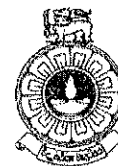


THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF ENGINEERING TECHNOLOGY
BACHELOR OF TECHNOLOGY HONOURS IN ENGINEERING
LEVEL 5
FINAL EXAMINATION – ACADEMIC YEAR 2016/2017
ECX5267 – SOFTWARE TESTING AND QUALITY ASSURANCE



Date : November 14, 2017

Time: 0930 - 1230 hrs

MULTIPLE CHOICE QUESTIONS ANSWER SHEET

ADMISSION NUMBER:

01	A	B	C	D
02	A	B	C	D
03	A	B	C	D
04	A	B	C	D
05	A	B	C	D
06	A	B	C	D
07	A	B	C	D
08	A	B	C	D
09	A	B	C	D
10	A	B	C	D
11	A	B	C	D
12	A	B	C	D
13	A	B	C	D
14	A	B	C	D
15	A	B	C	D
16	A	B	C	D
17	A	B	C	D
18	A	B	C	D
19	A	B	C	D
20	A	B	C	D
21	A	B	C	D
22	A	B	C	D
23	A	B	C	D
24	A	B	C	D
25	A	B	C	D

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Important:

1. This examination paper has 2 Sections.
2. Section 1 has **mandatory** questions (25 MCQs & 2 short answer questions) and Section 2 has optional questions (4 Essay Question).
3. Answer both **Q1** and **Q2** in **Section 1**. Answer **2** questions out of 4 in **Section 2**

SECTION 1 [Answer All Questions]

SECTION 1-A and SECTION 1-B are mandatory. Answer all questions. This section will provide you 50 marks in total. The marks belonging to each part is displayed separately.

SECTION 1-A

(25 Marks)

01: What is the MAIN benefit of designing tests early in the life cycle?

- A. Tests designed early are more effective than tests designed later.
- B. It helps prevent defects from being introduced into the code.
- C. It is economical than designing tests during test phases.
- D. It saves time during the testing phases when testers are busy.

02: Which is not the testing objective?

- A. Finding defects
- B. Gaining confidence about the level of quality and providing information
- C. Preventing defects
- D. Debugging defects

03: Which activities form part of test planning?

- i) Developing test cases.
 - ii) Defining the overall approach to testing.
 - iii) Assigning resources.
 - iv) Building the test environment
 - v) Writing test conditions.
- A. i, ii & iv are true, iii & v are false.
 - B. ii & iii are true, i, iv & v are false.
 - C. iv & v are true, i, ii & iii are false.
 - D. i, ii & iii are true iv & v are false.

04: Which of the following is a MAJOR task of test planning?

- A. Scheduling test analysis and design tasks
- B. Initiating corrective actions
- C. Initiating monitoring progress and test coverage
- D. Measuring and analyzing results

05: Which of the following BEST describes the difference between an inspection and a walkthrough?

- A. Both inspections and walkthroughs are led by the author.
- B. An inspection is led by a moderator and a walkthrough is led by the author.
- C. Both inspections and walkthroughs are led by a trained moderator.
- D. A walkthrough is led by the author. The author is not present during inspections.

06: Some tools are geared for development use. For the five tools listed, which category of tools are BEST for developers:

- i) Performance testing tools
- ii) Coverage measurement tools
- iii) Test comparators
- iv) Dynamic analysis tools
- v) Incident management tools

- A. i, iii. and iv.
- B. ii, iii. and iv.
- C. ii. and iv.
- D. None of the above tools is useful for developers.

07: Find the correct flow of the phases of a formal review

- A. Planning, Review meeting, Rework, Kick off
- B. Planning, Individual preparation, Kick off, Rework
- C. Planning, Review meeting, Rework, Follow up
- D. Planning, Individual preparation, Follow up, Kick off

08: Where does functional testing performed?

- A. Only at system and acceptance testing levels
- B. At all levels above integration testing
- C. Only at the acceptance testing level
- D. At all test levels

09: What is the MAIN objective when reviewing a software deliverable?

- A. To identify potential application failures by use of a test specification.
- B. To identify defects in any software work product.
- C. To identify spelling mistakes in a requirements specification.
- D. To identify standards inconsistencies in the code.

10: Which is NOT a project risks?

- A. Supplier issues
- B. Organization factors
- C. Technical issues
- D. Error-prone software delivered

11: Which of the following are characteristic of regression testing?

- i) Regression testing is run ONLY once
- ii) Regression testing is used after fixes have been made
- iii) Regression testing is often automated
- iv) Regression tests need not be maintained

Options:

- A. ii, iv.
- B. ii, iii.
- C. iii.
- D. i, iii, iv.

12: A thermometer measures temperature in whole degrees only. If the temperature falls below 18 °C, the heating is switched off, and switched on when the temperature reaches 21 °C. What are the best values in degrees to cover all equivalence partitions?

- A. 15, 19 and 25
- B. 16, 26 and 32
- C. 17, 18 and 19
- D. 18, 20 and 22

13: Given the following fragment of code, how many tests are required for 100% decision coverage?

```
if( num > 90 )
{ System.out.println( "You earned an A" ); }
else if( num > 80 )
{   System.out.println( "You earned a B" ); }
else if( num > 70 )
{   System.out.println( "You earned a C" ); }
```

- A. 5
- B. 3
- C. 1
- D. none of the above

14: Which of the following would you NOT usually find on a software defect report?

- A. The name and/or organizational position of the person raising the problem.
- B. Suggestions as to how to fix the problem.
- C. Version of the Software Under Test.
- D. Actual and expected results.

15: Who would USUALLY perform debugging activities?

- A. System Analyst
- B. Test Analysts
- C. Software Testers
- D. Software Programmers

16: A wholesaler sells transistors. The minimum order quantity is 5. There is a 20% discount for orders of 1000 or more transistors. You have been asked to prepare test cases using various values for the number of transistors ordered.

Which of the following groups contain three test inputs that would be generated using Boundary Value Analysis?

- A. 1, 10, 900
- B. 1, 100, 1000
- C. 4, 5, 999
- D. 4, 6, 900

17: Which of the following activities should be performed during the selection and implementation of a testing tool?

- i) Investigate the organization's test process.
- ii) Conduct a proof of concept.
- iii) Implement the selected tool on a project behind schedule to save time.
- iv) Identify coaching and mentoring requirements for the use of the selected tool.

Options:

- A. i, ii, iii.
- B. ii, iii, iv.
- C. i, iii, iv.
- D. i, ii, iv.

18: Which of the following benefits are MOST likely to be achieved by using test tools?

- i) Easy to access information about tests and testing.
- ii) Reduced maintenance of testware.
- iii) Easy and cheap to implement.
- iv) Greater consistency of tests.

Options:

- A. i and iv
- B. i and iii
- C. ii and iv
- D. ii and iii

19: What is the purpose of exit criteria?

- A. To determine when a test has completed
- B. To define when a test level is completed
- C. To determine whether a test has failed
- D. To determine whether a test has passed

20: What determines the level of risk?

- A. The probability that an adverse event will occur
- B. The cost of dealing with an adverse event if it occurs
- C. The amount of testing planned before release of a system
- D. The likelihood of an adverse event and the impact of the event

21: Which type of test design techniques does the following statement best describe a procedure to derive test cases based on the specification of a component?

- A. Black Box Techniques
- B. White Box Techniques
- C. Glass Box Techniques
- D. Experience Based Techniques

22: Which of the following is MOST important in the selection of a test approach?

- A. Availability of tools to support the proposed techniques.
- B. The budget allowed for training in proposed techniques.
- C. Available skills and experience in the proposed techniques.
- D. The test team's willingness to learn new techniques.

23: Which of the following is a benefit of test independence?

- A. It does not require familiarity with the code.
- B. It is cheaper than using developers to test their own code.
- C. It avoids author bias in defining effective tests.
- D. Testers are better at finding defects than developers.

24: System testing should investigate

- A. Not the functional requirements but only the non-functional requirements
- B. Functional requirements only but not non-functional requirements
- C. Either non-functional requirements or functional requirements
- D. Both non-functional requirements and functional requirements

25: Maintenance releases and technical assistance centres are examples of which of the following costs of quality?

- A. External failure
- B. Internal failure
- C. Appraisal
- D. Prevention

SECTION 1-B

Q1) Write the correct answers (*i.e. Answers should be one line answers*) for the following questions:

- a) What is the type of testing that conducted not based on any knowledge of internal design or code where the tests are based on requirements and functionality?
(2 Marks)
- b) What is the type of testing where the testers do continuous testing of an application as new functionality is added; requires that various aspects of an application's functionality be independent enough to work separately?
(2 Marks)
- c) What is the test type where we provide evidence that provides a high degree of assurance that a product, service, or system accomplishes its intended requirements?
(2 Marks)
- d) What is the test type which is used to ensure that the system meets the needs of the organization and user or customer?
(2 Marks)
- e) What is the technique for documenting the potential requirements of a new system or software change?
(2 Marks)

Q2) *"Mitigating risk is meant to lessen any negative consequence or impact of specific, known risks."*

- a) What is the Risk? Define. (5 Marks)
- b) Describe four risks associate with software testing and mentioned a possible cause for each. (5 Marks)
- c) What is contingency planning? Define. (5 Marks)

-----SECTION 1 ENDS-----

SECTION 2 : Answer 2 questions out of 4.

Q3)

Berjaya Hotels and Resorts is a hotel chain inclusive of 20 hotels (Only 9 hotels featured on Berjahotel.com) located across Malaysia, Philippines, Vietnam, Japan, Sri Lanka, Seychelles and UK. With the increasing Mobile visitor trend, the website was not able to assist these visitors due to lack of mobile friendliness.

As the digital agency for Berjaya Hotels & Resorts, eMarketingEye worked together with Berjaya to develop a responsive website along with an experiential & conversion driven design for users to interact and convert on the website. (source: eMarketingEye)

Following are the major functionalities of the system.

- Home page should consist of user login and user registration. Employees in the hotel can use their own user name and password given by the admin. Users outside the hotel have to register with the site using their personal email ID. Once registered, they have to confirm the registration and when confirmed they can login with the system.
- Since the site is designed to be used by a large customer base (both internal and external users), the site has to maintain different authorization levels. This has to be done by validating the user name used to login.
- The site has separate pages to display the varieties of available facilities. The images have to be displayed very clearly with accurate colours. The designs drawn in rooms should be very clear in the image when it is displayed in the site.
- Online payments will happen using a credit card payment gateway site, which has been developed in house. The application has to direct the user automatically to this web site when the customer is going to make the payment. Once the payment is successful, it should redirect the user to the hotel web site.

Based on the above scenario answer the below question.

- i) As the test lead of the team, what are the test types you recommend for this application based on the available information? Select the best 4 test types from the below list. (2 Marks)
- ii) Briefly explain three test types from the four you have selected above. (3 Marks)
- iii) Explain why you have selected those test types for this particular scenario and justify them using the information provided. (8 Marks)
- iv) Justify why you have not selected each of the other listed test types for this particular scenario and give examples when/where these test types are mostly suited. (12 Marks)

Q4)

i) Compare and contrast objectives of verification against objectives of validation. (5 Marks)

ii) Why is it necessary to develop test cases for both valid and invalid input condition? (5 Marks)

iii) Write down following test scenarios to validate the login form in Figure-1: you may make assumptions for the inputs in the form,

a) Five positive test scenarios (10 Marks)

b) Four negative test scenario (4 Marks)

c) One extreme test scenario (1 Mark)

LOGIN

Login **Register**

Username

Password [Forgot your password?](#)

☒ Remember Me.

Continue

Figure-1: Login form

Q5) "Industry IT Solutions" is a service providing company. Recently they noted that the number of customer reported defects are getting high and the severity of those is high too. Due to these defects, the customer satisfaction was being reduced and complains made against the systems delivered were in a critical situation. Hence, the management decided to conduct a root cause analysis to find the reasons behind this. During the root-cause analysis, they found the following reasons for having a high number of customer reported defects.

- Competency on testing was lacking
- Test Tools were not provided on time
- Business clarifications were not addressed on time
- Schedule or Budget for Testing was not enough

- i) How a risk differs from an issue? *(3 Marks)*
- ii) Identify and list three risks and three issues encountered in this project? *(3 Marks)*
- iii) State 3 common ways to identify risks in testing and describe them. *(3 Marks)*
- iv) State the four aspects of risk management and explain them in detail with regard to the above scenario. *(10 Marks)*
- v) What is the V model? Explain using a diagram. *(6 Marks)*

Q6)

"Quality IT" is a company that is very interested in maintaining the quality of their deliverables and they are looking for a way to ensure that they are on track. They have hired you for this company as a process consultant and who is primarily responsible in advising them on what to focus on. You explained to them that the company has to improve the process handling in order to maintain the quality of their deliverables. As a result, you have to help them in selecting the best process improvement model/tool.

- (a) Explain the meaning of "Quality Management" with regard to ISO 9000 family *(3 Marks)*
- (b) Introduce them, what is ISO and CMMi by explaining them in detail. Your explanation should contain the following.
 - What are ISO and CMMi ? *(6 Marks)*
 - What are the differences of these two models? *(12 Marks)*
 - Name other two model other than CMM and ISO. *(4 Marks)*