Institute of Information Technology
Jahangirnagar University
Professional Masters in IT

There are 07 (Seven) questions. Answer any **5 (Five)** of them.
Figures in the right margin indicate marks.

1. a) Draw the extreme programming release cycle. Why extreme programming is called extreme?　　2+2

    b) Mention the different factors of Teamwork in agile team.　　3

    c) Why customer involvement is important for agile development?　　3

    d) 　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　0.5×4=2
    　　i.　If design is good, _____ all the time.
    　　ii.　Writing tests before code clarifies the _____ to be implemented.
    　　iii.　The __, who is part of the team writes tests as development proceeds.
    　　iv.　Some tests can be very difficult to write _____.

2. a) Write the principle of testing. What is verification and validation?　　2+2

    b) Mention the level of testing? What is gray box testing?　　2+2

    c) Explain an integration testing strategy which can be applied to any type of software with example.　　4

3. a) Consider any software application you have to develop for your customer. Apply an appropriate test case writing technique for numerical input.　　4

    b) If you have any complex decision-making situation in your application the which technique you can apply for writing test cases? Give example.　　4

    c) Write a pseudocode or draw a flowchart for your any functional requirement of your system and find different types of coverage using three test cases.　　4

4. a) Draw the defect life cycle. Mention the defect tracking parameters.　　2+2

    b) Suppose O = Optimistic estimate (best case scenario in which nothing goes wrong and all conditions are optimal)= 400, M = Most likely estimate (most likely duration and there may be some problem but most of the things will go right) = 600, E = Pessimistic estimate (worst case scenario where everything goes wrong) = 200. Calculate the test estimation. Also find the standered deviation.　　3

    c) How Wideband delphi technique works?　　3

    d) Give example of the following types of defects for an online shopping site:　　0.5×4=2
    　　i.　High severity and priority
    　　ii.　High severity and low priority
    　　iii.　Low severity and high priority
    　　iv.　Low severity and priority

5.

a) How ISO 9001 standard can be achieved by any organization?   4

b) How agile makes inspection easier? Identify the types of faults: 2+2
    i. If character strings are used, is a delimiter explicitly assigned?
    ii. If a break is required after each case in case statements, has it been included?
    iii. Do formal and actual parameter types match?
    iv. Is space explicitly de-allocated after it is no longer required?

c) How process and product quality depend on each other? Give two examples of product standard and process standard.   4

6.

a) Identify the types, probability and effects of the following types of risks: 1×4=4
    i. The database used in the system cannot process as many transactions per second as expected.
    ii. Faults in reusable _____ components have to be repaired before these components are reused.
    iii. It is impossible to recruit staff with the skills required for the project.
    iv. Customers fail to understand the impact of requirements changes.

b) Show the SCM activities with a diagram. What is the difference between version and release?   2+2

c) How version management for any software is done with baselines and codelines?   4

7.

a) There are four quality goals for software products and each goal can be defined by several attributes. Identify the attributes represented by the following matrices: 2
    i. Number of changes per requirement
    ii. Existence of architectural model
    iii. Cyclomatic complexity
    iv. Staff hour percentage per activity

b) Explain the concept of continuous CMMI model. How this concept can be used with agile development method?   4

c) How correctness and efficiency of any system can be assessed?   3

d) Mention the factors of maintenance quality metric. If 317 problems are closed during and total number of problems arrived during Auguest 2023 was 427. Find the backlog management index.   3