# POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2023
Programme: BE | Full Marks: 100
Course: Software Engineering Fundamentals (New) | Pass Marks: 45
Time :3hrs.

*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) What are the five values of extreme programming in agile and explain extreme programming (XP) in detail with necessary diagram. 8

   b) Define software metric. Given the data below, compute the function point value, effort and total cost of a project with the following information domain characteristics. 7

   Number of user inputs: 37
   Number of user outputs: 53
   Number of user inquiries: 5
   Number of files: 5
   Number of external interfaces: 3

   Assuming that the complexity of given software is simple, productivity of software developers is 25 FP/PM and their salary is Rs.1000 /PM

2. a) Define risk in the context of software development. Explain the importance of risk analysis and management in software projects. 7

   **OR**

   What do you mean by risk identification? Discuss risk refinement. Explain how risk refinement helps in analyzing and responding to potential risks.

   b) How does data flow diagram (DFD) help to acquire functional aspect of any system? Draw a DFD level 1 for online university examination system. 8

   **OR**

   A student has to login to university online portal in order to take the final examination. After successful login students can take only one subject exam at a time. Students are monitored by more than one invigilator during the examination time. Students should scan the final answer sheet and submit it to the university portal before they sign-out from the system.

From this scenario draw

i. ER diagram. 4

ii. DFD level 1 diagram 4

3. a) Explain the need of use cases and user stories while performing requirement analysis. Draw a use case diagram for an online library system. 7

b) Why is software design important? Explain design principles and guidelines while designing any software projects. 8

4. a) What are different software architectures styles? Explain data flow and client server architectures with necessary diagrams. 7

b) What is the importance of validation testing. Draw the control flow graph and calculate the cyclomatic complexity of the following function. 8

```
int fun(int x, int y) {
  while (x != y) {
    if (x > y) {
      x = x - y;
      print "x is greater than y";
    } else {
      y = y - x;
      print "y is greater than x";
    }
  }
}
```

5. a) Explain the terms verification and validation. Why regression testing and smoke testing are required while performing software integration? 7

b) Define software quality assurance. Discuss the objectives and steps involved in conducting FTR. 8

6. a) What is software configuration management? Discuss the change control process in brief. 7

b) Explain two important features of object-oriented system. Explain different layers of object-oriented design. 8

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

a) Design patterns

b) Data Dictionary

c) 4Ps of Management Spectrum

# NEPAL COLLEGE OF INFORMATION TECHNOLOGY

## ASSESSMENT_FALL_2023

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Programme: BE_SE
Course: Software Engineering Fundamentals
Semester : IT/Software III

Year: 2024
Full Marks: 100
Pass Marks: 45
Time: 3 hrs.

*Candidates are required to answer in their own words as far as practicable.*
*The figures in the margin indicate full marks*
***Attempt all the questions.***

Q.n 1.a Why do you think agile process of software development is considered better than conventional method of software development? Explain scrum process with suitable diagram. 7

b Define empirical estimation technique? 8
Given the data below, compute the function point value, effort and total cost of a project with the following information domain characteristics.
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Q.n 2.a Define the role of primary, secondary actors and use cases in use case diagram. 8
Draw use case diagram for online food delivery system.

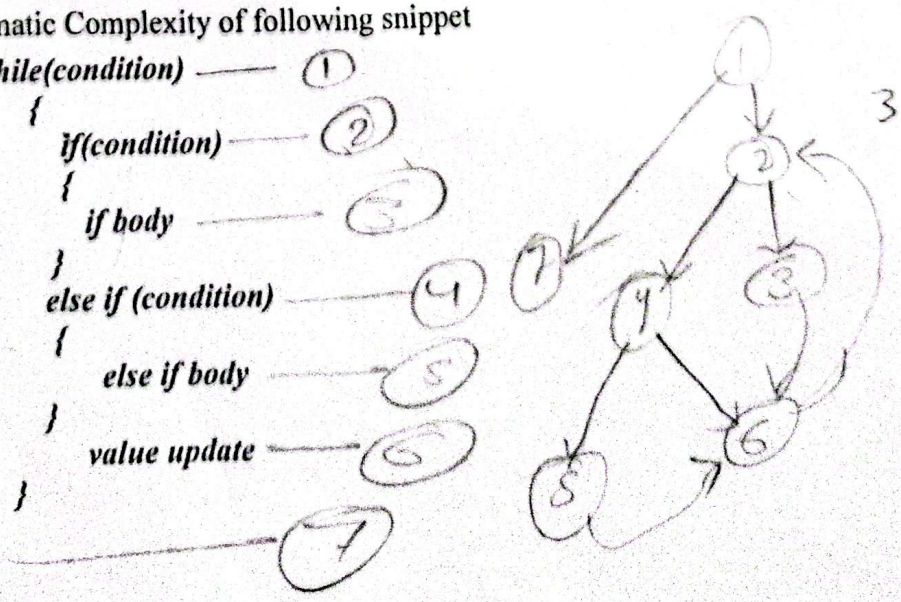
b Define functional modeling. Explain how DFD helps to acquire functional model of any system 7

Q.n 3.a Explain need of design while developing software. Explain data design with suitable example. 8

b Explain the concept of modularity, structural partitioning and control hierarchy for effective software design. 7

Q.n 4 Why do we need to calculate cylomatic complexity of a code. Calculate the Cylomatic Complexity of following snippet 7

```
While(condition)
{
  if(condition)
  {
    if body
  }
  else if (condition)
  {
    else if body
  }
    value update
}
```



| | | |
|---|---|---|
| b | Mention the significance of software testing? Explain different types of software testing taking an example of each. | 8 |
| Q.n 5.a | Define software configuration management. Difference between version control and change control. | 8 |
| .b | What are the attributes for good quality software? Difference between international standard organization (ISO) and capability maturity model (CMM) | 7 |
| Q.n 6.a | Explain the important features of object oriented software project (OOP). Explain different types of abstraction with an example. | 8 |
| b. | Differentiate between object oriented analysis (OOA) and object oriented design (OOD). | 7 |
| Q.7 | Write down short notes on any of two[2*5 = 10] | |

a. Four Ps
b. Design Patterns
c. Software risks