

# **ASTQB Certified Tester IoT and Mobile Testing Sample Exam Answers**



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American Software Testing Qualifications Board

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**40 possible points. 27 required to pass (65%). 90 minutes.**

- 1. What types of testing are particularly important for IoT or mobile applications based on the user's expectations?**
- a. Suitability and Accuracy
  - b. Usability and Performance
  - c. Portability and Usability
  - d. Performance and Security

**B is correct. While all of these are important, the user has particularly high expectations for the usability and performance of a mobile application. (LO-1.4.a)**

- 2. If an application resides on the mobile device and was written specifically for that device, what type of application is it?**
- a. Web-based
  - b. Hybrid
  - c. Native
  - d. Device-specific

**C is correct. An application that resides on the mobile device rather than on a web server and is written to work with a specific device is a native application. (LO-1.5.b)**

- 3. You are testing an application for a smart phone. You have determined that you only need to test one device from the target family of devices because the behavior of all devices in that family will be the same for this application. This is an example of what test design technique?**
- a. Boundary value analysis
  - b. Combinatorial
  - c. Decision tables
  - d. Equivalence partitioning

**D is correct. This is an example of EP where all the members of the class are expected to behave in the same manner, therefore only one member of the class needs to be tested. Combinatorial technique is not the correct answer because that would be looking to reduce the set of test devices based on creating combinations to test. (LO-1.7.a)**

- 4. If you are testing a mobile application that is not safety-critical, which lifecycle model is most likely to be used?**
- a. V-model
  - b. Waterfall
  - c. Mobile model
  - d. Iterative

**D is correct. Agile, a form of iterative lifecycle models, is often used for developing mobile applications as are other iterative lifecycles. Waterfall and V-model would be used for safety-critical where more documentation and control is required. The “mobile model” doesn’t yet exist but may in the future! (LO-1.8.a)**

**5. Which of the following requirements documents would be the best source to determine normal usage scenarios?**

- a. Requirements specification
- b. Use cases
- c. User stories
- d. Usability requirements

**B is correct. Use cases should supply the expected usage scenarios. User stories are too brief to give the scenario view. Usability requirements generally focus on the user interface requirements rather than usage scenarios. Requirements specifications are notorious for not having much information regarding actual usage. (LO-2.1.a)**

- 6. In a project that is feature-rich but time-poor, which is the most reasonable approach to risk analysis?**
- a. Conduct a full risk analysis, including weighted likelihood and impact ratings for each item
  - b. Use a lightweight approach and assign relative importance of each identified item
  - c. Skip the risk analysis step and proceed to test execution based on experience
  - d. Concentrate on the functional capabilities and disregard the physical capabilities of the device since those should be tested by the manufacturer

**B is correct since this is a time challenged project. If there were adequate time, A might be the right answer, depending on the criticality of the product. C is never a good idea since even minimal risk analysis is needed to focus the testing. D is risky because the interaction of the application with the physical capabilities of the device still need to be tested. (LO-2.2.a)**

- 7. If you are testing a mobile banking application, is it important to test the interaction between the software and the device?**
- a. No, it is not necessary to extend the functional testing to cover interaction with the device
  - b. Yes, using the physical device is how the user interacts with the application and how the application interacts with the Internet
  - c. No, if the application is developed as a native application, there is no need to test the interaction because the application is portable across many different types of devices
  - d. Yes, each feature of the device should be tested to verify if it interacts with the application

**B is correct. Testing the physical device's interaction with the application is important. A is not correct because B is correct. C is not correct and a native application is developed for a specific device and is generally not portable. D is incorrect because devices have many, many features and testing all the features would be out of scope for the application under test. (LO-2.5.a)**

8. **You are testing a native application for a smart phone. The application allows the user to make grocery lists on the phone and store up to three lists at a time. A list can contain up to 50 items.**

**Which of the following is the minimum set of test conditions to achieve 100% coverage with the boundary value analysis test technique?**

- a. List with 47 items
- b. List with 0 items, List with 1 item, List with 50 items, List with 51 items, 0 lists saved, 1 list saved, 3 lists saved, 4 lists saved
- c. List with 0 items, List with 25 items, List with 51 items, 3 lists saved
- d. List with 0 items, List with 12 items, List with 58 items, 0 lists saved, 3 lists saved, 7 lists saved

**B is correct because it is doing BVA on both the list quantity and the list saving capability. D is incorrect because it has achieved EP coverage, but didn't get the boundaries. A is incorrect because it doesn't consider the list save capabilities and it doesn't test the invalid values for the list. C is incorrect because it does not sufficiently test the save feature. (3.2.a)**

**9. Correctness can be defined as a combination of which two quality characteristics?**

- a. Suitability and accuracy
- b. Usability and performance
- c. Portability and interoperability
- d. Security and usability

**A is correct per the syllabus. The others are quality characteristics, but are not components of correctness. (LO-3.2.b)**

**10. When conducting security testing on an IoT or mobile application, which is the correct set of basic areas to cover?**

- a. Access, data protection, documentation
- b. Code, functionality, documentation, security policy
- c. Data creation, data storage, data transfer
- d. Access, data storage, data transfer, security policy

**D is correct per the syllabus. The others are incorrect. (LO-3.2.c)**

**11. Which of the following types of testing might consider the user's age?**

- a. Scenario-based testing
- b. Use case testing
- c. User story testing
- d. Persona-based testing

**D is correct. An age class user is a realistic persona to use in testing. A is not correct because it is looking at a scenario rather than the user. B is incorrect for the same reason. C is incorrect because a user story is looking at a small bit of functionality and is concentrating on why the functionality is needed rather than the user. (LO-3.2.d)**

**12. If your application can only be used within a specific country, what feature of the device might be used to supply information that the application can use to make this determination?**

- a. Geolocation
- b. Telephony
- c. Magnetometer
- d. Altimeter

**A is correct. Geolocation can pinpoint the location of the device and determine if it is in the correct country for the application to work. Without geolocation, the location might have to be determined by IP address or triangulation on a cellular network. Telephony could be used, but only if the telephone is involved in the application and we don't know that from the question. (LO-3.2.e)**

**13. Your company has created an application for doing crossword puzzles. The target users are in the age class of over 65 years old. There has already been considerable concentration on creating screens that are easy to navigate and intuitive. It is a primary goal that the software be easy to use. Viewability has been implemented with a revolutionary magnification ability based on moving a magnifying glass across the screen. The beta testers have still had problems using the application, particularly when trying to enter the letters into the squares. Given this information, which area should you target for more complete testing?**

- a. Simplicity
- b. Layout
- c. Intuitiveness
- d. Navigation

**B is correct since the users seem to be having problems accessing either the pointer or the keyboard to enter the letters. A and C seem to not be issues at this time since it is not an issue with understanding the application. D may be an issue depending on how the user gets to the various input methods, but that is not indicated in the information here. (LO-3.3.d)**

**14. You are planning to conduct performance testing on a new application. You have been given a set of personas to use during this testing. How should you apply the personas in the performance testing approach?**

- a. Personas should be duplicated by the automated tools to create virtual users who can create a realistic load on the system.
- b. Personas should be reviewed to understand the individual tasks being performed. These tasks can then be scripted and performed in sets.
- c. Personas are used primarily for usability testing and should not be used as guidelines for performance testing.
- d. Personas should be used to derive use cases which can be broken down into user stories and then scripted into performance test scripts.

**A is correct. Personas represent realistic users doing realistic transactions and so are well suited for use in performance testing. B is not correct because transactions are needed for performance testing rather than tasks. C is not correct because while personas are used for usability testing, they are also used for performance testing. D is not correct because user stories cover small bits of functionality, not transactions. (LO-3.3.a)**

**15. If you are testing how much battery is being used by your application, what are you testing?**

- a. Task completion
- b. Delays
- c. User interface delays
- d. Resource usage

**D is correct. The battery life is one of the resources of the device and usage of that resource should be tested to ensure the application is not abusing the resource. (LO-3.3.b)**

**16. You have been doing your mobile application performance testing on a simulator. Why would you need to do some testing on a real device?**

- a. Because a simulator is not an exact replica of the real device and may give different performance results
- b. Because it is not possible to thoroughly test a simulator to ensure it is working correctly
- c. Because simulators cannot be cloned to provide enough devices to generate a realistic load
- d. Because simulators cannot run concurrent applications

**A is correct. A simulator is not a real device and doesn't have the hardware and connectivity characteristics that the real device has. B is not correct because you can thoroughly test a simulator, but that still won't get around the problem in A. C is not correct because this is precisely why simulators are used – they are easily cloned. D is not correct because simulators can certainly run concurrent applications. (LO-3.3.c)**

**17. If a tool is able to simulate the way in which a specific device would respond to an application, it is considered to be what type of simulator?**

- a. A hybrid simulator
- b. A native device simulator
- c. A web-based application simulator
- d. A browser-based application simulator

**B is correct. The other three are referring to application types rather than devices. (LO-4.1.a)**

**18. Which of the following is a generic tool that would be useful for an IoT or mobile application testing project?**

- a. A simulator
- b. An emulator
- c. A defect tracking system
- d. A performance testing tool

**C is correct. This is a generic testing tool that would still be useful in an IoT or mobile application project. A and B are specific tools that would be designed for use for the specific project. D might work but most generic performance testing tools don't work well for IoT or mobile applications because of their inability to work with simulators and provide the variability in network connections. (LO-4.1.b)**

**19. In what way might a mobile device itself supply data to the mobile application?**

- a. By providing location information by using its geolocation capability
- b. By gathering input from the user
- c. By communicating with a backend system
- d. By connecting to another device

**A is correct since this information is coming from the device itself. B, C, and D all get the information from a source other than the device. (LO-4.2.a)**

**20. Which of the following is true about a browser-based application?**

- a. It is designed to exercise capabilities of a particular device
- b. It runs on the device
- c. It is portable to any device that can run the supported browser
- d. It is generally faster than a native application

**C is correct. Since the application is running through the browser, if a device supports that browser it should work on the device. This makes the application very portable. A and B are characteristics of native applications. D is incorrect because native applications are generally faster. (LO-4.3.a)**

**21. Which of the following is a reason to use simulators for testing?**

- a. Simulators give more accurate performance than real devices
- b. Real devices can be difficult and expensive to procure in large quantities
- c. Simulators can interact with users to provide feedback on usability
- d. Real devices can be quickly configured to provide new testing scenarios

**B is correct. A is incorrect because real devices will always be more accurate. C is incorrect because usability requires the look and feel of the real device. D is not true on a large scale and may not even be true on a small scale. A well-designed simulator should be easier to re-configure as needed. (LO-4.4.a)**

- 22. You are responsible for performance testing for a new hybrid mobile application that will run on smartphones. The application will use the phone's GPS capability to determine the altitude of the phone.**

**The altitude information is sent to the application which then contacts a web server to compute the "safe limit" for alcohol consumption. The "safe limit" is displayed for the user. The device has already been tested for high altitude usage, so that is not a concern for this test.**

**You expect your highest usage of the system to be on New Year's Eve when many people are skiing at high altitudes and will need to check their safe limit. For the first year of usage, 5,000 concurrent users are expected to use the application on that one evening.**

**Given this information, what is the best approach to use for conducting the performance test?**

- a. Clone simulators to create 5000 users and conduct the test with those simulators
- b. Clone emulators to create 5000 users and conduct the test using the emulators
- c. Use a mix of simulators and emulators to give the most realistic results
- d. Use crowd-sourcing and real users to get accurate results from real devices

**A is correct. Simulators are the best approach for this testing because a large number are needed to access the web service at the same time. Specific altitude readings can be programmed into the simulator. B is not correct because there is no need to interact with the phone's hardware to do this test and it is stated in the question that the altimeter information has already been tested separately. The altitude information can be programmed into the simulator. C is not correct because that would just complicate the tests and simulators alone will be sufficient. D would be difficult to manage and finding 5,000 high-altitude drinkers on a night other than New Year's Eve may be difficult. (LO-4.4.b)**

**23. Which cloud capability is most beneficial for performance testing?**

- a. Supporting a variety of network types
- b. Supporting a variety of protocols
- c. Supporting a variety of device types
- d. Supporting a variety of device quantities and usages

**D is correct as this is more beneficial for performance testing. Mixing any of the other three will help create a realistic load, but without D the others are not as useful. (LO-4.5.a)**

- 24. You are testing an application that will allow users to scan the barcode from a package mailing label and then receive emails from the package shipper as the package moves through the various stages of its delivery (e.g., pickup, receipt at central processing, routing, delivery). If requested, the user can also receive a picture of the signature of the recipient of the package. This is a web browser-based application. It is expected that this application will have wide usage across a large set of devices and networks with varying speeds and reliability.**

**Your company has several competitors who are working on similar products although your company's product has some new innovations and a very attractive user interface. As a result, once it is released, your company expects to grab that majority market share.**

**Given this information, what would be the best approach for doing your testing to ensure the capabilities of the product are tested as well as the range of environments and networks?**

- a. Use a remote device lab that is provided by a device manufacturer to ensure your application works across the whole family of devices
- b. Use crowd sourcing to get the widest distribution of device locations and types with minimal cost
- c. Use a set of simulators that can simulate the various capabilities of a wide variety of devices
- d. Use a cloud-based virtual test environment to simulate various devices and networks

**D is correct. The cloud solution would be the best for this case as it would allow many different devices to be simulated across a number of different types of networks with varying speeds. A is not correct because this is a browser-based application so testing across an entire device family is not warranted. B is not correct because this is a product with competitors and the innovative technology should not be known in the market before the product is released. C is not correct because simulators will not give the network type and speed variance needed. (LO-4.x.a)**

**25. In what way can a refrigerator become part of the IoT?**

- a. By allowing manual temperature setting
- b. By providing an on and off function which is controlled by a physical switch
- c. By uploading and downloading information to and from the Internet
- d. By providing a required function for humans

**C is correct. The interaction with the Internet is what allows a refrigerator to be a part of the IoT. A, B and D are not factors in being part of the IoT. (CD-5.2.a)**

**26. Which of the following is most likely to have a security risk?**

- a. A refrigerator that relies on WiFi within the home
- b. A smartphone application that is used in a business office
- c. A tablet application that is used to download and upload patient information (including diagnostic images) as mobile nurses travel to and from patient's homes
- d. A tablet application that is used to download and upload patient information (including diagnostic images) by nurses in a hospital

**C is correct. This is the most likely application to have a security risk because it is using public cellular connections for long periods. A, B and D are not as risky because they will be using home, office or hospital WiFi which "should" be more secure. (CD 5.3.a)**

**27. You receive a message on your phone from an application that receives sensor information from your refrigerator. This message says the temperature is running high and indicates there may have been a coolant failure. What is this an example of?**

- a. It's an example of a benefit of the IoT
- b. It's an example of a risk of the IoT
- c. It's an example of a security risk in the application
- d. It's an example of a reliability risk in the application

**A is correct. This is an example of a benefit of the IoT. (CD-5.3.b)**

**28. Which of the following is an example of a smart appliance?**

- a. A refrigerator that detects the milk supply is low and displays a message on the front panel of the door
- b. A car that flashes an indicator when the temperature is too high
- c. A home security system that sounds an alarm when an intrusion is detected
- d. A sensor on a dog collar that can detect and report to a smart phone application when a dog has crossed over an invisible fenceline

**D is correct. This is an example of a smart appliance. A smart appliance is able to communicate over the Internet and provide information that can be received by an application such as one running on a smart phone. A, B and C are not correct because they are not communicating via the Internet to an application that could be running on a smart phone, tablet, desktop or some other device capable of Internet communication. (CD-5.4.a)**

**29. Which of the following is an example of a “wearable”?**

- a. A ring that records when a cigarette is lit, based on a smoke filter, and reports this to an online application
- b. A pair of glasses that automatically changes tint based on the light
- c. A prosthetic knee
- d. A pair of gloves that is both waterproof and insulated

**A is correct. This is a connected wearable device that communicates to the Internet to pass information to an application that can then present that information to another consumer, which could be another application or a human user. B, C and D are all worn by a user, but they do not communicate to the Internet to provide or gather information. (CD 5.4.b)**

**30. Which of the following is an example of a connected system?**

- a. A system that includes sensors to detect impact and the ability to contact emergency authorities if an accident has occurred
- b. The anti-lock braking system that detects skidding and adjusts the braking
- c. A parallel parking system that can control the car to complete the parallel parking activity without manual intervention
- d. A system of sensors that can determine if a car is following too closely and slow it to maintain a safe distance

**A is correct. This is an example of a connected system because it must connect to either the car’s WiFi or the cellular network to contact the emergency authorities. B, C and D are all examples of autonomous systems which work without interaction with the Internet. (CD-5.4.c)**

**31. Which of the following should be considered to be part of the IIoT?**

- a. A smart metering application for an energy company
- b. A self-driving car
- c. A home security system
- d. A smart phone

**A is correct. This is the type of application that is part of the Industrial Internet of Things. B is actually an autonomous application, not a connected one. C and D are part of the IoT but not necessarily part of the IIoT. (CD-5.4.d)**

**32. What is driving the tendency to keep data on local devices or on a local network?**

- a. The data is becoming too large to transmit efficiently
- b. The data stream is too fast for most networks to handle
- c. The response time requirements are getting more and more difficult to fulfill on public networks
- d. The data itself has a higher need for security, such as a retina image used to access a secure site

**D is correct. The key driver is the need for higher security which is difficult to guarantee when information is passed over the Internet. A, B and C are all possible reasons as well, but these are not the key drivers. (CD-5.4.e)**

**33. For an IoT protocol such as MQTT, what is the expectation for the supported network type?**

- a. Wi-Fi only
- b. Cellular only
- c. 4G or 5G only
- d. Any network type

**D is correct. Any network type should be supported by a protocol such as MQTT. This widens the potential application and location of the IoT device that uses the protocol. (CD-5.5.a)**

**34. For IoT devices, which of the following helps to alleviate the need for large amounts of data to be transmitted to the cloud before processing?**

- a. Positive processing
- b. Edge computing
- c. Frog hopping
- d. Cloud servicing

**B is correct. Edge computing will provide a way for the data to be processed locally to help reduce the need to transmit the raw data for processing. (CD-5.5.c)**

**35. You are working with a company that is developing a wearable heart rate monitor. This monitor will be used to track the heart rates of Olympic runners throughout the day, including during their workout sessions. The information gathered from the monitors will be uploaded to a web service that will then process the data and produce reports. The upload will occur at night over the cellular network while the runner is sleeping.**

**You are responsible for testing the heart rate monitor and its ability to upload the data to the web service. Should headless testing be used for this monitor?**

- a. Yes, headless testing should be paired with usability testing to get the best coverage of the interface
- b. Yes, headless testing should be used to drive the testing since there is no UI to access for the testing
- c. No, headless testing is not needed because testing can be performed through the application that receives the data to verify if it is accurate
- d. No, headless testing will not allow any performance measurements and those will be critical for this device

**B is correct. Headless testing makes sense because there is no UI to the device itself. The only UI is on the reporting end, but that is stated as out of scope for the testing. A is not correct because usability testing would only be applicable to the out of scope reporting. C and D are not correct because headless testing is needed. (CD-5.6.a)**

**36. You are testing an IoT device that communicates via APIs to a web service over the Internet. You are concerned about testing the error recovery capability of the APIs, particularly when connections are dropped. Which of the following is the best tool for this testing?**

- a. Wireshark
- b. Grasshopper
- c. Locust
- d. SoapUI

**D is correct. (CD-5.7.a)**

**37. In the future, what is the expectation for device capabilities?**

- a. They will decrease as devices get smaller
- b. They will increase as demand increases
- c. They will stay the same
- d. They will stay about the same but expand across a greater range of devices

**B is correct. Capabilities are expected to grow and will also expand across more devices and new devices. (LO-6.1.a)**

**38. When building a flexible testing framework, how does the short product lifecycle affect the test approach and tool decisions?**

- a. The framework must support long-term maintainability
- b. The framework should utilize stable and reliable tools from known vendors
- c. The framework must provide a good ROI
- d. The framework should leverage a formal risk analysis

**C is correct per the syllabus. A is probably not a goal since products come and go and longterm maintainability of the test framework may be a poor investment. B is not correct because known vendors may not produce tools that support the latest technologies. D is not correct because a lightweight risk analysis is more likely used than a formal risk analysis process. (LO-6.2.a)**

- 39. Your organization has just hired a test automation architect who has previously worked on medical software with strict regulatory requirements. His test automation framework is very solid and will allow the staff to build maintainable data-driven test cases. His tool choice is the top of the line tool that has been used for many years for traditional test automation. You are concerned that this is a very expensive tool and may not have the flexibility needed in your environment, particularly since the IoT or mobile applications your company develops are intended to exist in the market for only six months before being re-worked to add new features and change the user interface. The software development lifecycle is iterative and the team uses continuous integration to provide testable software faster.**

**Given this information, what should you recommended for the test approach?**

- a. Search for other tools that are more suited for the IoT or mobile environment and consider creating test automation with keyword-driven tests rather than data-driven.
- b. Go with the proven framework and seek high coverage in the test automation software to ensure good reuse.
- c. Bypass test automation and go with crowd-sourcing to get a high amount of testing done in a short period of time. Test repeatability is not an issue with this software.
- d. Use test automation for performance testing and conduct the functional testing manually since the product has a short life expectancy.

**A is correct. It is important to use tools that are well suited for mobile. Keyword-driven test automation is likely to be more maintainable than data-driven, particularly when the application changes frequently. B is incorrect because high re-usability is not a goal for this project. High levels of coverage are probably not important in the test automation because the product has a short lifespan. Also, the tools may not be well-suited to mobile products. C is not correct because bypassing test automation violates the rules of the iterative lifecycles and would miss the opportunity of automating testing after the continuous integration occurs. D is not correct because the test automation should be used for the functional testing and needs to be done early in the lifecycle to ensure good product development and continuous integration testing. (LO-6.2.b)**

**40. What type of testing methodologies should IoT or mobile applications testers seek?**

- a. Leaner and more efficient
- b. Faster and more reliable
- c. Secure and more usable
- d. Documented and more repeatable

**A is correct per the syllabus. (LO-6.4.a)**