importance and the need of the following agile concepts in practice.

- i) Incremental approach
- ii) Engaging the customers

(04 Marks)

Unit-3

Q No 3 a) A) Explain the following Agile Principle. (6)  
- **Working software is the primary measure of progress**

(02 Marks)

B) Imagine that you are a part of an agile team involved in the development of an **Online Food Ordering application**. For this software application, create a "NOT List" showing the essential elements viz. **In Scope** and Out of Scope.

(Hint: features in scope and features not in scope)

(04 Marks)

Unit-4

Q No 4 a) A)What are interfaces?

(16)

Explain the problem associated with **Alternative Classes with different interfaces**.

(02 Marks)

B) With sample code/pseudo code example (i.e. Code with code smell and refactored code), illustrate how the refactoring technique called **Move method** eliminates the code smell and improves the quality of the code.

(04 Marks)

C) What are the three levels at which code smell may exist? State the example of a code smell at ANY TWO of these levels.

(02 Marks)

D) Describe with an example, what are the bad smells/problems associated with **Switch statement** and how do you refactor to eliminate these problems. The above example should be from the domain of **College System/Portal/Application**.

(Code is optional/not expected for the above example, Use Class Diagram to explain the above refactoring. The classes should have relevant operations and methods.)

(04 Marks)

E) Why do you need to apply the following refactoring techniques? Justify.

i) Extract method

ii) Extract superclass

(Code is optional/not compulsory for above. You may use coding if you wish.)

(04 Marks)

Q No 5 a) A) With a neat labelled diagram, explain in brief the roles of Model, View and Controller parts of the **MVC Architecture** for a web application. (17)  
(02 Marks)

B) Consider a typical **Online Examination** application.

For this application, give examples for Model, View and Controller parts of **MVC Architecture** and the responsibilities of each part.  
(04 Marks)

C) In the context of web applications, what is the purpose and scope of **Configuration testing** for clients?  
(02 Marks)

D) Consider a ticket booking module for any **Online Movie Ticket Booking** application. MENTION any FOUR features that you will consider for this ticket booking module. Show how will you test your user interface elements/functionalities for **ticket booking module** by defining at least TWO test cases.  
(Hint: This module may have many different features/functionalities and user interface (UI) elements.  
Hint: Example of feature can be Choices of Date of movie.  
Hint: Example of UI element can be a UI form for booking a ticket.)  
(04 Marks)

E) Explain **SIMPLICITY** Design Goal for Web Application.  
(02 Marks)

F) Consider a typical Government website.  
For this website, what all aspects/security elements will be tested as part of **Security Testing**?  
In the context of this website, explain with appropriate examples, how testing of above aspects/security elements can be performed.  
(03 Marks)



# CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

(An Autonomous Institute affiliated to Savitribai Phule Pune  
University)

## Fourth Year Computer SOFTWARE ENGINEERING (CE4102)

Duration : 01:00 Hour

Max Marks : 25

Instructions :

1. All questions are compulsory.
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5. Most questions are based on hypothetical systems / examples. MAKE SUITABLE ASSUMPTIONS about scope of such systems / examples, wherever relevant. (IMPORTANT INSTRUCTION)
6. Draw neat diagrams wherever necessary.
7. Please Manage/Plan your time carefully for All Questions.

### Unit-1

Q No 1 a) A) Explain the **Sprint Planning** activity as part of the Scrum approach. (5)  
(02 Marks)

B) In the context of Scrum approach, compare and contrast the **Product Backlog** and **Sprint Backlog** artefacts in terms of aspects like their purpose, scope and Suitable examples.  
(03 Marks)

### Unit-2

Q No 2 a) A)What are the problems associated with the Documentation (5)  
which is followed in the traditional software development  
process?  
(02 Marks)

B) Consider an **Online College Admission system**. Assume  
that the system will be implemented using an agile approach.  
Identify and enlist different users for this system and also enlist  
one User Story for each user.

Write a user story for **Apply for an admission** feature of  
this system, using the user story template. (Hint for template:  
Who..., What..., Why...)  
(03 Marks)

#### Unit-3

Q No 3 a) A)Explain with a neat labelled diagram the working of **Test** (5)  
**Driven Development (TDD)** approach.  
(02 Marks)

B)In the context of agile project, compare and contrast the  
Burn-Down Chart and the Burn-Up Chart in terms of aspects  
like their purpose, plotting methods and examples.  
(03 Marks)

#### Unit-4



Q No 4 a) A) What is a Code Smell? What is the importance of testing in refactoring? (5)  
(02 Marks)

B) Identify the bad smell and all the opportunities for refactoring in the following code.  
Refactor the following code using "Extract method" technique for improvement (wherever possible) and Write the refactored code/pseudo code.

```
int main() {  
    char s[] = "Programming is fun";  
    int i;  
    char str[1000], ch;  
    int count = 0;  
  
    for(i = 0; s[i] != '\0'; ++i);  
    printf("Length of the string: %d", i);  
  
    printf("Enter a string: ");  
    fgets(str, sizeof(str), stdin);  
  
    printf("Enter a character to find its frequency: ");  
    scanf("%c", &ch);  
  
    for (i = 0; str[i] != '\0'; ++i) {  
        if (ch == str[i])  
            ++count;  
    }  
    printf("Frequency of %c = %d", ch, count);  
    return 0;  
}
```

(03 Marks)

Q No 5 a) A) Explain the exception handling keywords/concepts in Java (5)  
viz. **throws** and **try-catch**.  
(02 Marks)

B) Give your own examples of code smells viz. **Global variables** and **Duplicated code** with explanation of why they are considered as bad programming practices/bad smells.  
(03 Marks)