Institute of Information Technology

Jahangirnagar University

Professional Masters in IT

1st Trimester Final Examination, Summer 2019 [Intake: Summer 2019 & Spring 2019]

Duration: 3 Hours | Full Marks: 60

Course Code: PMIT – 6111 | Course Title: Software Testing & Quality Assurance

Do not write anything on the question paper.

There are **7 (Seven)** questions. Answer any **5 (Five)** of them.

Figures in the right margin indicate marks.

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1. a) How the scrum based testing works? Why customer involvement is important? 4

   b) Show a model of the software testing process. Write the initial testing process exercised to check whether the software under test is ready/stable for further testing. 4

   c) Why continuous integration is important for agile development? Show the agile testing process. 4

2. a) Write difference between regression testing and smoke testing. 4

   b) Suppose you have to test a web based software for any domain. Identify some functional requirements of your software solution. Write 5 sample test cases based on the requirements. 4

   c) Identify the following terms: 2

      i. Where individual program units or object classes are tested.

      ii. Test what happens if large amounts of data are handled.

      iii. Tests system's response to presence of errors or loss of data.

      iv. An approach to program development in which you inter-leave testing and code development.

   d) Fill in the blanks with appropriate term(s): 2

      i. If _____ are good, review all the time.

      ii. As soon as the work on a task is complete, it is _____ into the whole system.

      iii. Entire team is involved in all activities of an _____.

      iv. Development testing, where the system is tested during development to discover bugs and defects.

3. a) How defects can be classified from QA and developers perspectives? Write the parameters of defect tracking process. 4

   b) From the following table calculate the function point, FP. If any team has productivity/month 5FPs and cost/month 50,000BDT, the estimate the time and cost of the project. 4

Information Domain Value	Count	Weighting factor
External Inputs (EIs)	50	3
External Outputs (EOs)	20	2
External Inquiries (EQs)	30	3
Internal Logical Files (ILFs)	35	7
External Interface Files (EIFs)	10	5

   c) List the components of test case. Calculate the test case point for the following data: 4

Type of Test cases	No. of test cases	Test case Point	Total Factor
Simple	16	6	0.25
Average	10	8	
Complex	8	12	

4. a) What is software standard? Identify the following types of standard:
   i. Design review form
   ii. Submission of new code for system building
   iii. Version release process
   iv. Project plan format

   b) Mention the process of ISO 9001. Identify the following types of errors: 4
   i. Have all constants been named?
   ii. Is each loop certain to terminate?
   iii. Are all input variables used?
   iv. If a linked structure is modified, have all links been correctly reassigned? 4

   c) How agile makes inspection and review easier? 4

5. a) How correctness and efficiency can be obtained for software product. 4
   b) Explain the relation between customer problem and customer satisfaction? 4
   c) Mention the software fitness for purposes. Mention the quality assurance components. 4

6. a) Draw the risk management process. Identify the following types of risk:
   i. Reusable software components contain defects that mean they cannot be reused as planned.
   ii. Key staff are ill and unavailable at critical times.
   iii. The code generated by software code generation tools is inefficient.
   iv. The time required to develop the software is underestimated. 4

   b) Identify the probability and effects of the following risk:
   i. It is impossible to recruit staff with the skills required for the project
   ii. Changes to requirements that require major design rework are proposed
   iii. The organization is restructured so that different management are responsible for the project
   iv. The database used in the system cannot process as many transactions per second as expected
   v. The time required to develop the software is underestimated
   vi. Customers fail to understand the impact of requirements changes
   vii. The rate of defect repair is underestimated
   viii. Organizational financial problems force reductions in the project budget

   c) Draw the change management process. Write the factors of change analysis. 4

7. a) Write some test cases for the following use case.

Use Case Name	Order goods
Goal:	To order goods from the system.
Actor(s):	Customer Operator
Preconditions:	1. The customer is registered to order goods. 2. The customer has entered registration details e.g. user name (i.e. is logged on to the ordering section).
Main flow of events:	1. The customer enters Order Goods section. 2. The system displays the customer's account detail. 3. For each desired product, the customer enters its identity. 4. The customer provides delivery details. 5. The system calculates and displays the price of the goods ordered. 6. The customer submits payment details. 7. The system confirms the result of transaction. 8. The operator collects the detail of the order. 9. The operator processes the order.
Post conditions:	Order details are entered on the system and the order processed.

Suppose you have to create a password with minimum 6 characters and maximum 10 characters. Any invalid password can produce error message. Use Equivalence Partitioning and boundary value analysis to test the situation. 4

c) Consider following block of code and find different coverages for different test cases. 4

```
#include <stdio.h>
int main()
{
int number1, number2;
printf("Enter two integers: ");
scanf("%d %d", &number1, &number2);
//checks if two integers are equal.
if(number1 == number2)
{
printf("Result: %d = %d",number1,number2);
}
//checks if number1 is greater than number2.
else if (number1 > number2)
{
printf("Result: %d > %d", number1, number2);
}
// if both test expression is false
else
{
printf("Result: %d < %d",number1, number2);
}
return 0;
}
```