Institute of Information Technology

Jahangirnagar University

Professional Masters in IT

1st Trimester Final Examination, Spring 2023 **Intake: Fall 2022 & Spring 2023**

Duration: 3 Hours Full Marks: 60

Course Code: PMIT 6111 **Course Title: Software Testing & Quality Assurance**

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

1. a) Draw the sprint cycle. Mention the Scrum activities. 2+2

   b) What are differences between extreme programming and scrum? 4

   c) Answer the following questions very briefly: 1×4=4
      i. What is test automation?
      ii. How pairing can be done for agile testing?
      iii. What is refactoring?
      iv. How sprint backlog can be found from user's stories?

2. a) Mention the two major goals of program testing. Defect testing is concerned with rooting out undesirable system. Give examples of such behaviour. 2+2

   b) Which factors should be considered to write test cases for unit testing? 2

   c) Draw the acceptance testing process. 2

   d) Mention different types of system testing. Write the differences between black box and white box testing. 1+3

3. a) "We begin by 'testing-in-the-small' and move toward 'testing-in-the-large'." How this strategy works for conventioal software and for object-oriented (OO) software? 3

   b) Why we need an incremental strategy for integration testing? If you are testing an OO software product which strategy you should follow and why? 2+2

   c) Identify the following types of testing: 0.5×8=4
      i. The initial testing process exercised to check whether the software under test is ready/stable for further testing.
      ii. Test tolerances for heat, humidity, motion, portability.
      iii. Testing involves examining each requirement and developing a test or tests for it.
      iv. A release of the software is made available to users to allow them to experiment and to raise problems that they discover with the system developers.
      v. Objectives are to detect faults due to interface errors or invalid assumptions about interfaces.
      vi. Where several individual units are integrated to create composite components and the testing should focus on testing component interfaces.
      vii. Tests system's response to presence of errors or loss of data.
      viii. The testing begins by evaluating the correctness and consistency of the analysis and design models

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4. a) 1. Consider the following algorithm given below. Write two test cases, then calculate statement, condition and decision coverages for each test cases.

```
Var CGPA;
If (CGPA>=3.50)
Print "You are selected for Thesis";
Else if (CGPA>=2.00 && CGPA<=3.49)
Print "You are selected for research Project";
Else Print "Apply for an improvement exam";
If (CGPA=4.00)
Then Print "You are selected for Thesis and awarded a stipend";
```

4

b) Mention different types of experience-based testing. Compare experience-based testing and behaviour-based testing. 4

c) When we use decision tables? Draw a decision table on the following condition.
"A tourist will visit Saint Martine Island from Chottogram or from Taknaf. A tourist will visit Saint Martine Island from Taknaf if the day is sunny, sea is calm and ships are available. From Chottogram if sea is calm and ships are available the tourist will get to Saint Martine. Otherwise, tourist cannot go."

5. a) Write the steps of Use-case point test estimation. If the Unadjusted Actor Weights = 30 and Unadjusted Use-Case Weights = 350, then find the total effort. (TEF=0.50). 5

b) Draw the defect life cycle. 3

c) How the following states can be reached by any defect in its life cycle? 1×4=4

i. Reopened
ii. Deferred
iii. Closed
iv. Reject

6. a) Draw the software configuration management process. Mention its activities. 2+1

b) How ISO 9001 certification can be achieved? 4

c) Draw the risk management process. Give example of different kinds of risks. 2+3

7. a) Suppose you have to build a web solution for online project management system. In this system supervisor and project students are two main users. Supervisor can provide project topics and students can enroll under supervisor. 2×3=6

i. Write different types of requirements of this system.
ii. From the functional requirements mentioned in above select two important requirements. Write requirement tests for them.
iii. User requirement "After each submission a report should be generated to evaluated the project". Find the system specifications.

b) Answer the following questions: 1×6=6

i. Give an of high priority and high severity defect.
ii. What is Mainline?
iii. How 'Availability' can be measured?
iv. What is show stopper error?
v. What is parameter interface?
vi. What is refactoring?

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