Part (1): ISTQB Foundation Level Material:

Please antwer the following questions in the bubble sheet and Mark your exam modet in the buttle sheet

1. **What is the difference between a defect and a failure?**
   a. **A defect is a flaw in the software that causes it to behave incorrectly or unexpectedly.**
      A failure is an event where the software does not meet the expectations or requirements of the user or stakeholder.
   b. A defect is an event where the software does not meet the expectations or requirements of the user or stakeholder.
      A failure is a flaw in the software that causes it to behave incorrectly or unexpectedly.
   c. A defect is a flaw in the software that causes it to fail.
      A failure is an event where the software fails to perform its required function.
   d. A defect is an event where the software fails to perform its required function.
      A failure is a flaw in the software that causes it to fail.

2. **Which of the following statements represent some examples of test levels?**
   a. **Unit testing, integration testing, system testing, acceptance testing**
   b. Functional testing, non-functional testing, structural testing, change-related testing
   c. Alpha testing, beta testing, gamma testing, delta testing
   d. All the above

3. **Which of these statements is true about sequential models?**
   a. They are more flexible and adaptable than iterative-incremental models
   b. They require less documentation and communication than iterative-incremental models
   c. They produce work-products that are verified before moving to the next phase
   d. **They deliver value to the customer only at the end of the project**

4. **What of the following statements precisely describe some common test objectives?**
   a. Finding defects, preventing defects, improving quality, providing information.
   b. Finding defects, fixing defects, improving quality, providing information.
   c. **Finding defects, preventing defects, improving quality, reducing costs.**
   d. Finding defects, fixing defects, improving quality, reducing costs.

5. **Which of the following is an element of a test plan**
   a. Test scope
   b. Test schedule
   c. Exit criteria
   d. **All the above**

6. **Which of the following is a typical activity of test monitoring?**
   a. Measuring the test coverage
   b. Complaining the actual vs planned progress
   c. Taking corrective actions
   d. **A & B**

7. **Which of the following is a type of tools that can support test implementation and execution?**
   a. Test design tool
   b. Test data preparation tool
   c. **Performance testing tool**
   d. Test reporting Tool

8. **What is the difference between verification and validation?**
   a. **Verification is checking that the software meets the specific requirements**
      Validation is checking that the software meets the user's needs.
   b. Verification is checking that the software meets the users need
      Validation is checking that the software meets the specific requirements.
   c. Verification is checking that the software built correctly
      Validation is checking the that the software is built for the correct purpose .
   d. Verification is checking the that the software is built for the correct purpose
      Validation is checking that the software built correctly.

9. **What are the main disadvantages of informal reviews over formal reviews?**
   a. They are less structured and documented.
   b. They are less thorough and consistent.
   c. They are less measurable and traceable.
   d. All the above

10. **What are the main different between static testing and dynamic testing?**
    a. Static testing does not require test data, dynamic testing does
    b. Static testing does not involve executing the software, dynamic testing does
    c. Static testing is done before coding, dynamic testing is done after coding
    d. Static testing is done by developers, dynamic testing is done by tester

11. **What are the roles involved in a review process?**
    a. Author, Reviewer, moderator, and scribe
    b. Author, reviewer, leader, and recorder
    c. Author, reviewer, manager, and secretary
    d. Author, reviewer, facilitator, and note-taker.

12. **Which of the following is a white-box test technique that measures the percentage of executable statements that have been exercised by a test suite?**
    a. Statement testing and coverage
    b. Decision testing and coverage
    c. Condition testing and coverage
    d. None of the above

13. **Which of the following is not a typical activity of test planning?**
    a. Defining the test objectives
    b. Identifying the test conditions
    c. Estimating the test effort
    d. Identifying the test risks

14. **Which of these is a psychological factor that affects testing?**
    a. Curiosity
    b. Bias
    c. Communication
    d. All the above

15. **What are the benefits of static testing?**
    a. it can find defects that are difficult to detect by dynamic testing
    b. It can improve the quality of the artifacts and prevent defect propagation.
    c. It can reduce the cost and time of testing and development.
    d. All the above,

16. Which of the following statements is true about static test design techniques?

a. They require executing the software under test or a model of it.
b. They are based on analyzing the test basis without executing the software under test
c. They are only applicable for non-functional testing
d. They are less effective than dynamic testing and development.

17. Which of these is an activity in the fundamental test process?

a. Test analysis and design
b. Test debugging and fixing
c. Test maintenance and support
d. None of the above

18. Which of the following is a black box test technique that uses a table to show combinations of inputs and expected outputs?

a. Equivalence Partitioning
b. boundary value analysis
c. Decision table testing
d. State transition testing

19. What is the main challenge of integration testing?

a. To identify and isolate defects in individual units or components
b. To simulate missing or incomplete components using stubs and drivers
c. To ensure compatibility and interoperability between different units or components
d. To evaluate non-functional aspects such as performance, usability, security, etc.

20. Which of the following factors influence the degree of independence in testing?

a. The size and complexity of the software
b. The availability and skills of testers
c. The budget and schedule constraints
d. All the above

21. Which of these is a general testing principle?

a. Testing proves absence of defects
b. Early testing wastes time and money
c. Defect clustering increase the number of test cases
d. Testing is context dependent

22. Which of the following is an example of an experience-based technique?

a. Boundary value analysis
b. State transition testing
c. Checklist-based testing
d. Decision table testing

23. Which of the following metrics can be used to measure test progress?

a. Number of test cases executed per day
b. Percentage of test coverage achieved
c. Number of defects found per test level
d. All the above

24. What are some common psychological factors that influence testing?

a. Blindness to one's own errors, confirmation bias, overconfidence

b. Blindness to one's own errors, confirmation bias, curiosity

c. Blindness to one's own errors, creativity, overconfidence

d. Blindness to one's own errors, creativity, curiosity

25. Which of the following is a typical task of a test manager?

a. Writing or reviewing test cases

b. Setting up the test environment

c. Reporting test results to stakeholders

d. Executing test cases

26. What is exhaustive testing?

a. Testing that covers all specified requirements and objectives.

b. Testing that covers all possible combination of inputs, outputs, states, paths, etc.

c. Testing that covers all relevant aspects of quality and usability

d. Testing that covers all potential risks and impacts.

27. What is test oracle?

a. A mechanism to determine the expected outcome of a test case

b. A tool to automate the execution of test cases

c. A person who has expert knowledge of the software under test

d. A document that describes the scope and objectives of testing.

28. What is main purpose of a walkthrough?

a. To verify the correctness and completeness of the software artifact.

b. To validate the suitability and usability of the software artifact.

c. To educate and inform the participants about the software artifact.

d. To evaluate and improve the quality of the software artifacts.

29. Which of these statements is <u>TRUE</u> about sequential model?

a. They are more flexible and adaptable than iterative-incremental models

b. They require less documentation and communication than iterative-incremental models

c. They produce work-products that are verified before moving to the next phase

d. They deliver value to the customer only at the end of the project.

30. Which of the following is <u>NOT</u> a typical factor for estimation the test effort?

a. The number of defects found

b. The complexity of the system

c. The availability of test tools

d. The skill level of the test team

31. Which of the following is <u>TRUE</u> about system testing

a. It's performed to verify that the system as a whole meets the specified requirements & quality attributes.
b. It can use black-box techniques and tools such as performance testing tools & usability testing tools
c. It can include functional testing and non-functional testing depending on the system characteristics.
d. All the above

32. Which of the following is a typical task of a tester?

a. Analyzing user requirements for testability
b. Estimating testing effort and resources
c. Defining test objectives and scope
d. Identifying and managing risks

33. Which of the following is a benefit of using tools for testing?

a. Tools can reduce the need for human testers
b. Tools can improve the communication and collaboration among testers
c. Tools can automate all the testing activities and techniques
d. Tools can increase the reliability and consistency of testing

34. Which of the following is an example of an expert-based estimation technique?

a. Delphi method
b. Function point analysis
c. COCOMO model
d. Test point analysis

35. Which of the following is an experience-based test technique that involves designing and executing tests based on the tester's intuition and exploration of the system or component under test?

a. Error guessing
b. Exploratory testing
c. Checklist-based testing
d. Use case testing

Please use the following case to answer the next 5 questions.

You are a tester working for a company that develops a web application for online shopping. The web application allows customers to browse, search and buy products from various categories , such as book, electronics, clothing, etc. The web application also allows customers to create and manage their accounts, view their order history, track their shipments, and provide feedback and rating for the products they purchased.

The Web Application is developed using HTML, CSS, JavaScript, PHP, and MySQL. The web application follows the MVC (Model-View-Controller) design pattern, where the model represents data and business logic of the application, the view represents the user interface of the application, and the controller handles the requests and responses between the model and the view.

The web application is tested at different levels, such as unit testing, integration testing, system testing and acceptance testing. The testing team uses various test techniques to design and execute test case for each level of testing. The test techniques are chosen based on the objective, scope, risks and resources of each testing level

36. Which of the following tech technique is most suitable for unit testing the model component of the web application?

a. Equivalence partitioning
c. Statement testing
b. Decision table testing
d. Use case testing

37. Which of the following test techniques a most likely to be used in combination with other test techniques to increase the effectiveness of testing?

a. Error guessing
c. Statement testing
b. Equivalence partitioning
d. Decision table testing

38. Which of the following test techniques is most suitable for system testing the view component of the web application?

a. State transition testing
c. Error guessing
b. Checklist based testing
d. Exploratory testing.

39. Which of the following test techniques is most suitable for integration testing the controller component of the web application?

a. Boundary value analysis
c. Condition testing
b. API testing
d. User story testing

40. Which of the following test techniques is most suitable for acceptance testing the web application as a whole?

a. Decision testing
c. Error guessing
b. Checklist-based testing
d. User story testing

Part (2): RedHat System Administration Material:

Please answer the following questions in this booklet

Question 1: Answer the following questions by completing the missing information or writing the required command.

1. Set an environment variable called "**WelcomeMessage**" to value "**Hello, Welcome Back!**" and it should be persistent across boots.
   a. File Path to be edited: `/etc/profile OR ~/.bashrc`
   b. Line to be added: `export WelcomeMessage="Hello, Welcome Back!"`
2. Redirect **emergency** logging level of facility **local7** to **/var/logs/local7/emerge.txt** then activate the new configuration.
   a. File Path to be edited: `/etc/rsyslog.conf`
   b. Line to be added: `Local7.* /var/logs/local7/emerge.txt`
   c. Command: `systemctl restart rsyslog`
3. Make all logging for **journalctl** persistent across boots, then activate the new configuration
   a. File Path to be edited: `/etc/system/journald.conf`
   b. Line to be added: . `Storage=persistent`
   c. Command: `systemctl restart systemd-journald`

Question 2: Write all the required commands with stating the necessary changes to the configuration files (if any) to achieve the below requirements
(you are logged in as student user in your local machine).

1. Log in to student user on server 'localhost' (password is **rh_2020**).
   ```
   > ssh student@localhost
   > enter password: rh_2020
   ```
2. Generate public and private keys (passphrase: rh2023) in **`~/keys/withPassphrase`** directory
   ```
   > ssh-keygen -f ~/keys/withPassphrase
   > Enter passphrase (empty for no passphrase): rh2023
   ```
3. Share your keys with server
   ```
   > ssh-copy-id -i ~/keys/withPassphrase.pub student@localhost
   > user@remotehost's password: rh_2020
   ```

4. Login to the server using the keys you just shared but make sure that you will write passphrase only once.

```
> ssh -i ~/keys/withPassphrase student@localhost
```

5. Prohibit any user from logging in without keys

```
> vim /etc/ssh/sshd_config
> PasswordAuthentication yes
```

6. Prohibit direct login for the root user and make sure that it is applied right your changes.

```
> vim /etc/ssh/sshd_config
> PermitRootLogin no
```

7. Log out and test your updates are working probably
   (Both cases should fail, and you are new in your local machine)

```
> sudo systemctl restart sshd
> exit
```

8. Provide an overview of the file system mount point and the amount of free space available in S1 and save the result in the **~/mnt/disk/report.txt** file.

```
> df -h /mnt/S1 > ~/mnt/disk/report.txt
```

9. **Display** the usage of disk reports for the **/usr/share** directory.

```
> du -sh /usr/share
```

10. **Mount** the second partition of the virtuo-btk third device to **/mnt/data** directory.

```
> sudo mount /dev/virtuo-btk2 /mnt/data
```

11. Assuming that you are made multiple operation using the device which you mounted in the previous step. **Specify** how you would check the open files and processes which are using that device, then **unmount it**.

```
> sudo lsof /mnt/data
> sudo umount /mnt/data
```

12. Using real-time crawling, **search** for all the files in the root directory containing the keyword **'mail'** case-insensitive and **match** the files for which the user has at least write and execute permission, or the group has at least write permissions, or other have at least write access, **limit** the search to the files that were modified less than 60 minutes ago.

```
> find / -type f -iname "*mail*" -perm /222 -mmin -60
```

Question 3: Write the commands needed to perform the following requests:

Create a new directory called **/home/student/grading/review2** with **student** and **database** as its owning user and group respectively. Configure the permissions on that directory so that any new file in it inherits **database** as its owning group irrespective to the creating user. The permissions on **/home/student/grading/review2** should allow the group member of **database** and the user **student** to access the directory and create contents in it. All other users should have read and execute permissions on the directory. Also, ensure that the users are only allowed to delete the files, they own, from **/home/student/grading/review2** and not other's files.

```
> mkdir -p /home/student/grading/review2

> chown student:database /home/student/grading/review2

> chmod g+s /home/student/grading/review2

> chmod 775 /home/student/grading/review2

> chmod o+t /home/student/grading/review2

> exit
```