Institute of Information Technology

Jahangirnagar University

Professional Masters in IT

1st Trimester Final Examination, Fall 2019 [Intake: Fall 2019 & Summer 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) Explain how test driven development works. 4
   b) Show the sprint based life cycle of Agile. What are the limitations of sprint? 5
   c) Why extreme programming is called extreme? 3

2. a) A web application has several functional components. To test the functionalities which tests are conducted from developers' and users' end? 4
   b) Suppose you are building an application for your client. After few iterations you have faced a problem in a program code. But you can't find the source of it. What should you do to identify the error? 4
   c) What are the stages of Testing? Identify the following types of testing: 4
      i. Testing the limits of system e.g. maximum number of users, peak demands, extended operation.
      ii. Test the various software and hardware configurations
      iii. Exercise all input and output parameters of each component, all components and all calls (each component is called at least once and every component is called by all possible callers.)
      iv. Conducted at sponsor's site (developer is not present) and software gets a realistic workout in target environment.

3. a) Which testing strategy will be appropriate for a four layer call hierarchy of any system? Explain with example. 4
   b) Mention the types of interface and interface errors. 4
   c) How many types of requirements can be identify for any developing system? Suppose your developing a result processing system for PMIT. Give example of different types of requirements. 4

4. a) Write a program code consisting at least 10 statements including loop or control statements. For any three test cases calculate different types of coverages. 4
   b) Draw a state transition table for a scenario where a user tries to log in to another session while being logged into another session already. 3
   c) When we use equivalence partitioning?. 2
   d) Draw a decision table for user login, where user can login if they provide correct username and password. 3

5. a) Identify the priority and severity of the following error: 4
      i. The system crashes after you made the payment or when you are not able to add the items to the Cart,
      ii. The logo of the company in the front-page is wrong.
      iii. A new feature published in Facebook but it is not working properly or not very much liked by the users.
      iv. In the email service provider like Yahoo or Gmail, after typing the correct Username and the password, instead of logging in, the system crashes or throws the error message.
      v. In the email service provider like Yahoo or Gmail, when you are not allowed to add more than one recipient in the CC section.
      vi. In web form you have three options like: "BACK", "NEXT" & "CANCEL". Among them when you press "BACK", you go back to previous page but your information are not found.
      vii. Your product name and description have several spelling mistakes.
      viii. For each online transaction 1% of payment amount is not added to the payment gateway vendor's account.

b) Identify the terms or states of defects: 4

i. A potential defect that has been identified but not validated.
ii. Assigned to development team but not solved yet.
iii. If the defect is repeated twice or the defect corresponds to the same concept of the bug
iv. if the bug persists even after the developer has fixed the bug
ix. The defect is assigned to development team and further investigation is going on.
x. The tester re-tests the bug after it got fixed by the developer.
xi. If the developer feels the defect is not a genuine defect.
xii. If the present bug is not of a prime priority and if it is expected to get fixed in the next release.

c) 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

6. a) Draw the risk management process. How risk planning works? 4

b) Identify the types of risk, probability and effect of the risks: 3

i. Organizational financial problems force reductions in the project budget.
ii. Key staff are ill at critical times in the project.
iii. Changes to requirements that require major design rework are proposed.
iv. The time required to develop the software is underestimated.
v. The code generated by software code generation tools is inefficient.

c) Show the quality review process. 2

d) Identify the types of faults: 3

i. Are all program variables initialized before their values are used?
ii. For each conditional statement, is the condition correct?
iii. Are compound statements correctly bracketed?
iv. Are all output variables assigned a value before they are output?
v. Do formal and actual parameter types match?
vi. Is space explicitly deallocated after it is no longer required?

7. a) Suppose you are developing a module which can find you the best deal for properties like plots, apartments etc. for buying and selling. Write a test scenario for this module. 4

b) Draw the McCall's quality triangle. 3

c) Write the expressions for the following terms: 5

i. Defect removal effectiveness
ii. Availability
iii. Problems per User-Month
iv. Percent delinquent fixes
v. Defect Density