POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year : 2024
Programme: BE | Full Marks: 100
Course: Software Engineering Fundamentals (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) Why do you prefer agile process of software development than conventional method of software development? Explain scrum process of software development with necessary diagram. 8

   b) Discuss the benefits of cost and time estimation during project planning. 7

   A university administration system is to be developed, and the estimated lines of code (LOC) are calculated to be 90,000. Based on historical data for educational domain projects, the average productivity is 400 LOC per person-month (PM), and the labor rate is Rs. 30,000 per month. Calculate the estimated effort and estimated project cost for the development of the university administration system.

   OR

   Explain the demerits of Lines of Code (LOC).

   Given the data below, compute the function point value, effort and total cost of a project with the following information domain characteristics.

   Number of user inputs: 35
   Number of user outputs: 55
   Number of user inquiries: 5
   Number of files: 4
   Number of external interfaces: 3

   Assuming that the complexity of given software is simple, productivity of software developers is 20 FP/PM and their salary is Rs.200 /PM

2. a) How does use case help to understand system requirements? Draw use case diagram for online food delivery system. 7

b) What are the major differences between DFD level 0 and DFD level 1? Draw DFD level 1 for online food delivery system. 8

3. a) List out any three design principles during software design. Explain the concepts of: 7
   i. Call and return architecture
   ii. Data flow architecture

   b) Describe the steps of transform mapping and transaction mapping involved in mapping of requirements into software architecture. 8

4. a) Define software testing. What are different considerations during unit testing of any module? Explain importance of drivers and stuff 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++;
}
```

5. a) How do you define software quality? Differentiate between capability maturity model (CMM) and international standard organization (ISO) quality standards. 8

   b) Discuss the process of change control in managing software configurations. How does it help in maintaining the integrity of the software throughout its lifecycle? 7

6. a) What do you mean by domain analysis? Explain the different steps involved in domain analysis. 8

OR

Discuss the concept of Object-Oriented Design. Explain the different layers of OOD.

   b) Define object-oriented paradigm. Explain how do you identify the elements of an object model. 7

7. Write short notes on: **(Any two)** 2×5

a) Types of Risk
b) 4Ps of Management Spectrum
c) Design Patterns

2024 (Spring) SEF
(New)