

POKHARA UNIVERSITY

Level: Bachelor

Semester: Fall

Year : 2024

Programme: BE

Full Marks : 100

Course: Software Engineering (New)

Pass Marks : 45

Time : 3 hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Define software testing. What are different considerations during unit testing of any module? Explain importance of drivers and stub while performing the unit testing. 8
- b) Draw the control flow graph and calculate the cyclomatic complexity of the following function. 7

```
int a = 1, b = 1, n, c;
```

```
int i = 1;
```

```
while (i <= n) {  
    c = a + b;  
    a = b;  
    b = c;  
    printf("%d ", c);  
    i++;  
}
```

2. a) A patient goes to registration machine then he presses on button and then screen opens. After that he enters the patient id number and books for the doctor for his checkup. After that he checks the category of disease from given list then chooses doctor's name from given doctor's name list, then he enters time he wants to meet with doctor. For this registration he needs to enter the amount, if the amount is ok it accepts the registration and prints the registration slip otherwise it gives an alarm. 8

From above information

1. Draw a use case diagram
2. Draw a sequence diagram

- b) What is architectural design and what are the factors that determine the architectural design decisions. Explain about repository and pipe and filter architecture style. 7
3. a) What are software configurations items? Explain the process of system building and also mention some common problems during continuous system integration. 8
- b) Write down some importance of software reuse. Explain the need and benefits of using artificial intelligence (AI) in software engineering. 7
4. a) A software project started on March 2013 was supposed to be completed by May 2014. But the progress review at the end of March 2014 shows that only 20% of the tasks have been completed and the major reason in delay of the project was the people factor. Explain briefly the possible reasons that the people factor affects the software development process. 8
- b) What is risk in a software? How do you identify risk in software engineering? Explain risk mitigation, monitoring and management. 7
5. a) What do you mean by agile development? How agile development is different than the traditional software development model? Explain. 7
- b) Consider the world of libraries. A library has books, videos and CDs that it loans to its users. All library material has unique id and a title. In addition, books have one or more authors, videos have one producer and one or more actors, while CDs have one or more entertainers. The library maintains one or more copies of each library item (book, video or CD). Copies of all library material can be loaned to users. For every loan, the library records the user, the loan date and time, and the return date and time. For users, the library maintains their name, address and phone number. Draw a class diagram for the description above. 8
6. a) Define Software Quality. Explain the activities of software quality assurance (SQA) group for achieving a high- quality end product. 7
- b) For the case study given below identify all the actors, use cases and relationships. Also draw use case diagram. 8
- A Coffee Vending Machine dispenses coffee to Customers. Customers order coffee by selecting a recipe from a set of recipes. Customers pay for the coffee using coins. Change is given back if any to the customers. The service staff load ingredients (coffee

powder, milk, sugar, water and chocolate) into the coffee machine. The service staff can also add a recipe by indicating the name of the coffee, the units of coffee powder, milk, sugar, water and chocolate to be added as well as the cost of the coffee.

7. Write short notes on: (**Any two**) 2×5
- a) Cloud based software engineering
 - b) Version control
 - c) 4Ps of Management Spectrum