TMAP®:
Organizing built-in quality at scale

Sample exam

Version 1.3

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Introduction

This is the sample exam for the certification "TMAP: Organizing built-in quality at scale" which is part of the TMAP certification scheme. The requirements for this exam are described in the syllabus.

The format of the exam is multiple choice. There are 40 questions, 20 relate to K2 LOs, 20 relate to K3 LOs (K1 LOs are not explicitly examined). Each correctly answered K2 question gives 1 point, a correctly answered K3 question gives 2 points, in total 60 points can be achieved. To pass the exam, at least 66% of the points (that is 40 points) must be achieved.

The available time for the exam is 1,5 hours (90 minutes). This time is also sufficient for non-native English speakers to complete the exam. Currently the exam is only available in English, translations to other languages may follow in the future.

The exams and certificates are provided by the independent exam provider iSQI. The syllabus and other information can be found at: www.isqi.org.

For more information about the TMAP body of knowledge see www.tmap.net.

To contact the Sogeti academy in the Netherlands please contact academy.nl@sogeti.nl.

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Revision history

Version	Date	Author	Remarks
0.1	06-08-2021	Questions & Exercises team	New document
0.9	08-08-2021	Guido Nelissen	Version for review
1.0	09-08-2021	Rik Marselis	Final version
1.3	31-08-2022	Rik Marselis	Minor update *(note 1.1 and 1.2 don't exist)*

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1. Questions

1.1. LO01 - The VOICE model of business delivery and IT delivery (K3 – 2 points)

QualityLand wants to develop an app that monitors queues for the attractions. The first version of the app will be released on short term (within 2 months) and tried out via a field trial within a limited group of preferred guests.
Also, QualityLand has plans to develop an app that monitors queues at the parking area. It aims at reducing the duration before a customer enters the park. This app requires additional infrastructural adjustments in the parking area, like loops in the road surface and intelligent cameras.

For both apps, the pursued business value is to optimize the time visitors can enjoy their experiences in QualityLand.

Select the IT objectives that apply specifically to both apps.

[V] Deploy easy-to-use solutions and tools for visitors.
[W] Regression tests must be automated as much as possible.
[X] Provide self-service tools for customers and employees.
[Y] Transform the QualityLand IT teams to a high-performance IT delivery organization.

A. V, W, X and Y
B. V and X
C. W and Y
D. V, X and Y

1.2. LO02 – Indicators (K3 – 2 points)

In QualityLand the team members want to know whether the quality of the changes in the app that is used by visitors to order food in the MagicMouseSnackShop is according to the pursued value.
The team will use indicators for measuring the quality.
Match the following team members and roles with the groups of indicators that are their primary interest (select only one group per stakeholder).

P: BugsBunny - Scrum Master
Q: TweetyBird - Product Owner
R: RoadRunner - Performance tester

V: Business value related indicators
W: IT delivery related indicators
X: Team related indicators
Y: Problem related indicators
Z: Non-functional quality indicators

(see answers on next page)

A. P - V
   Q - Z
   R - X
B. P - X
   Q - Y
   R - V
C. P - W
   Q - V
   R - Z
D. P - Y
   Q - X
   R – Z

1.3. LO03 - Continuous quality engineering and built-in quality (K2 – 1 point)

The Scaled Agile Framework (or SAFe®) focuses on the quality of products with five dimensions of built-in quality. The dimensions are: Flow, Architecture & Design quality, Code quality, System quality and Release quality.

In what way does the dimension "Flow" in SAFe® focus on the quality of products?

A. Flow is achieved with a test-first approach (with TDD and BDD) and a continuous delivery pipeline. In the test-first approach they distinguish between guiding the team and critiquing the product just like in the agile testing quadrants.
B. Flow is achieved by several practices such as automated unit testing and paired working. But also collective ownership across teams and coding standards.
C. Flow is achieved by determining future needs and designing for quality. This also contributes to good testability.
D. To achieve flow there must be a scalable definition of done that aligns the goals of the teams involved and the goals of the organization as a whole.

1.4. LO04 - Cross-functional teams (K3 – 2 points)

You are the scrum master for a new team at QualityLand. The team consists of the following five members:
- Antoine: Very experienced IT person with over 25 years of experience in all sorts of IT roles. Is most experienced in business analysis.
- Bettine: Person with 5 years experience, mainly in Java development. Also has experience in programming scripts for the automated tests.
- Charlotte: Person with over 10 years experience in operations but also can do development tasks and testing.
- Denis: University graduate who just started at QualityLand and mainly has theoretical IT knowledge. Is very eager to learn.
- Eloise: Has 5 years experience as sales-support employee and switched to the IT department last month. Has successfully passed the TMAP:Quality for cross-functional teams exam.

What can you, as a scrum master, do to support this team in becoming more effective and efficient?

A. You decide to do the following:
   - Introduce whole-team workshops for refinements so that everybody can benefit from each others knowledge
   - Introduce the use of checklists to support doing the right things in an easy way
   - actively support team members Antoine, Bettine and Charlotte to work in pairs with Denis and Eloise so they can benefit from the experience and good practices of the experienced people.
B. You decide to do the following:
   - Have Bettine and Denis work together in creating an automated testing framework so that all testing activities can be automated because there is no real tester in the team
   - Let Antoine and Charlotte work together in detailing user stories for future sprints only
   - Instruct Eloise to make test cases and execute tests for all deliverables of the team because she is the only certified quality engineer in the team
C. Being the scrum master you are especially equipped to take over any task that other team members don't feel capable of doing. So you will support at least Denis and Eloise (who are least experienced) by taking over their tasks. And you expect that Antoine and Charlotte (who are most experienced) will concentrate on making the easy programming tasks right.
D. Since this team doesn't have a skilled tester, you (as the scrum master) will have a meeting with the product owner (Owen) to ask for extension of the team because having an extra team member will make the work more efficient.

1.5. LO05 - Quality engineering at scale (with multiple teams)
(K3 – 2 points)

You are the end-to-end quality orchestrator of QualityLand. One of the teams has changed the functionality of an IT system that is part of a complex business process and the team cannot perform an end-to-end test on their own. They trust you to organize this.
How will you involve shared services and/or one or more system teams and/or virtual teams to achieve this?

A. You will always organize a Virtual Team containing representing people from each of the involved teams to create and execute the end-to-end test.
B. As the end-to-end quality orchestrator you are part of the shared services of the SAFe® organization. As such you organize the virtual teams that perform end-to-end tests.
C. You will organize a virtual team if the task can be best performed by people from the involved teams. For support by very specialized people you will include shared services (that will need to be scheduled timely) and in case the end-to-end test can better be done by a dedicated team you organize a system team for that.
D. You organize a training course, with follow up in the form of personal coaching, to assist the individual teams in organizing and executing the end-to-end test so that the organization as a whole will perform most efficiently.

1.6. LO08 - High Performance IT delivery models (K2 – 1 point)

The CALMS framework is often used to evaluate whether an organization is ready for DevOps. How does the A in CALMS contribute to this evaluation?

A. The A means "analysis" which is an essential part of the evaluation of the maturity of the organization.
B. The A refers to the Agile manifesto to evaluate if the DevOps team members have an Agile mindset.
C. The A is about acceptance criteria that must be included on the story card of user stories to be able to make proper test cases for acceptance testing.
D. The A means "automation", the evaluation is for example about whether the continuous integration, the cloud provisioning and the regression tests are automated.

1.7. LO09 - Hybrid IT delivery models (K2 – 1 point)

What are the extra configurations in "Full SAFe®", additional to Essential SAFe®?

A. Team SAFe® and Program SAFe®
B. Lean Portfolio Management and Enterprise Solution Delivery
C. Large Solution SAFe® and Portfolio SAFe®
D. Continuous Learning Culture and Lean-Agile Leadership

1.8. LO10 – Introduction to Quality engineering at scale (K2 – 1 point)

QualityLand is rapidly growing and the number of IT delivery teams is also increasing. This forces the QualityLand IT manager to implement quality engineering in agile at scale. The IT manager asks you to advise her about what challenges to take into account. What is your answer?

A. You explain that working with multiple teams increases complexity. A scaling approach will help to deal with this complexity and to contribute to common IT goals. Challenges in achieving this are:
   - Lack of knowledge sharing between teams
   - Applying a shared way of working
   - Ensuring end-to-end quality
B. You explain that implementing SAFe® will take a long time because all people need to first become familiar with Agile Release Trains and Large Solution Trains. Besides many people will need to adopt new roles because with SAFe® you need to introduce release train engineers and other technical specialists like these.
C. You explain that quality engineering in a scaled agile situation still uses the 20 QA&Testing topics so basically there are no significant challenges when implementing quality engineering at scale.
D. You explain to the IT manager that the best scaling option for QualityLand is to implement the Spotify model because this model is not a hybrid model but a purely high-performance IT delivery model and therefore there will not be any special challenges when implementing agile at scale.

1.9. LO12 - Transition from one to another IT delivery model
(K2 – 1 point)

The QualityLand IT manager wants to change the IT delivery model from a project-centric V-model approach to a product-focused DevOps culture. She has heard you talk about QA&Testing topics and ask you how, in this QualityLand organization, these topics can be used for the transition.
What is your explanation?

A. The Quality Orchestrator describes the "as-is" and "to-be" situations for the organization. Then the quality orchestrator instructs the teams how to implement a topic. This way the transition will take as little time of the team members as possible and they can keep their focus on IT delivery instead of the improvement of the IT delivery process.
B. The Quality Orchestrator distributes the QA&Testing topics over multiple teams so that every team can take responsibility for improvement of one, or a few, topics for the whole organization.
C. The transition is divided in multiple (parallel) transitions based on each of the topics. The team(s) involved define for each topic how they will approach the activities of that topic.
This way the transition is easier to manage and progress can be better followed.
D. TMAP has two groups of QA&Testing topics: Organizing and Performing topics.
For a transition from a project-centric to a product-focused situation, the Organizing topics describe all relevant activities to make the transition successful.

1.10. LO14 - QA & Testing topics plotted on the IT delivery models
(K2 – 1 point)

The QualityLand organization is in transition from a sequential IT delivery model to a high-performance (DevOps) IT delivery model. The Scrum master wants to include the right quality engineering activities in the Way of Working but needs some help in how to determine the activities. She asks for your help. What is your advice?

A. The QA&Testing topics are a standard set of quality engineering activities that can just be implemented. Since all topics are relevant for all IT delivery models there will not be a need for a transition because the implementation for the current sequential model can seamlessly be used for DevOps too.
B. You advice the Scrum master to use the QA&Testing topics because the activities represented by this common set of topics are always relevant for quality engineering, and the relevant activities can be included in the way of working.
C. For the current sequential IT delivery model there is a Master Testplan which includes the description of how the QA&Testing topics are implemented. This can be copied in the way of working for DevOps which makes the transition very swift without any adjustments.
D. The common testing activities (test case design, test execution and reporting) will be included in the Definition of Done and thus the quality engineering efforts are established for the new situation.

1.11. LO15 - QA & Testing topics plotted to SAFe® (K2 – 1 point)

In the QualityLand IT organization three teams collaborate in implementing the IT systems. To have a clear value stream they will implement the "Essential SAFe®" (just the program and team layers) with an Agile Release Train and high-performance teams that use the Scrum framework.
Which of the QA&Testing topics will be relevant if only these layers are implemented and no shared services and system teams are used?

A. For Essential SAFe® only the Performing topics are relevant because the Organizing topics only relate to the Large Solution and the Portfolio layers of SAFe®.
B. Most topics are always relevant. When the Large solution layer and/or the Portfolio layer are not implemented there is no need to consider overall QA&Testing topics such as Quality & Test policy, Continuous Improvement and Quality Risk Analysis & Test Strategy.
C. Since every SAFe® implementation is different the QualityLand people must carefully consider what they need and select the topics that are relevant in their situation. Based on the standard plotting of topics as shown in the books they can decide how to adjust it and which topics can be ignored in their specific situation.
D. All of the Organizing and all of the Performing QA&Testing topics relate to the Program level and Team level that together form "Essential SAFe®". So all topics are relevant in one way or another.

1.12. LO16 - Quality & test policy (K3 – 2 points)

The QualityLand mission and vision are focused on high satisfaction of the visitors. This is reflected in the Quality & Test Policy of the IT organization within QualityLand.
You are tasked to translate the Quality & Test Policy to tactical and operational levels. To start with, the CIO has asked you how you will make this translation.
What is your explanation?

A. At the tactical level, the quality & test policy will be translated by creating regulations that specify the preconditions and standards that support realizing the strategic policy. This is known as a Way of Working.
   At the operational level, a uniform test approach is implemented which could be part of the Definition of Done.
B. The Quality & test policy consists of 9 different subjects.
   To implement them to tactical and operational level every subject will be translated. To make this workable (eat an elephant bite by bite) the subjects will be implemented one after the other. On average each subject takes one month so the total implementation will take about a year.
C. The Quality & Test policy is translated into the topics estimating and planning (which are organizing topics) and to the quality risk analysis & test strategy (which is a performing topic related to operational activities).
D. An important subject that is relevant to translate from the Quality & Test policy to the tactical and operational levels is the subject of indicators related to confidence in value. By defining the right indicators the teams will measure whether they are complying with the IT objectives to support the pursued value.

1.13. LO17 - Total cost of quality (K2 – 1 point)

How does the concept of the total cost of quality contribute to support a shift-left move of your IT delivery organization?

A. The cross-functional teams should focus on automating all of the test execution because that will lower the prevention and detection costs and thus reduce the total cost of quality.
B. If the quality risk analysis shows that the risk level is high that means that more focus on quality engineering is important so that the cost of failure will increase and thus the total cost of quality will increase.
C. Based on the quality & test policy (which typically is not changed for a longer period of time) the desired total cost of quality can be calculated and then this cost level will be the rule for the teams involved.
D. Since shift-left refers to building quality in from the start, this is all about achieving balance between the cost of failure (for example fixing problems but also paying for the impact at customers) and the cost of prevention and detection of faults and failures. This balance will differ per situation, for example based on the quality risk levels.

1.14. LO18 - Responsibilities and roles (K2 – 1 point)

In a high-performance cross-functional team, all roles have some common responsibilities and also have QA & Testing responsibilities.
Which QA & Testing responsibilities can be taken by which role?

A. Scrum master - Evaluator of test results
   Product owner - Evaluator of test results
   Tester - Evaluator of test results
B. Business Analyst - Reviewer of acceptance criteria and test cases
   Developer - Author of unit test cases
   User - Participator in acceptance tests
C. Operations person - Participator in writing regression test cases
   System architect - Propagator of QA & testing awareness and practices
   User - author of non-functional tests
D. Developer - automator of unit/system tests
   Tester - author and maintainer of automated tests
   Business Analyst - monitoring production

1.15. LO19 - Monitoring & control (K3 – 2 points)

QualityLand is going to develop a new control system for the Superhero Rollercoaster that will open at the start of the new season (which is in 3 months from now).
Multiple roles are involved in this development and delivery effort, important roles are:
P - Product Owner
Q - Quality Engineer & tester
R - User
S - Scrum Master

Which information, suitable for monitoring, is relevant for which stakeholders?
1 - Burndown chart of user stories done
2 - Number of records successfully processed in batch
3 - Customer satisfaction
4 - Changes in quality against time
5 - Velocity of the team

A. P: 1
   Q: 2 & 3
   R: 4
   S: 5
B. P: 5
   Q: 1
   R: 2
   S: 3 & 4
C. P: 1 & 3
   Q: 2
   R: 4
   S: 5
D. P: 1 & 3
   Q: 5
   R: 2
   S: 4

1.16. LO20 - Anomaly management (K2 – 1 point)

When teams work in an Agile at scale situation, who is responsible for monitoring the anomaly management process?

A. The team that initially found the anomaly is always in the lead for the rest of the anomaly management for this anomaly.
B. If the Agile at scale is implemented using the Spotify model then the Release Train Engineer is the only possible choice for anomaly management.
C. Monitoring is designated to a scrum master or product owner or the scrum-of-scrums. Also organizations may organize arbitrage meetings.
D. The person in the tester role of the team that fixes the anomaly is responsible for the whole management of registration, fixing and retesting of that anomaly.

1.17. LO21 - Reporting and alerting (K3 – 2 points)

In the QualityLand IT delivery process a great number of stakeholders are involved, for example the IT manager, the product owner, the scrum master, the key user, and the people in the IT delivery team. Of course all stakeholders get the reports that are relevant for them. But when there is a specific situation that needs immediate action, something extra is needed.
How would you suggest to do this?

A. Since the team members (including the product owner and scrum master) will be present at the daily standup this is the perfect moment to alert all people involved about actions that need to be taken. Only the IT manager will need to be alerted separately, this can best be done in the standard email that is used for sending the report.
B. If the IT manager needs to take action use a phone call to alert him because he will probably not read the report in time.
   If the Product Owner needs to take action send an extra email separate from the email with the report, since the product owner probably will look at reports of the team quickly, and if not the contact is so close that it will be noticed.
   For the key user and the scrum master use an automated text message to their phone to alert them.
   The team members can be alerted in the daily standup meeting or in another personal way.
C. Having a live monitor is an ideal tool for alerting people instantly. Since this type of dashboard is always up-to-date the people involved will always have the correct information available. Using a selection mechanism every role can select the relevant information to be shown.
   This way a real-time dashboard is the perfect tool to alert all different groups of stakeholders.
D. Install a wifi-enabled lamp in the room of the IT manager and the Key user. As long as no action is needed the lamp will shine green light. As soon as immediate action is needed the lamp will start flashing red light.
   The product owner can be alerted with a text message on their phone. The Scrum master and the team will alert each other in their regular contacts which are frequent anyway.

1.18. LO22 – Estimating (K3 – 2 points)

The high-performance IT delivery team of QualityLand is working on three user stories (US01, US02 and US03) and now need to estimate the effort, taking into account the efforts needed for testing based on risk class.
Therefore the team, represented by 4 people in different roles: Brian - Business Analyst, Dyna -Developer, Oprah - Operations and Toby - Tester, will do a risk poker and planning poker session in which they will decide on risk class and number of story points for these user stories.
They use an existing user story that is known to all team members for reference, this user story is risk class B (medium) and has 2 story points.

The team agrees that US01 and US02 are about 3 times as large as the reference story. US03 is 8 times as large. The impression about the risk levels differ. Brian and Dyna show poker card 1 (low) for the risk of US01 and US03, and poker card 3 (high) for US02.
Oprah shows poker card 2 (medium risk) for all user stories.
Toby shows poker card 3 for US01 and US02 and card 1 for US03.
For the planning poker estimation the team uses poker cards with a Fibonacci scale (0, 1/2, 1, 2, 3, 5, 8, 13, 20, 40)
Which user story will at the end of the poker session (most likely) get the highest number of story points and why?

A. Since Oprah seems not have a change-making opinion and there seems to be consensus that US02 is the highest risk class, US02 will get a high number of story points based on the risk without discussion. And US03 will get a low risk class so the story points from the planning poker will not be increased based on risk. The discussion about the risk class will be between Brian, Dyna and Toby about US01. Supposing that Toby will convince Brian and Dyna that US03 is low risk then this user story will also not get a higher weighting of story points for risk.
   So therefore US02 will get the highest number of story points.
B. User story US02 will get 3 x 2 story points increased for high risk (3 people vote for high risk class) so this will likely get 8 story points.
   User story US03 will get 8 x 2 story points which is not changed because of medium risk (2 people vote for high, 1 for medium and 1 for low, assuming the discussion will get consensus on medium), the closest to 16 is 13 on the Fibonacci scale.
   User story US01 will get 3 x 2 story points which may be increased to 8 or lowered to 5 depending on the outcome of the discussion.
   So US03 will have the highest number of story points with a medium or low risk class.
C. Since User story US02 has the highest risk class (3 people vote 3, one votes 2, in total that is 3x3+2=11, multiplied by 2 story points is 22, most close Fibonacci card is 20.
   US01 has 2x1+2+3=7 votes, multiplied by 2 story points is 14, most close Fibonacci card is 13.
   US03 has 2x1+2+1=5 votes, which is a Fibonacci card.
   So US02 gets the highest number of story points.
D. The team members have quite some differences in their opinion about the risk class. Therefore the Scrum master must postpone the poker session so that the people involved can first take time to make up their minds and try to convince each other separately about their views. When they are all aligned they can resume the poker session.

1.19. LO23 – Planning (K3 – 2 points)

The QualityLand IT delivery team has done the estimation for the user stories for the next sprint. While creating the sprint backlog and looking planning and scheduling they are not totally confident that they will be able to indeed finish all user stories in the next sprint. So they need to define the order in which the stories are picked up.

The following information is known for the user stories:
All user stories have the same size of 5 story points and thus the same duration of development.
For each user story they determined Business Value (BV), Time Criticality (TC) and Risk Reduction (RR):
US1 has BR=8, TC=1, RR=2

US2 has BR=5, TC=5, RR=5

US3 has BR=2, TC=2, RR=2

US4 has BR=1, TC=1, RR=2

US5 has BR=2, TC=3, RR=2

What approach will they use for this prioritization of user stories and which user story will be first and which will be last on the backlog?

A. The team uses business value as the core driver (based on the VOICE model), and the number of story points for each is equal (5) so therefore the priority will be with US1 and next US2. US4 will be last.
B. With this information it is impossible to determine the priority. What is missing is a differentiation in sizing. If the number of story points (based on planning poker and risk poker) is equal for all stories, then an additional estimation method (such as T-shirt sizing or bucket sizing) should be used to determine the priority.
C. The team will use Weighted Shortest Job First (WSJF) for the prioritization. Using this approach they will select US2 as the first on the backlog and US4 as last. That is because US2 has a WSJF of 11/5 and US4 has a WSJF of 4/5. So US2 is highest WSJF and thus maximum economic benefit.
D. The team will use Weighted Shortest Job First (WSJF) for the prioritization. Using this approach they will select US4 as the first on the backlog and US2 as last. That is because US2 has a WSJF of 11/5 and US4 has a WSJF of 4/5. So US4 is the shortest job which should go first.

1.20. LO24 – Infrastructure (K2 – 1 point)

Your team at QualityLand was still using your own dedicated hardware for test environments. In the QualityLand IT organization there is specialized support for flexible and scalable infrastructure. What are the elements that they can help your team with, to make sure you can create every test environment you need for the various goals of testing?

A. The support organization of QualityLand can do the infrastructure verification so that the team doesn't need to bother about the infrastructure components and the integration between tools.
B. The elements that are supported for your test infrastructure are Containerization and Cloud technology which together make sure you can easily run software on different environments and scale to the levels you need.
C. Infrastructure as code (IaC) is the process of managing and provisioning computer environments through machine-readable definition files.
D. A test environment is a composition of parts, such as hardware and software, connections, environment data, tools and operational processes in which a test is carried out.

1.21. LO25 – Tooling (K2 – 1 point)

The product owner of QualityLand has heard that the support team will put effort in test orchestration regarding the tools in the CI/CD pipeline and asks you what this orchestration is about.
What is your explanation?

A. Orchestration is the process of selecting and purchasing tools that fulfil the capabilities needed in a CI/CD pipeline.
B. Orchestration is about the responsibility for organizing end-to-end quality and the person responsible is called end-to-end quality orchestrator.
C. Test orchestration focuses on eliminating dependencies between teams by supplying the teams separate test infrastructure so that all tests can be run independently and no integration is needed in the business test stage of the CI/CD pipeline.
D. Test orchestration is the alignment of a large number of test automation tasks and other quality assurance related tasks for all teams involved in a CI/CD process. Test orchestration aligns human and automated tasks so that automated test can be performed effectively and efficiently over multiple systems.

1.22. LO26 – Metrics (K3 – 2 points)

Due to a recent crisis in the entertainment industry, one of the business drivers QualityLand has defined in its mission and vision, is to achieve the best customer experience at the lowest cost. It strongly believes that being innovative supports reducing the IT costs. The QualityLand IT department recently transitioned to a high-performance IT delivery model and wants to increase 'being in control'. For that reason, the IT manager suggests several metrics and asks you whether these metrics align well with the business driver.
Which metrics do align with the above mentioned business goal?

[P] Percentage of time team members work in pairs.
[Q] Percentage of test costs (related to total costs).
[R] Number of released features according to planning, per month.
[S] Savings achieved by reusing test products.
[T] Percentage of code coverage.

A. P and Q align with the goal,
   R, S and T do not align with the goal.

B. S and T align with the goal,
   P, Q and R do not align with the goal.

C. P, R and T align with the goal,
   Q and S do not align with the goal.

D. Q and S align with the goal,
   P, R, and T do not align with the goal.

1.23. LO27 - Continuous improvement – Quality to Activity Mapping
(K3 – 2 points)

Your team at QualityLand has determined that some improvements to the IT delivery process are necessary. The improvements are:
- Apply test design techniques
- Establish central QA & Testing support
- Automate all unit tests in the CI/CD pipeline

At which intersections of the Quality to Activity Mapping (QAM) table should these improvements be plotted?

QAM	Monitor	Plan	Code	Integrate	Deploy	Operate
QA Awareness						
QA & Testing						
Governance						
Transparency						
Automation						
Infrastructure						

A. Apply test design techniques - intersection of QA & Testing and Operate
Establish central QA & Testing support - intersection of Transparency and Plan
Automate all unit tests in the CI/CD pipeline - intersection of Infrastructure and Deploy

B. Apply test design techniques - intersection of QA & Testing and Code
Establish central QA & Testing support - intersection of Governance and Plan
Automate all unit tests in the CI/CD pipeline - intersection of Automation and Code.

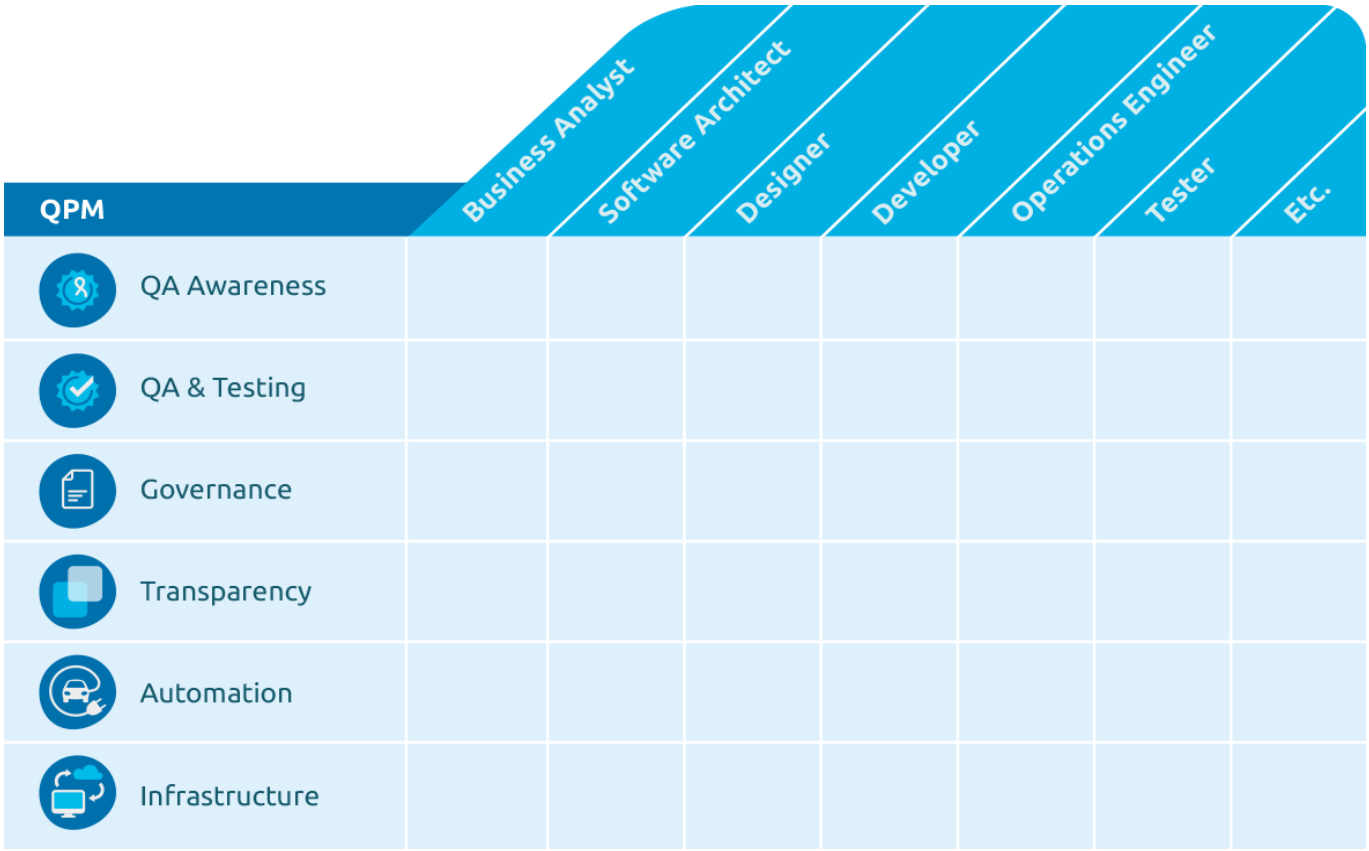
C. Apply test design techniques - intersection of QA & Testing and Code
Establish central QA & Testing support - intersection of Governance and Integrate
Automate all unit tests in the CI/CD pipeline - intersection of Automation and Monitor

D. Apply test design techniques - intersection of QA Awareness and Code
Establish central QA & Testing support - intersection of QA Awareness and Plan
Automate all unit tests in the CI/CD pipeline - intersection of Automation and Code

1.24. LO28 - Continuous improvement – Quality to People Mapping
(K3 – 2 points)

Your team at QualityLand wants to define which quality measures are relevant for which roles in the team. They use a Quality to People Mapping table (QPM) to register the following quality measures.:
- apply Behavior Driven Development (BDD)
- apply Feature Toggles
- apply Pair Programming

At which intersections of the Quality to People Mapping table should these quality measures be plotted?



A. BDD - intersection of QA & Testing and Business Analyst
   Feature Toggles - intersection of Automation and Operations engineer
   Pair Programming - intersection of Governance and Developer
B. BDD - intersection of QA & Testing and Operations Engineer
   Feature Toggles - intersection of QA Awareness and Business Analyst
   Pair Programming - intersection of Transparency and Designer
C. BDD - intersection of Infrastructure and Software Architect
   Feature Toggles - intersection of Transparency and Operations engineer
   Pair Programming - intersection of QA Awareness and Developer
D. BDD - intersection of QA & Testing and Designer
   Feature Toggles - intersection of Automation and Software Architect
   Pair Programming - intersection of Infrastructure and Operations Engineer

1.25. LO29 - Quality risk analysis & test strategy (K3 – 2 points)

QualityLand introduces a new mobile app for the visitors. With this app they can listen to the story of the fairytale that they are looking at during their visit. Research has shown that this app will be used most by little children (age < 6) and their grandparents (age > 60).
With your team you are doing a quality risk analysis that will be the basis to determine the right quality measures.
In the risk-poker-session you will evaluate the following user stories:
US1: The app uses GPS to detect what is the fairytale the user is standing close to. Only the closest fairytale can be listened to.
US2: The app uses icons for easy communication with the user.
US3: The app uses the standard sound-control features of the device to adjust the volume.

What risk levels will your team most likely assign to these user stories and why?
(Risk class A = highest, C = lowest risk)

A. US1 will get risk class C because if the wrong fairytale is played the children won't notice anyway.
US2 will get risk class A because we will need to have a close look whether the help-texts that go with the icons is understandable for the target audience.
US3 will get risk class B because we need to do a lot of portability testing since sound-control differs a lot per device and per version of the operating system.

B. US1 will get risk class B since GPS is a standard function of mobile devices but still it is important that the correct location is selected so the right fairytale is sent to the device.
US2 will get risk class A since the usability for the target group (little children and old people) needs special attention and usability testing.
US3 will get risk class C because this is standard functionality on any device.

C. US1 will get class A since GPS is a very complex technology and will be difficult to test in the test environment.
US2 will get class C because the use of icons is standard technology and children are used to using icons anyway.
US3 will get risk class B because we will need to assess if the sound will be loud enough when people are walking outside in the open air in a crowded amusement park.

D. US1 will get risk class A because the team thinks we can better use a tailor made technology for determining the position of the device based on Bluetooth signals from each fairytale.
US2 will get risk class C because the team will not use icons but will use simple texts that the grandparents can read to the children and thus it all will be clear to the whole audience.
US3 will get risk class A because if the sound level is too low the people won't hear anything and the app is useless.

1.26. LO30 - Acceptance criteria (K2 – 1 point)

QualityLand has implemented the Scaled Agile Framework (SAFe®) for IT delivery. Multiple teams work on one value stream. What does this mean for the acceptance criteria that the involved teams must define?

A. The teams must define the quality level of IT products with acceptance criteria and to ensure a working end product additional end-to-end acceptance criteria must be defined.
B. Each team independently defines the acceptance criteria for their user stories. The end-to-end quality orchestrator defines the end-to-end completion criteria together with the release train engineer.
C. Since there will be an independent testing team for the end-to-end regression team this team doesn't need to bother about acceptance criteria because they focus on completion criteria.
D. Since the foundation of the SAFe® frameworks is working in Agile teams using Scrum, the teams define acceptance criteria per user story as defined by Scrum and that way they cover the end-to-end acceptance as well.

1.27. LO31 - Test automation (K2 – 1 point)

The QualityLand CIO and you see each other at the coffee machine and the CIO asks you how test orchestration helps to prevent islands of automation. What is your explanation?

A. The task of the end-to-end quality orchestrator is to implement the quality & test policy in such way that teams collaborate in an optimal way and thus don't waste time on handoffs.
B. Test orchestration eliminates islands of automation by combining manual and automated tasks in a holistic fashion. It links together individual automated tasks, which helps eliminate manual handoffs, dependencies, wait times and cycle waste, resulting in automated testing fully integrated in the pipeline.
C. Test orchestration aligns human and automated tasks so that automated tests can be performed effectively and efficiently over multiple systems.
The product owner needs to be involved to define how to automate the tests.
D. The most logical place according to SAFe® for organizing orchestration of end-to-end quality is a system team. This can be compared to the Support Team end-to-end Quality.

1.28. LO32 - Investigate & assess outcome (K2 – 1 point)

A student researches the "investigate & assess outcome" topic of TMAP. In his thesis he has written down four statements. You notice the student does not understand everything yet, only one of the statements is totally correct.
Which statement is correct?

A. Pair debugging is a frequently used technique by developers to prevent anomalies in the system.
B. Testing errors do not concern faults in the system itself and therefore have a lower priority for further examination.
C. When the expected and actual outcomes do not match, the test has failed; a quality risk has materialized, and the requirement is not yet implemented. The tester will need to do some investigation.
D. Faults in the program code do not result in registration of a failed test because these kinds of faults are the responsibility of the developer, and generally we do not log unit tests nor test results.

1.29. LO34 - Root cause analysis (K2 – 1 point)

The "escaped fault ratio" is an important indicator that helps to improve the IT delivery process. Which statement is correct?

A. The "escaped fault ratio" indicates that Quality Engineering activities have prevented fault to escape to a later phase.
B. An increased "escaped fault ratio" indicates that the IT delivery process has improved.
C. The "escaped fault ratio" indicates the number of production incidents. They escaped as it were from the high performance IT team before releasing the product or system.
D. The "escaped fault ratio" contributes to improvement of the detective quality measures.

1.30. LO35 - Personal, interpersonal and team skills (K3 – 2 points)

Your QualityLand team suddenly has a need for test data management because a new application needs anonymized and scrambled test data based on the production data. Nobody in your cross-functional team has experience with this type of test data management.
How can the staff organization add additional skills to your team?

A. The staff organization consists of people that can perform specialized tasks to support teams in executing their tasks. This can be organized in shared services of system teams.
B. The staff organization is a more organic community of interest, a group of people that want to share knowledge, tools, code and practices. Anybody who is interested can join.
C. Key to become effective is to grab every learning opportunity ("learn fast"). So the staff organization organizes a training course with some additional coaching to support the team members in learning how to do data management.
D. The team and the staff organization together apply the so-called "flocking" where the people get alerted that something unforeseen happens and they all start working on that particular task to make sure this task is performed well.

1.31. LO36 - Test varieties (K3 – 2 points)

You are the end-to-end quality orchestrator of QualityLand. For a new value stream that you are involved in, five cross-functional teams will deliver parts of the total IT solution to support the business process. Looking at the ambitions of the product owner, the individual teams will not have time to perform test varieties that are supposed to be executed in the "Business Test Stage" of the CI/CD pipeline.
Together with the scrum masters of the involved teams you must define the test varieties that are relevant in this situation. One of the scrum masters reminds you of the test policy that states that all tests that are repeated multiple times should be automated.
Which of these solutions describes the setup of test varieties that you would advise keeping in mind the various relevant perspectives?

A. In a situation like this the best solution is to organize flexible test varieties that respond to the available people at the moment the tests must be prepared and executed.
Automation of the tests will be done by a shared service team to relieve the members of the involved teams from this specialized task.
Non-functional tests will all be done by system teams because the non-functionals (such as performance, security and usability) will entirely be tested in the business test stage and the teams don't have time to do those test varieties.

B. Every involved team will do static code analysis using tools and manual code reviews before the code is merged in the main branch.
Every involved team will do dynamic unit testing based on Test Driven Development.
The API-based interface tests and the tests from a business perspective (such as acceptance tests and end-to-end-regression tests) will be automated by a virtual testing team that exists of people from the involved teams.
Non-functional tests are integrated with other test varieties because the teams don't have non-functional specialists available.

C. Every involved team will do static testing, especially during refinement of user stories and manual and automated code reviews during pull requests.
Every involved team will do dynamic testing, especially automated unit testing and testing of interfaces on API level.
The non-functional aspect performance is tested both by individual teams in their build pipeline and by a specialized system team of operations experts in the release pipeline.
Acceptance testing and end-to-end regression testing are performed by a system team of testing experts from the staff organization in the business test stage of the release pipeline.

D. The involved teams will ask people from other involved teams to do code-reviews and unit testing to have maximum exchange of knowledge and skills between teams.
Since the teams don't have time for business testing they will ask representatives from the business departments to prepare and perform the manual acceptance tests and end-to-end regression tests (these cannot be automated because business people don't have these skills).
Non-functional tests such as maintainability and portability will be integrated in the unit testing and integration testing that is done by the teams.

1.32. LO37 - End-to-end regression testing (K2 – 1 point)

QualityLand has introduced a new app with in-app-purchases. To support the payments of these purchases the app has a real-time connection to an external payment provider. This provider has their own test environment that QualityLand can connect to. The team of the provider works with an Agile mindset just like your team.
You have picked up the task to organize the end-to-end regression tests for the new app.
What are the challenges that apply for this task?

A. The main challenges for working in an Agile at scale situation are:
   - The impact a virtual end-to-end testing team has on the velocity of the teams
   - To find a specialist that can visualize in which areas test automation adds value and organize test automation for the end-to-end test.

B. The main challenges for working in an Agile at scale situation are:
   - Lack of knowledge sharing between teams
   - Applying a shared way of working
   - Ensuring end-to-end quality

C. The main challenges for working in an Agile at scale situation are:
   - You need to do the quality risk analysis both for the increment as well as for the individual sprints.
   - Teams often don't have the knowledge, time and resources to properly organize and perform end-to-end tests.

D. The main challenges for working in an Agile at scale situation are:
   - End-to-end parties
   - People
   - Change dynamics
   - Test environments
   - Test data
   - End-to-end QA process

1.33. LO38 - End-to-end QA at scale (K3 – 2 points)

The IT manager of QualityLand has visited a conference where he attended a presentation about the Scaled Agile Framework (also known as SAFe®).
She now asks you (the most experienced Scrum master) to work together to prepare QualityLand for becoming a true "Agile at Scale" organization.
One of the things to organize is the end-to-end quality assurance.
The IT manager and you describe the first steps in this transition. What is the best description of these steps?

A. You will start making a quality strategy. Some tasks cannot be done by the involved agile teams so you will need to organize support teams (these may be system teams, shared services or virtual teams).
The test strategy at scale contains activities for teams and also end-to-end testing and skills needed to ensure quality of the solution as a whole.

B. The first step is to organize end-to-end regression testing by a support team. A newly assigned end-to-end quality orchestrator will take operational responsibility for the creation of test cases and test data and for the execution of this test. Investigation and assessing of the outcome of the tests will be done by the agile teams because the support team doesn't have the relevant knowledge.

C. The first step is to instruct all teams that from now on they must make sure that all features are independent so that teams won't get involved in "chains of systems" or even a "mesh of systems". This way QualityLand will ensure easy orchestration of the end-to-end quality so that you as a scrum master can also perform the task of end-to-end quality orchestrator.

D. At the conference the IT manager learned that SAFe® comprises multiple QA-related subjects. From these subjects you select Built-in Quality, Relentless Improvement and Test Driven Development as first steps to organize end-to-end QA. Built-in Quality will be assigned to the new end-to-end Quality Orchestrator. The existing continuous improvement of one of the teams will be intensified so they can also improve other teams. Test Driven Development is new to all teams so this will be implemented as a shared service by the staff organization.

1.34. LO39 – The value of unstructured testing (K2 – 1 point)

Which activities contribute to avoid unstructured testing?

A. Focus on day-to-day business only. Focus on positive test cases only. Focus on easy interactions with the system that produce results immediately. Focus on functional testing only.
B. First think about the goal of the testing. What information needs to be given to stakeholders? Then think about how this information can be obtained. Which test ideas, test situations and/or test cases would help you get this information? Then design and execute tests in a formal or less formal way.
C. Apply a commonly accepted test approach such as error guessing.
D. Start test execution as soon as possible to make progress early in the process, for example because of time pressure or the desire to show the new system to the stakeholders.

1.35. LO40 - Quality characteristics and non-functional testing
(K3 – 2 points)

The QualityLand amusement park introduces a new mobile app that is specifically focused on children from 5 to 8 years that can use this app on the mobile device of their parents. The purpose of the app is to prepare them for the visit to the park. They will see what kind of attractions are in the park and get to know the characters they will see in the park.
Your role in the team is business analyst and you discuss with the product owner what is important for this app.
The product owner explains that functionality of course is the starting point. Besides that, the product owner is keen on the speed with which video-content will be shown (because as you know children have a short span of attention, so if it takes too long they will loose interest). Also the app must take into account that children are not good at understanding text so they must be able to operate the app using icons and other graphical means. The product owner thinks this app will contribute much to the pleasure that children will have before and during the visit of the park, but wants to have this tested. And the last point of concern is that all children must be able to use the app, also children that have the old mobile device of their parents, in which case it may not be the latest operating system.
Which are the relevant quality characteristics that you will take into account when creating and testing this mobile app together with your team?

A. The important quality characteristics are:
   - Performance - capacity (product quality)
   - Reliability - fault tolerance (product quality)
   - Context coverage - flexibility (quality in use)
   - Maintainability - reusability (product quality)

B. The important quality characteristics are:
   - Performance - time behavior (product quality)
   - Usability - operability (product quality)
   - Satisfaction - pleasure (quality in use)
   - Portability - adaptability (product quality)

C. The important quality characteristics are:
   - Functionality suitability (product quality)
   - Security - integrity (product quality)
   - Effectiveness (quality in use)
   - Personality - charisma (product quality)

D. The important quality characteristics are:
   - Maintainability - testability (product quality)
   - Satisfaction - comfort (quality in use)
   - Freedom from risk - health and safety risk (quality in use)
   - Maintainability - modifiability (product quality)

1.36. LO41 - Fixing phase (K2 – 1 point)

Which statement is correct?

A. A fixing phase should be implemented at the end of the development cycle to fix all faults that have previously been undetected in the IT delivery activities.
B. Introducing a fixing phase in the IT delivery process makes more sense in traditional IT delivery models than in modern high-performance IT delivery models.
C. Not all faults need to be fixed. People want to continuously have insight in the quality level and the remaining risks, and when necessary improve quality throughout the lifecycle. If this means some faults remain, that is fine as long as the stakeholders know it and have the necessary workarounds.
D. Testing at the end of an IT delivery lifecycle is an efficient way to implement quality engineering.

1.37. LO42 - Stakeholder management (K3 – 2 points)

As a test lead, you are a member of the system team and you want to start an improvement process, where the focus will mainly be on 'Built-in Quality', to increase the quality of delivery by the teams and thus the necessity and impact of chain and acceptance testing will decrease. You are convinced that this will shorten the lead time of delivery as well as a considerable reduction in costs (less testing, fewer defects, less rework). You have well substantiated your proposal and you have even set up a show case for a team that has already made significant steps in the field of built-in quality and which also shows the shortening of the lead time and the cost reduction.

Suppose you do not get in touch with one of your most important stakeholders. You will not receive any responses to your e-mails and the appointments you make with him via his / her agenda are always canceled. What is the best way to ensure that your stakeholder gets the information you think he should get?

A. You will continue to send emails with that information on a weekly basis. If he / she does not read it, at least you have done your best and you are not to blame.
B. You approach another stakeholder whom you know is in contact with the original stakeholder, and ask him / her to inform that stakeholder or ask how best to get in touch.
C. You stop trying to make contact. You can show that you've done everything you can and if he / she doesn't respond, it won't be important.
D. You walk into the conference room where he / she is having a meeting, to ask how best to get in touch.

1.38. LO43 – Governance (K2 – 1 point)

In the coffee corner of the QualityLand office building the CEO asks you what IT governance is about and who are responsible.
What do you explain?

A. IT governance is about defining the pursued business value, translating it into objectives and defining the right indicators to establish the confidence in the quality of the IT solution. People involved are the Business Analyst and the Product Owner.
B. IT governance is about aligning business value and IT objectives with the quality levels on a tactical level. Also it is about making the team doing things right.
The product owner is responsible for good IT governance.
C. Governance contributes to quality at speed by striving for the absolute highest possible quality and by having the right education for the people in the support teams.
Governance is done by the end-to-end quality orchestrator.
D. Governance is about aligning business goals and IT objectives on a strategic level. Also it is about making doing the right thing also the easy thing. When QualityLand was still small IT governance was the responsibility of the scrum master but now we have grown it is the responsibility of the scrum-of-scrums and the end-to-end quality orchestrator.

1.39. LO44 - Creating a test strategy and test plan (K3 – 2 points)

At QualityLand you are involved in the creation of a new feature in the cash register application for the souvenir shop. This feature is an extra scanner that allows the frequent visitors to scan their member card (using a barcode on the card) to get extra discounts. The Product Owner says that the speed of scanning is very important so the customers don't have to wait and also this scanning must not interfere with the activities of the employee who is entering the souvenirs that are purchased.
You and your team create a test strategy.

Which of the following parts of this test strategy are correct for this new feature?

A. Feature: Scan member card
Quality characteristic: Usability
Risk class: A
Static quality measures: ●● Usability review using checklist
Dynamic quality measures: ●●● Usability testing in a usability lab
Other quality measures: ● feature toggle for A/B testing
Quality characteristic: Reliability
Risk class: C
Static quality measures: ● Code review
Dynamic quality measures: ●● recoverability testing
Other quality measures: - (none)

B. Feature: Scan member card
Quality characteristic: Performance
Risk class: B
Static quality measures: ●● Review of infrastructure design
Dynamic quality measures: ●● Performance testing using load model
Other quality measures: ● applying design patterns
Quality characteristic: Portability
Risk class: B
Static quality measures: ● 4-amigos session
Dynamic quality measures: ●● Model Based Testing
Other quality measures: ●●● Refactoring and patching

C. Feature: Scan member card
Quality characteristic: Performance
Risk class: A
Static quality measures: ● review of code architecture and system architecture
Dynamic quality measures: ●●● Performance testing using load model
Other quality measures: ● applying coding standards
Quality characteristic: Compatibility
Risk class: A
Static quality measures: ●● review of interfacing and connectivity
Dynamic quality measures: ●●● API testing
Other quality measures: ●● Pair programming

(continued on next page)

D. Feature: Scan member card
Quality characteristic: Security
Risk class: A
Static quality measures: ●● Security scan using SonarQube
Dynamic quality measures: ●● Penetration testing
Other quality measures: ● interview with OWASP consultant
Quality characteristic: Maintainability
Risk class: C
Static quality measures: ● code review as part of pull request
Dynamic quality measures: - (no specific quality measure)
Other quality measures: ●●● Manual code reviews and automated static analysis

1.40. LO45 - Psychological safety (K3 – 2 points)

You are scrum master at the Agile team of QualityLand and in the last retrospective a new team member joined and remarked that it would be good to have explicit measures to support psychological safety so that new team members know how to behave and what to expect of each other.
Your task is to describe how this psychological safety will be organized. You have identified the following possible measures/rules/activities. Which of these do indeed support psychological safety?

[P] Metrics of team performance

[Q] Metrics of individual performance

[R] Focus on solving anomalies and discuss how to avoid such anomaly in the future, don't focus on who caused the anomaly

[S] Put the team member who caused the highest number of anomalies in this sprint on the "fail wall"

[T] Conduct lessons learned sessions as part of retrospective but also together with people from outside the team

[U] Creating a test strategy that aligns with the risk class

A. The measures that support psychological safety are:
[Q], [S] and [U]

B. The measures that support psychological safety are:
[P], [R] and [T]

C. The measures that support psychological safety are:
[P], [Q], [R] and [T]

D. The measures that support psychological safety are:
[Q], [R], [T] and [U]

2. Answers and feedback

2.1. LO01 - The VOICE model of business delivery and IT delivery
(K3 – 2 points)

QualityLand wants to develop an app that monitors queues for the attractions. The first version of the app will be released on short term (within 2 months) and tried out via a field trial within a limited group of preferred guests.
Also, QualityLand has plans to develop an app that monitors queues at the parking area. It aims at reducing the duration before a customer enters the park. This app requires additional infrastructural adjustments in the parking area, like loops in the road surface and intelligent cameras.

For both apps, the pursued business value is to optimize the time visitors can enjoy their experiences in QualityLand.

Select the IT objectives that apply specifically to both apps.

[V] Deploy easy-to-use solutions and tools for visitors.
[W] Regression tests must be automated as much as possible.
[X] Provide self-service tools for customers and employees.
[Y] Transform the QualityLand IT teams to a high-performance IT delivery organization.

A. V, W, X and Y
B. V and X
C. W and Y
D. V, X and Y

A. Incorrect
   See explanation at the correct answer.
B. Correct
   Option V is correct; both apps aim to be easy-to-use solutions.
   Option W is not correct; this goal relates to the IT delivery process and not to the apps.
   Option X is correct; both apps aim to be self-service solutions.
   Option Y is not correct; this goal relates to the IT delivery process and not to the apps.
C. Incorrect
   See explanation at the correct answer.
D. Incorrect
   See explanation at the correct answer.

2.2. LO02 – Indicators (K3 – 2 points)

In QualityLand the team members want to know whether the quality of the changes in the app that is used by visitors to order food in the MagicMouseSnackShop is according to the pursued value.
The team will use indicators for measuring the quality.
Match the following team members and roles with the groups of indicators that are their primary interest (select only one group per stakeholder).

P: BugsBunny - Scrum Master
Q: TweetyBird - Product Owner
R: RoadRunner - Performance tester

V: Business value related indicators
W: IT delivery related indicators
X: Team related indicators
Y: Problem related indicators
Z: Non-functional quality indicators

A. P - V
   Q - Z
   R - X
B. P - X
   Q - Y
   R - V
C. P - W
   Q - V
   R - Z
D. P - Y
   Q - X
   R – Z

A. Incorrect
   See the explanation of the correct answer.
B. Incorrect
   See the explanation of the correct answer.
C. Correct
   The scrum master is primarily interested in IT delivery related indicators and Team related indicators.
   The product owner is primarily interested in business value.
   The performance tester will be primarily interested in non-functional quality.
   Book sections 4.1 and 17.1
D. Incorrect
   See the explanation of the correct answer.

2.3. LO03 - Continuous quality engineering and built-in quality
(K2 – 1 point)

The Scaled Agile Framework (or SAFe®) focuses on the quality of products with five dimensions of built-in quality. The dimensions are: Flow, Architecture & Design quality, Code quality, System quality and Release quality.

In what way does the dimension "Flow" in SAFe® focus on the quality of products?

A. Flow is achieved with a test-first approach (with TDD and BDD) and a continuous delivery pipeline. In the test-first approach they distinguish between guiding the team and critiquing the product just like in the agile testing quadrants.
B. Flow is achieved by several practices such as automated unit testing and paired working. But also collective ownership across teams and coding standards.
C. Flow is achieved by determining future needs and designing for quality. This also contributes to good testability.
D. To achieve flow there must be a scalable definition of done that aligns the goals of the teams involved and the goals of the organization as a whole.

A. Correct
(Syllabus section 7.1.4)
B. Incorrect
This is part of the description of the dimension Code quality (syllabus section 7.1.4)
C. Incorrect
This is part of the description of the dimension Architecture and design quality (syllabus section 7.1.4)
D. Incorrect
This is the description of the dimension Release quality (syllabus section 7.1.4)

2.4. LO04 - Continuous quality engineering, Cross-functional teams
(K3 – 2 points)

You are the scrum master for a new team at QualityLand. The team consists of the following five members:
- Antoine: Very experienced IT person with over 25 years of experience in all sorts of IT roles. Is most experienced in business analysis.
- Bettine: Person with 5 years experience, mainly in Java development. Also has experience in programming scripts for the automated tests.
- Charlotte: Person with over 10 years experience in operations but also can do development tasks and testing.
- Denis: University graduate who just started at QualityLand and mainly has theoretical IT knowledge. Is very eager to learn.
- Eloise: Has 5 years experience as sales-support employee and switched to the IT department last month. Has successfully passed the TMAP:Quality for cross-functional teams exam.

What can you, as a scrum master, do to support this team in becoming more effective and efficient?

A. You decide to do the following:
- Introduce whole-team workshops for refinements so that everybody can benefit from each others knowledge
- Introduce the use of checklists to support doing the right things in an easy way
- actively support team members Antoine, Bettine and Charlotte to work in pairs with Denis and Eloise so they can benefit from the experience and good practices of the experienced people.

B. You decide to do the following:
- Have Bettine and Denis work together in creating an automated testing framework so that all testing activities can be automated because there is no real tester in the team
- Let Antoine and Charlotte work together in detailing user stories for future sprints only
- Instruct Eloise to make test cases and execute tests for all deliverables of the team because she is the only certified quality engineer in the team

C. Being the scrum master you are especially equipped to take over any task that other team members don't feel capable of doing. So you will support at least Denis and Eloise (who are least experienced) by taking over their tasks. And you expect that Antoine and Charlotte (who are most experienced) will concentrate on making the easy programming tasks right.

D. Since this team doesn't have a skilled tester, you (as the scrum master) will have a hmeeting with the product owner (Owen) to ask for extension of the team because having an extra team member will make the work more efficient.

A. Correct
See book chapters 2, 3 and section 16.1 and syllabus 7.3.

B. Incorrect
- Automating ALL testing activities is not a good starting point (automate everything as long as it is useful)
- Working on user stories for future sprints only isn't an efficient and effective approach
- In a cross-functional team all team members should be able to pick up multiple tasks so only one person creating and executing tests is not an example of cross-functional behavior.

C. Incorrect
The scrum master basically does not perform operational tasks (and if a team member would have a role as a scrum master besides having other roles in the team then still the scrum master role doesn't do operational tasks)
An important goal in making work effective and efficient is to make doing the right thing also the easy thing. But this doesn't mean that people that are experienced in one task should only concentrate on easy tasks that are mainly part of another role.

D. Incorrect
There is no specific reason to ask for an extra team member. Also extra people on a team generally don't make the work more efficient.

2.5. LO05 - Quality engineering at scale (with multiple teams)
(K3 – 2 points)

You are the end-to-end quality orchestrator of QualityLand. One of the teams has changed the functionality of an IT system that is part of a complex business process and the team cannot perform an end-to-end test on their own. They trust you to organize this.
How will you involve shared services and/or one or more system teams and/or virtual teams to achieve this?

A. You will always organize a Virtual Team containing representing people from each of the involved teams to create and execute the end-to-end test.
B. As the end-to-end quality orchestrator you are part of the shared services of the SAFe® organization. As such you organize the virtual teams that perform end-to-end tests.
C. You will organize a virtual team if the task can be best performed by people from the involved teams. For support by very specialized people you will include shared services (that will need to be scheduled timely) and in case the end-to-end test can better be done by a dedicated team you organize a system team for that.
D. You organize a training course, with follow up in the form of personal coaching, to assist the individual teams in organizing and executing the end-to-end test so that the organization as a whole will perform most efficiently.

A. Incorrect
A virtual team is one of the options but definitely not the only option.
See syllabus section 8.2.3
B. Incorrect
The end-to-end quality orchestrator is part of a support team that can be implemented in SAFe® as a system team. (so not as a shared service)
End-to-end tests may be done by virtual teams but will also often be done by system teams.
See syllabus chapter 8
C. Correct
See book section 14.3 and syllabus chapter 8.
D. Incorrect
In an organization with a large(r) scale it is common that an individual team is not able to efficiently perform an end-to-end test. Therefore the end-to-end quality orchestrator must organize it with the help of shared services and/or system teams and/or virtual teams.
See syllabus chapter 8.

2.6. LO08 - High Performance IT delivery models (K2 – 1 point)

The CALMS framework is often used to evaluate whether an organization is ready for DevOps. How does the A in CALMS contribute to this evaluation?

A. The A means "analysis" which is an essential part of the evaluation of the maturity of the organization.
B. The A refers to the Agile manifesto to evaluate if the DevOps team members have an Agile mindset.
C. The A is about acceptance criteria that must be included on the story card of user stories to be able to make proper test cases for acceptance testing.
D. The A means "automation", the evaluation is for example about whether the continuous integration, the cloud provisioning and the regression tests are automated.

A. Incorrect
The A is for Automation. (book section 9.2.3)
B. Incorrect
The A is for Automation. (book section 9.2.3)
C. Incorrect
The A is for Automation. (book section 9.2.3)
D. Correct
The A is for Automation, the examples are taken from the book. (book section 9.2.3)

2.7. LO09 - Hybrid IT delivery models (K2 – 1 point)

What are the extra configurations in "Full SAFe®", additional to Essential SAFe®?

A. Team SAFe® and Program SAFe®
B. Lean Portfolio Management and Enterprise Solution Delivery
C. Large Solution SAFe® and Portfolio SAFe®
D. Continuous Learning Culture and Lean-Agile Leadership

A. Incorrect
Team and Program SAFe® together are Essential SAFe®
B. Incorrect
These are two of the core competencies of SAFe®.
C. Correct
See book 10.2 and www.scaledagileframework.com
D. Incorrect
These are core competencies.

2.8. LO10 - (Introducing) Quality engineering at scale (K2 – 1 point)

QualityLand is rapidly growing and the number of IT delivery teams is also increasing. This forces the QualityLand IT manager to implement quality engineering in agile at scale.
The IT manager asks you to advise her about what challenges to take into account.
What is your answer?

A. You explain that working with multiple teams increases complexity. A scaling approach will help to deal with this complexity and to contribute to common IT goals. Challenges in achieving this are:
   - Lack of knowledge sharing between teams
   - Applying a shared way of working
   - Ensuring end-to-end quality
B. You explain that implementing SAFe® will take a long time because all people need to first become familiar with Agile Release Trains and Large Solution Trains. Besides many people will need to adopt new roles because with SAFe® you need to introduce release train engineers and other technical specialists like these.
C. You explain that quality engineering in a scaled agile situation still uses the 20 QA&Testing topics so basically there are no significant challenges when implementing quality engineering at scale.
D. You explain to the IT manager that the best scaling option for QualityLand is to implement the Spotify model because this model is not a hybrid model but a purely high-performance IT delivery model and therefore there will not be any special challenges when implementing agile at scale.

A. Correct
   See syllabus section 8.1.5
B. Incorrect
   There is no mention in the syllabus of how long or complex implementing SAFe® would be.
   Also a release train engineer is a management role, not a technical specialist.
C. Incorrect
   Although the 20 QA&Testing topics indeed are relevant in any situation, this does not mean that they can be implemented in an identical way in all situations. When implementing agile at scale the topics will need to be implemented to cope with the challenges as mentioned in the correct answer.
D. Incorrect
   The Spotify model indeed isn't a hybrid model. But in every implementation of agile at scale you will meet the three main QA challenges as mentioned in the syllabus, regardless of the IT delivery model.

2.9. LO12 - Transition from one to another IT delivery model
(K2 – 1 point)

The QualityLand IT manager wants to change the IT delivery model from a project-centric V-model approach to a product-focused DevOps culture. She has heard you talk about QA&Testing topics and ask you how, in this QualityLand organization, these topics can be used for the transition.
What is your explanation?

A. The Quality Orchestrator describes the "as-is" and "to-be" situations for the organization. Then the quality orchestrator instructs the teams how to implement a topic. This way the transition will take as little time of the team members as possible and they can keep their focus on IT delivery instead of the improvement of the IT delivery process.
B. The Quality Orchestrator distributes the QA&Testing topics over multiple teams so that every team can take responsibility for improvement of one, or a few, topics for the whole organization.
C. The transition is divided in multiple (parallel) transitions based on each of the topics. The team(s) involved define for each topic how they will approach the activities of that topic.
This way the transition is easier to manage and progress can be better followed.
D. TMAP has two groups of QA&Testing topics: Organizing and Performing topics.
For a transition from a project-centric to a product-focused situation, the Organizing topics describe all relevant activities to make the transition successful.

A. Incorrect
See syllabus section 7.5.2:
"For each topic the team(s) involved must define how they will approach the activities of that topic."
Also in high-performance IT delivery there must be focus on improvement of Product, Process and People, not just focus on the product.
B. Incorrect
You cannot separate a few topics for a specific team and let other teams care for other topics. All topics are relevant to everybody. Improvement can go step by step in parallel for multiple topics.
C. Correct
See syllabus sections 7.5.1. and 7.5.2.
D. Incorrect
See the book, section 11.1, that says: "For effective and efficient QA&Testing, ALL of these topics need to be addressed in one way or another. So the transition will take both Organizing and Performing topics into account.

2.10. LO14 - QA & Testing topics plotted on the IT delivery models
(K2 – 1 point)

The QualityLand organization is in transition from a sequential IT delivery model to a high-performance (DevOps) IT delivery model. The Scrum master wants to include the right quality engineering activities in the Way of Working but needs some help in how to determine the activities. She asks for your help. What is your advice?

A. The QA&Testing topics are a standard set of quality engineering activities that can just be implemented. Since all topics are relevant for all IT delivery models there will not be a need for a transition because the implementation for the current sequential model can seamlessly be used for DevOps too.
B. You advice the Scrum master to use the QA&Testing topics because the activities represented by this common set of topics are always relevant for quality engineering, and the relevant activities can be included in the way of working.
C. For the current sequential IT delivery model there is a Master Testplan which includes the description of how the QA&Testing topics are implemented. This can be copied in the way of working for DevOps which makes the transition very swift without any adjustments.
D. The common testing activities (test case design, test execution and reporting) will be included in the Definition of Done and thus the quality engineering efforts are established for the new situation.

A. Incorrect
See syllabus section 7.5 about using the topics for the transition from one IT delivery model to another.
B. Correct
See book section 11.1
C. Incorrect
The implementation of the topics will differ from the Sequential model to the DevOps model. See section 11.1.3 of the book and section 7.5 of the syllabus.
D. Incorrect
Quality engineering is much more than just test design and execution.

2.11. LO15 - Topics plotted to SAFe® (K2 – 1 point)

In the QualityLand IT organization three teams collaborate in implementing the IT systems. To have a clear value stream they will implement the "Essential SAFe®" (just the program and team layers) with an Agile Release Train and high-performance teams that use the Scrum framework.
Which of the QA&Testing topics will be relevant if only these layers are implemented and no shared services and system teams are used?

A. For Essential SAFe® only the Performing topics are relevant because the Organizing topics only relate to the Large Solution and the Portfolio layers of SAFe®.
B. Most topics are always relevant. When the Large solution layer and/or the Portfolio layer are not implemented there is no need to consider overall QA&Testing topics such as Quality & Test policy, Continuous Improvement and Quality Risk Analysis & Test Strategy.
C. Since every SAFe® implementation is different the QualityLand people must carefully consider what they need and select the topics that are relevant in their situation. Based on the standard plotting of topics as shown in the books they can decide how to adjust it and which topics can be ignored in their specific situation.
D. All of the Organizing and all of the Performing QA&Testing topics relate to the Program level and Team level that together form "Essential SAFe®". So all topics are relevant in one way or another.

A. Incorrect
See section 14.3 of the book
B. Incorrect
All QA&Testing topics must always be considered in any situation. Book chapter 11 and 14.
C. Incorrect
All QA&Testing topics must always be considered in any situation, so none of the topics can be ignored. Book chapter 11 and 14.
D. Correct
See book section 14.3

2.12. LO16 - Quality & test policy (K3 – 2 points)

The QualityLand mission and vision are focused on high satisfaction of the visitors. This is reflected in the Quality & Test Policy of the IT organization within QualityLand.
You are tasked to translate the Quality & Test Policy to tactical and operational levels. To start with, the CIO has asked you how you will make this translation.
What is your explanation?

A. At the tactical level, the quality & test policy will be translated by creating regulations that specify the preconditions and standards that support realizing the strategic policy. This is known as a Way of Working.
   At the operational level, a uniform test approach is implemented which could be part of the Definition of Done.
B. The Quality & test policy consists of 9 different subjects.
   To implement them to tactical and operational level every subject will be translated. To make this workable (eat an elephant bite by bite) the subjects will be implemented one after the other. On average each subject takes one month so the total implementation will take about a year.
C. The Quality & Test policy is translated into the topics estimating and planning (which are organizing topics) and to the quality risk analysis & test strategy (which is a performing topic related to operational activities).
D. An important subject that is relevant to translate from the Quality & Test policy to the tactical and operational levels is the subject of indicators related to confidence in value. By defining the right indicators the teams will measure whether they are complying with the IT objectives to support the pursued value.

A. Correct
   See book section 15.3
B. Incorrect
   The subjects should all be translated to tactical and operational levels, not subject after subject.
   See book chapter 15.
C. Incorrect
   The translation of the policy to tactical and operational levels is not in just translating it to 2 organizing topics and 1 performing topic. It is about creating a Way of Working and having goals in the Definition of Done.
D. Incorrect
   Indicators are indeed important. But it is not enough to just implement the indicators, for translating the Quality & Test policy to tactical and operational levels. Also see the correct answer and explanation.

2.13. LO17 - Total cost of quality (K2 – 1 point)

How does the concept of the total cost of quality contribute to support a shift-left move of your IT delivery organization?

A. The cross-functional teams should focus on automating all of the test execution because that will lower the prevention and detection costs and thus reduce the total cost of quality.
B. If the quality risk analysis shows that the risk level is high that means that more focus on quality engineering is important so that the cost of failure will increase and thus the total cost of quality will increase.
C. Based on the quality & test policy (which typically is not changed for a longer period of time) the desired total cost of quality can be calculated and then this cost level will be the rule for the teams involved.
D. Since shift-left refers to building quality in from the start, this is all about achieving balance between the cost of failure (for example fixing problems but also paying for the impact at customers) and the cost of prevention and detection of faults and failures. This balance will differ per situation, for example based on the quality risk levels.

A. Incorrect
Focus only on reducing prevention and detection costs is not sufficient to lower the total cost of quality. Also automating all tests does not necessarily support bringing the quality focus from the very start of the IT delivery process.
B. Incorrect
The idea of shift left is to move the quality focus to early in the process to achieve built-in quality. With high risks more effort can be spent on quality engineering which will increase the prevention & detection cost, it should decrease the cost of failure and thus balance both cost types.
C. Incorrect
The quality & test policy indeed is stable. But the total cost of quality will differ per team, per application and especially with the quality risks. If the risks are low then the cost of failure will probably be low so not so much quality assurance is needed. With high risks you will do more prevention & detection which costs more but will be in balance with the higher costs of failure when the risk would materialize.
D. Correct
See book section 15.2.

2.14. LO18 - Responsibilities and roles (K2 – 1 point)

In a high-performance cross-functional team, all roles have some common responsibilities and also have QA & Testing responsibilities.
Which QA & Testing responsibilities can be taken by which role?

A. Scrum master - Evaluator of test results
   Product owner - Evaluator of test results
   Tester - Evaluator of test results
B. Business Analyst - Reviewer of acceptance criteria and test cases
   Developer - Author of unit test cases
   User - Participator in acceptance tests
C. Operations person - Participator in writing regression test cases
   System architect - Propagator of QA & testing awareness and practices
   User - author of non-functional tests
D. Developer - automator of unit/system tests
   Tester - author and maintainer of automated tests
   Business Analyst - monitoring production

A. Incorrect
   Many roles can be evaluator of test results, but not the Scrum master.
B. Correct
   These are all correct examples.
   See table 16.1 in the book
C. Incorrect
   A Scrum master is a propagator of (…) not the systems architect.
   A user can participate in acceptance tests but not create non-functional tests.
   The operations person can participate in writing regression tests.
D. Incorrect
   Not the business analyst but the operations person does monitoring of production.
   The other two are correct.

2.15. LO19 - Monitoring & control (K3 – 2 points)

QualityLand is going to develop a new control system for the Superhero Rollercoaster that will open at the start of the new season (which is in 3 months from now).
Multiple roles are involved in this development and delivery effort, important roles are:
P - Product Owner
Q - Quality Engineer & tester
R - User
S - Scrum Master

Which information, suitable for monitoring, is relevant for which stakeholders?
1 - Burndown chart of user stories done
2 - Number of records successfully processed in batch
3 - Customer satisfaction
4 - Changes in quality against time
5 - Velocity of the team

A. P: 1
   Q: 2 & 3
   R: 4
   S: 5
B. P: 5
   Q: 1
   R: 2
   S: 3 & 4
C. P: 1 & 3
   Q: 2
   R: 4
   S: 5
D. P: 1 & 3
   Q: 5
   R: 2
   S: 4

A. Incorrect
   Most indicators are matched correctly but the tester will not be the main role interested in customer satisfaction.
   See book chapter 17 and table 16.1
B. Incorrect
   None of these indicators is matched correctly.
C. Correct
   Although multiple team members may be interested in several indicators this shows the main focus of the roles.
D. Incorrect
   The tester will not be mainly interested in the velocity, the user will not be mainly interested in test result details and the scrum master will not be mainly interested in details of the changes in quality.

2.16. LO20 - Anomaly management (K2 – 1 point)

When teams work in an Agile at scale situation, who is responsible for monitoring the anomaly management process?

A. The team that initially found the anomaly is always in the lead for the rest of the anomaly management for this anomaly.
B. If the Agile at scale is implemented using the Spotify model then the Release Train Engineer is the only possible choice for anomaly management.
C. Monitoring is designated to a scrum master or product owner or the scrum-of-scrums. Also organizations may organize arbitrage meetings.
D. The person in the tester role of the team that fixes the anomaly is responsible for the whole management of registration, fixing and retesting of that anomaly.

A. Incorrect
When multiple teams are involved the monitoring can be designated to a scrum master, product owner or scrum-of-scrums. Book section 18.1
B. Incorrect
A Release Train Engineer is a SAFe® role, not a Spotify role.
Also the book states it may be a scrum master, product owner, scrum-of-scrums or an arbitrage meeting. Book chapter 18.
C. Correct
Book section 18.1
D. Incorrect
It may happen that an anomaly is fixed by another team than the team that detected the anomaly, so the team that fixes cannot be in the lead. The book says (chapter 18) a scrum master, product owner or scrum-of-scrums is designated with this task.

2.17. LO21 - Reporting and alerting (K3 – 2 points)

In the QualityLand IT delivery process a great number of stakeholders are involved, for example the IT manager, the product owner, the scrum master, the key user, and the people in the IT delivery team. Of course all stakeholders get the reports that are relevant for them. But when there is a specific situation that needs immediate action, something extra is needed.
How would you suggest to do this?

(continued on next page)

A. Since the team members (including the product owner and scrum master) will be present at the daily standup this is the perfect moment to alert all people involved about actions that need to be taken. Only the IT manager will need to be alerted separately, this can best be done in the standard email that is used for sending the report.
B. If the IT manager needs to take action use a phone call to alert him because he will probably not read the report in time.
   If the Product Owner needs to take action send an extra email separate from the email with the report, since the product owner probably will look at reports of the team quickly, and if not the contact is so close that it will be noticed.
   For the key user and the scrum master use an automated text message to their phone to alert them.
   The team members can be alerted in the daily standup meeting or in another personal way.
C. Having a live monitor is an ideal tool for alerting people instantly. Since this type of dashboard is always up-to-date the people involved will always have the correct information available. Using a selection mechanism every role can select the relevant information to be shown.
   This way a real-time dashboard is the perfect tool to alert all different groups of stakeholders.
D. Install a wifi-enabled lamp in the room of the IT manager and the Key user. As long as no action is needed the lamp will shine green light. As soon as immediate action is needed the lamp will start flashing red light.
   The product owner can be alerted with a text message on their phone. The Scrum master and the team will alert each other in their regular contacts which are frequent anyway.

A. Incorrect
   For immediate action it is not a good idea to wait for the next daily standup, worst case that could be almost a day later.
   Also the IT manager will not be alerted if the standard email with the regular report comes in.
   And the key user is totally forgotten in this answer.
B. Correct
   These alerts are nicely aligned with the various audiences.
C. Incorrect
   Not all people in all roles are likely to constantly (or enough frequently) view the dashboard. Therefore the book mentions (in section 19.6) that to quickly get attention the alerts should be sent by email or text messages.
D. Incorrect
   Although an automatically triggered lamp is a nice way to alert people, this is more suited for people in the team. An average IT manager and Key user will not be enthusiastic about it and also they may often not be in the room where the lamp is so they would miss the alert.

2.18. LO22 – Estimating (K3 – 2 points)

The high-performance IT delivery team of QualityLand is working on three user stories (US01, US02 and US03) and now need to estimate the effort, taking into account the efforts needed for testing based on risk class.
Therefore the team, represented by 4 people in different roles: Brian - Business Analyst, Dyna -Developer, Oprah - Operations and Toby - Tester, will do a poker session in which they will decide on risk class and number of story points for these user stories.
They use an existing user story that is known to all team members for reference, this user story is risk class B (medium) and has 2 story points.

The team agrees that US01 and US02 are about 3 times as large as the reference story. US03 is 8 times as large. The impression about the risk levels differ. Brian and Dyna for US01 and US03 show poker card 1 (low) for the risk, and poker card 3 (high) for US02.
Oprah shows poker card 2 (medium risk) for all user stories.
Toby shows poker card 3 for US01 and US02 and card 1 for US03.
For the planning poker estimation the team uses poker cards with a Fibonacci scale (0, 1/2, 1, 2, 3, 5, 8, 13, 20, 40)
Which user story will at the end of the poker session (most likely) get the highest number of story points and why?

A. Since Oprah seems not have a change-making opinion and there seems to be consensus that US02 is the highest risk class, US02 will get a high number of story points based on the risk without discussion. And US03 will get a low risk class so the story points from the planning poker will not be increased based on risk. The discussion about the risk class will be between Brian, Dyna and Toby about US01. Supposing that Toby will convince Brian and Dyna that US03 is low risk then this user story will also not get a higher weighting of story points for risk.
   So therefore US02 will get the highest number of story points.
B. User story US02 will get 3 x 2 story points increased for high risk (3 people vote for high risk class) so this will likely get 8 story points.
   User story US03 will get 8 x 2 story points which is not changed because of medium risk (2 people vote for high, 1 for medium and 1 for low, assuming the discussion will get consensus on medium), the closest to 16 is 13 on the Fibonacci scale.
   User story US01 will get 3 x 2 story points which may be increased to 8 or lowered to 5 depending on the outcome of the discussion.
   So US03 will have the highest number of story points with a medium or low risk class.
C. Since User story US02 has the highest risk class (3 people vote 3, one votes 2, in total that is 3x3+2=11, multiplied by 2 story points is 22, most close Fibonacci card is 20.
   US01 has 2x1+2+3=7 votes, multiplied by 2 story points is 14, most close Fibonacci card is 13.
   US03 has 2x1+2+1=5 votes, which is a Fibonacci card.
   So US02 gets the highest number of story points.
D. The team members have quite some differences in their opinion about the risk class. Therefore the Scrum master must postpone the poker session so that the people involved can first take time to make up their minds and try to convince each other separately about their views. When they are all aligned they can resume the poker session.

A. Incorrect
Since US03 is approximately 16 story points (8 x 2), even when this is low risk it would at least get 13 story points. The other user stories are 3 x 2 is approximately 6 story points so even with high risk they are unlikely to get 13 story points.
Therefore US03 is likely to get the highest number of story points.

B. Correct
This is the most likely result of the discussions in the team. It is not likely that user stories with 6 story points will be increased to 13 story points or higher.
Refer to book chapter 20 and 26 for explanation of risk poker and planning poker.

C. Incorrect
This calculation is wrong for 2 reasons:
1) The goal of planning poker and risk poker is to get consensus, not to just simply add the votes
2) In this calculation the fact that US01 and US02 are 3 times the reference story and US03 is 8 times the reference story is totally ignored.

D. Incorrect
The main goal of planning poker and risk poker is to get consensus in the poker session. So it is not a good approach to suspend the session and try to get consensus outside of the session.

2.19. LO23 – Planning (K3 – 2 points)

The QualityLand IT delivery team has done the estimation for the user stories for the next sprint. While creating the sprint backlog and looking planning and scheduling they are not totally confident that they will be able to indeed finish all user stories in the next sprint. So they need to define the order in which the stories are picked up.

The following information is known for the user stories:
All user stories have the same size of 5 story points and thus the same duration of development.
For each user story they determined Business Value (BV), Time Criticality (TC) and Risk Reduction (RR):
US1 has BR=8, TC=1, RR=2
US2 has BR=5, TC=5, RR=5
US3 has BR=2, TC=2, RR=2
US4 has BR=1, TC=1, RR=2
US5 has BR=2, TC=3, RR=2

What approach will they use for this prioritization of user stories and which user story will be first and which will be last on the backlog?

(continued on next page)

A. The team uses business value as the core driver (based on the VOICE model), and the number of story points for each is equal (5) so therefore the priority will be with US1 and next US2. US4 will be last.
B. With this information it is impossible to determine the priority. What is missing is a differentiation in sizing. If the number of story points (based on planning poker and risk poker) is equal for all stories, then an additional estimation method (such as T-shirt sizing or bucket sizing) should be used to determine the priority.
C. The team will use Weighted Shortest Job First (WSJF) for the prioritization. Using this approach they will select US2 as the first on the backlog and US4 as last. That is because US2 has a WSJF of 11/5 and US4 has a WSJF of 4/5. So US2 is highest WSJF and thus maximum economic benefit.
D. The team will use Weighted Shortest Job First (WSJF) for the prioritization. Using this approach they will select US4 as the first on the backlog and US2 as last. That is because US2 has a WSJF of 11/5 and US4 has a WSJF of 4/5. So US4 is the shortest job which should go first.

A. Incorrect
For prioritization the business value should not be the only criterion. US2 has a high time criticality (which means the higher the criticality the more urgent the story is needed) and US2 has a higher risk reduction (when implemented business risks disappear). Therefore (using WSJF) US2 should get the highest priority. And US4 is last (based on WSJF).
B. Incorrect
The team chooses an estimation technique (in this case risk poker and planning poker to determine story points) and if all user stories by coincidence have the same size, that is not a reason to select another estimation method.
C. Correct
The job with the highest WSJF value gets highest priority. Because this means the user story has the maximum economic benefit.
D. Incorrect
The job with the highest WSJF value gets highest priority. Because this means the user story has the maximum economic benefit.

2.20. LO24 – Infrastructure (K2 – 1 point)

Your team at QualityLand was still using your own dedicated hardware for test environments. In the QualityLand IT organization there is specialized support for flexible and scalable infrastructure. What are the elements that they can help your team with, to make sure you can create every test environment you need for the various goals of testing?

A. The support organization of QualityLand can do the infrastructure verification so that the team doesn't need to bother about the infrastructure components and the integration between tools.
B. The elements that are supported for your test infrastructure are Containerization and Cloud technology which together make sure you can easily run software on different environments and scale to the levels you need.
C. Infrastructure as code (IaC) is the process of managing and provisioning computer environments through machine-readable definition files.
D. A test environment is a composition of parts, such as hardware and software, connections, environment data, tools and operational processes in which a test is carried out.

A. Incorrect
The team is responsible for parts of the infrastructure, it is also responsible for its quality. Book section 22.2
B. Correct
Containerization and Cloud technology make it easy to set uup and configure an environment on the fly. Book section 22.3
C. Incorrect
Although this is the correct definition of IaC (book section 22.1) it is not an answer to the question.
D. Incorrect
Although this is the correct definition of a test environment (book introduction chapter 22) this is not an answer to the question.

2.21. LO25 – Tooling (K2 – 1 point)

The product owner of QualityLand has heard that the support team will put effort in test orchestration regarding the tools in the CI/CD pipeline and asks you what this orchestration is about.
What is your explanation?

A. Orchestration is the process of selecting and purchasing tools that fulfil the capabilities needed in a CI/CD pipeline.
B. Orchestration is about the responsibility for organizing end-to-end quality and the person responsible is called end-to-end quality orchestrator.
C. Test orchestration focuses on eliminating dependencies between teams by supplying the teams separate test infrastructure so that all tests can be run independently and no integration is needed in the business test stage of the CI/CD pipeline.
D. Test orchestration is the alignment of a large number of test automation tasks and other quality assurance related tasks for all teams involved in a CI/CD process. Test orchestration aligns human and automated tasks so that automated test can be performed effectively and efficiently over multiple systems.

A. Incorrect
Although test orchestration is related to the tools in the pipeline, the selection and purchasing of tools is not the primary focus. The main goal is alignment between tools.
B. Incorrect.
TMAP distinguishes between end-to-end quality orchestration (which indeed is about the responsibility for end-to-end quality), and test orchestration (which is about alignment of test automation tasks) See syllabus sections 7.7.4 and 8.2.4.
C. Incorrect
In the Build pipeline (the CI-part of the pipeline) teams want to test independently. In the Release pipeline (the CD-part of the pipeline) the business test stage focuses on testing end-to-end business processes and there integration will be needed.
D. Correct
Syllabus section 7.7.4

2.22. LO26 – Metrics (K3 – 2 points)

Due to a recent crisis in the entertainment industry, one of the business drivers QualityLand has defined in its mission and vision, is to achieve the best customer experience at the lowest cost. It strongly believes that being innovative supports reducing the IT costs. The QualityLand IT department recently transitioned to a high-performance IT delivery model and wants to increase 'being in control'. For that reason, the IT manager suggests several metrics and asks you whether these metrics align well with the business driver.

Which metrics do align with the above-mentioned business goal?

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[P] Percentage of time team members work in pairs.
[Q] Percentage of test costs (related to total costs).
[R] Number of released features according to planning, per month.
[S] Savings achieved by reusing test products.
[T] Percentage of code coverage.

A. P and Q align with the goal,
   R, S and T do not align with the goal.
B. S and T align with the goal,
   P, Q and R do not align with the goal.
C. P, R and T align with the goal,
   Q and S do not align with the goal.
D. Q and S align with the goal,
   P, R, and T do not align with the goal.

A. Incorrect, Explanation:
   P: Incorrect, this is a team performance metric that is not directly related to the goal of lowest cost (syllabus section 7.6.2.1)
   Q: Correct, this is an efficiency metric that is related to the total costs (book section 24.4)
   R: Incorrect, this is an effectiveness metric that is not directly related to cost.
   S: Correct, this is directly connected to reducing costs.
   T: Incorrect, this has no direct relation to cost.
B. Incorrect, Explanation:
   P: Incorrect, this is a team performance metric that is not directly related to the goal of lowest cost (syllabus section 7.6.2.1)
   Q: Correct, this is an efficiency metric that is related to the total costs (book section 24.4)
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D. Correct, Explanation:
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   S: Correct, this is directly connected to reducing costs.
   T: Incorrect, this has no direct relation to cost.

2.23. LO27 - Continuous improvement – Quality to Activity Mapping
(K3 – 2 points)

Your team at QualityLand has determined that some improvements to the IT delivery process are necessary. The improvements are:
- Apply test design techniques
- Establish central QA & Testing support
- Automate all unit tests in the CI/CD pipeline

At which intersections of the Quality to Activity Mapping (QAM) table should these improvements be plotted?

QAM	Monitor	Plan	Code	Integrate	Deploy	Operate
QA Awareness						
QA & Testing						
Governance						
Transparency						
Automation						
Infrastructure						

A. Apply test design techniques - intersection of QA & Testing and Operate
Establish central QA & Testing support - intersection of Transparency and Plan
Automate all unit tests in the CI/CD pipeline - intersection of Infrastructure and Deploy
B. Apply test design techniques - intersection of QA & Testing and Code
Establish central QA & Testing support - intersection of Governance and Plan
Automate all unit tests in the CI/CD pipeline - intersection of Automation and Code.
C. Apply test design techniques - intersection of QA & Testing and Code
Establish central QA & Testing support - intersection of Governance and Integrate
Automate all unit tests in the CI/CD pipeline - intersection of Automation and Monitor
D. Apply test design techniques - intersection of QA Awareness and Code
Establish central QA & Testing support - intersection of QA Awareness and Plan
Automate all unit tests in the CI/CD pipeline - intersection of Automation and Code

A. Incorrect
Test design techniques do not relate to operate, it must be done in an earlier activity.
Central support relates to governance and not to transparency.
Automated unit tests does not relate to infrastructure and also not to the deploy activity.
Also see the explanation of the correct answer for more information.

B. Correct
The link between the improvements and quality key areas are described in the book, section 25.2.2.2.
Test design techniques relate to the code activity because that is where the team members create their deliverables.
Central support relates to the Plan activity because this is an improvement to the process.
Automation relates to the Code activity because automation is also about creating deliverables.

C. Incorrect
Test design techniques is correctly plotted.
Central support doesn't relate to the integrate activity.
Automating unit tests doesn't relate to monitoring because the unit tests will be executed during the Code and maybe the Integrate activities.
Also see the correct answer for more information.

D. Incorrect
Test design techniques don't relate to QA Awareness.
Central support doesn't relate to QA Awareness.
Automation of unit tests is correctly plotted.
Also see the correct answer for more information.

2.24. LO28 - Continuous improvement – Quality to People Mapping
(K3 – 2 points)

Your team at QualityLand wants to define which quality measures are relevant for which roles in the team. They use a Quality to People Mapping table (QPM) to register the following quality measures.:
- apply Behavior Driven Development (BDD)
- apply Feature Toggles
- apply Pair Programming

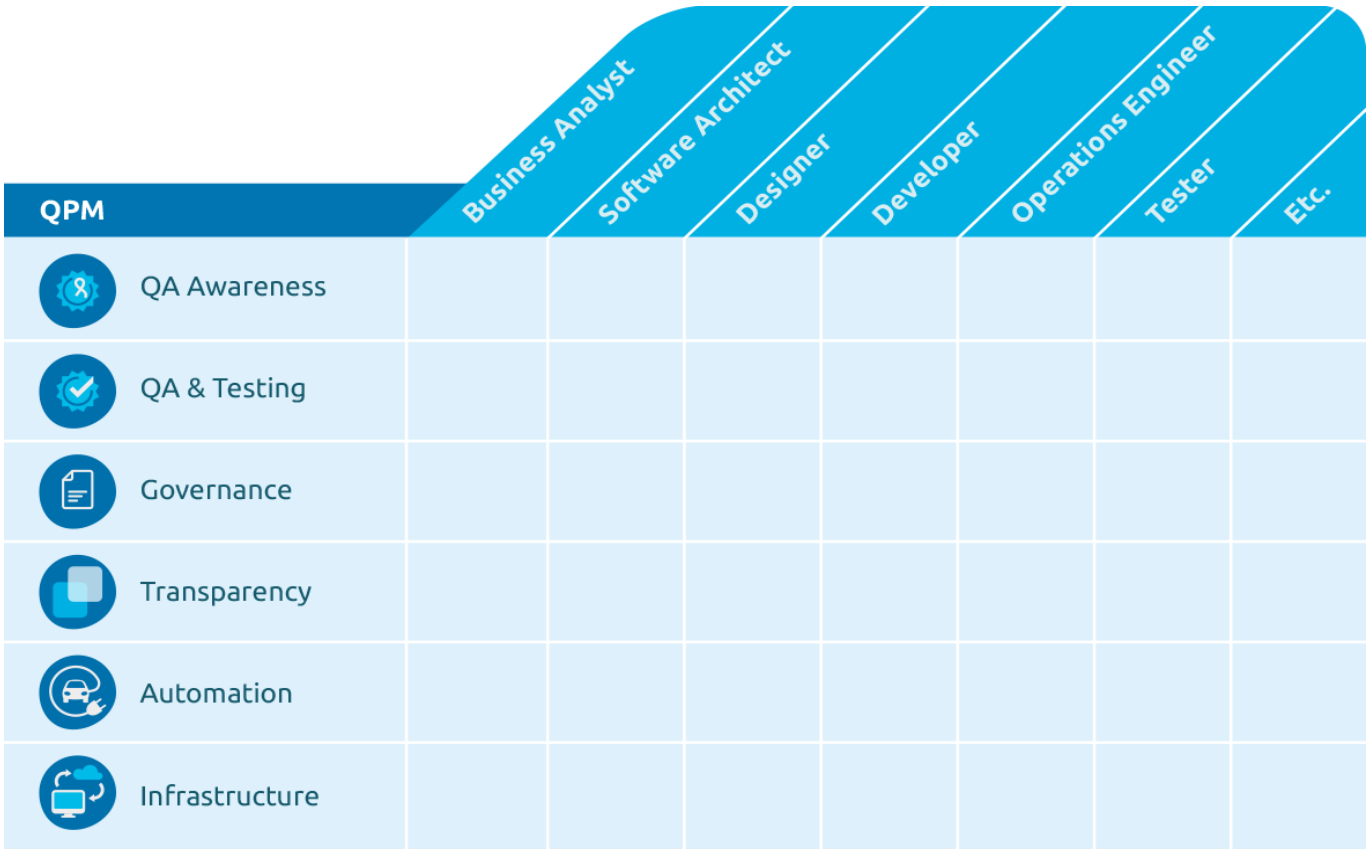
At which intersections of the Quality to People Mapping table should these quality measures be plotted?

A. BDD - intersection of QA & Testing and Business Analyst
Feature Toggles - intersection of Automation and Operations engineer
Pair Programming - intersection of Governance and Developer

B. BDD - intersection of QA & Testing and Operations Engineer
Feature Toggles - intersection of QA Awareness and Business Analyst
Pair Programming - intersection of Transparency and Designer

C. BDD - intersection of Infrastructure and Software Architect
Feature Toggles - intersection of Transparency and Operations engineer
Pair Programming - intersection of QA Awareness and Developer

D. BDD - intersection of QA & Testing and Designer
Feature Toggles - intersection of Automation and Software Architect
Pair Programming - intersection of Infrastructure and Operations Engineer



A. Correct
These quality measures are linked in a way as described in section 25.2 of the book.
Of course keep in mind that quality measures can relate to multiple key areas and roles at the same time. For example Pair Programming relates to Governance because it supports shift-left but it also relates to QA &Testing, and it relates to the Developer role but also to other roles e.g. the Tester.

B. Incorrect
The operations engineer is least involved in BDD
Feature toggles don't relate to QA Awareness and the Business Analyst isn't very likely to be involved.
Pair programming doesn't relate to Transparency (a Designer may be involved in pair programming)

C. Incorrect
BDD does not relate to Infrastructure (a Software Architect may be involved)
Feature toggles don't relate to Transparency (the operations engineer will be involved).
Pair programming doesn't relate to QA Awareness (a Developer will be involved in pair programming)

D. Incorrect
BDD may be indeed connected to QA & Testing and the Designer.
Feature toggles do relate to Automation but the Software Architect isn't very likely to be involved in applying feature toggles (but may be involved in creating them).
Pair programming doesn't relate to Infrastructure (an Operations Engineer may be involved in pair programming)

2.25. LO29 - Quality risk analysis & test strategy (K3 – 2 points)

QualityLand introduces a new mobile app for the visitors. With this app they can listen to the story of the fairytale that they are looking at during their visit. Research has shown that this app will be used most by little children (age < 6) and their grandparents (age > 60).
With your team you are doing a quality risk analysis that will be the basis to determine the right quality measures.
In the risk-poker-session you will evaluate the following user stories:
US1: The app uses GPS to detect what is the fairytale the user is standing close to. Only the closest fairytale can be listened to.
US2: The app uses icons for easy communication with the user.
US3: The app uses the standard sound-control features of the device to adjust the volume.

What risk levels will your team most likely assign to these user stories and why?
(Risk class A = highest, C = lowest risk)

A. US1 will get risk class C because if the wrong fairytale is played the children won't notice anyway.
   US2 will get risk class A because we will need to have a close look whether the help-texts that go with the icons is understandable for the target audience.
   US3 will get risk class B because we need to do a lot of portability testing since sound-control differs a lot per device and per version of the operating system.
B. US1 will get risk class B since GPS is a standard function of mobile devices but still it is important that the correct location is selected so the right fairytale is sent to the device.
   US2 will get risk class A since the usability for the target group (little children and old people) needs special attention and usability testing.
   US3 will get risk class C because this is standard functionality on any device.
C. US1 will get class A since GPS is a very complex technology and will be difficult to test in the test environment.
   US2 will get class C because the use of icons is standard technology and children are used to using icons anyway.
   US3 will get risk class B because we will need to assess if the sound will be loud enough when people are walking outside in the open air in a crowded amusement park.
D. US1 will get risk class A because the team thinks we can better use a tailor made technology for determining the position of the device based on Bluetooth signals from each fairytale.
   US2 will get risk class C because the team will not use icons but will use simple texts that the grandparents can read to the children and thus it all will be clear to the whole audience.
   US3 will get risk class A because if the sound level is too low the people won't hear anything and the app is useless.

A. Incorrect
   The considerations made by the team are not very probable. This team appears not to have the right people on the team.
B. Correct
   Based on the considerations in the team this will be the outcome of the risk analysis session using risk poker. (book chapter 26)

C. Incorrect
US1: although GPS is complex technology, the use of GPS on mobile devices is proven technology and won't involve the highest risk class.
US2: Although the target group may be familiar with icons in general, it is very important that the selected icons for this app are understandable to both little children and grandparents so some extensive usability testing with real people will be needed.
US3: Sound control is one of the most standard features of mobile devices. This doesn't appear to involve any specific risks.

D. Incorrect
For US1 and US2 the team changes the user story. That is not supposed to be done during quality risk analysis. If the team wants changes to the user stories they should take action before the risk poker and planning poker start, or at least they should not assign a risk class but instead send the user story back for further refinement.
US3 is about a standard function of devices and even with low intensity quality measures the quality of the sound can be determined sufficiently.

2.26. LO30 - Acceptance criteria (K2 – 1 point)

QualityLand has implemented the Scaled Agile Framework (SAFe®) for IT delivery. Multiple teams work on one value stream. What does this mean for the acceptance criteria that the involved teams must define?

A. The teams must define the quality level of IT products with acceptance criteria and to ensure a working end product additional end-to-end acceptance criteria must be defined.
B. Each team independently defines the acceptance criteria for their user stories. The end-to-end quality orchestrator defines the end-to-end completion criteria together with the release train engineer.
C. Since there will be an independent testing team for the end-to-end regression team this team doesn't need to bother about acceptance criteria because they focus on completion criteria.
D. Since the foundation of the SAFe® frameworks is working in Agile teams using Scrum, the teams define acceptance criteria per user story as defined by Scrum and that way they cover the end-to-end acceptance as well.

A. Correct
See book 5.6 and 27 and syllabus LO30 and 8.2.

B. Incorrect
End-to-end acceptance criteria must be defined by all involved people together, for example in the Program Increment planning meeting. Note that this answer mentions completion criteria, they do not relate to the acceptance of the product but merely to completion of activities (for example independent testing). See book 5.6 and 27 and syllabus 8.2.

C. Incorrect
Although independent testing teams indeed focus on completion criteria, in a SAFe® context you wouldn't have a testing team that is completely independent because they will be involved in Program Increment Planning and the definition of additional end-to-end acceptance criteria. See book 27 and syllabus 8.2

D. Incorrect
Additional end-to-end acceptance criteria will be needed in a SAFe® context. See syllabus LO30 and 8.2.

2.27. LO31 - Test automation (K2 – 1 point)

The QualityLand CIO and you see each other at the coffee machine and the CIO asks you how test orchestration helps to prevent islands of automation. What is your explanation?

A. The task of the end-to-end quality orchestrator is to implement the quality & test policy in such way that teams collaborate in an optimal way and thus don't waste time on handoffs.
B. Test orchestration eliminates islands of automation by combining manual and automated tasks in a holistic fashion. It links together individual automated tasks, which helps eliminate manual handoffs, dependencies, wait times and cycle waste, resulting in automated testing fully integrated in the pipeline.
C. Test orchestration aligns human and automated tasks so that automated tests can be performed effectively and efficiently over multiple systems.
The product owner needs to be involved to define how to automate the tests.
D. The most logical place according to SAFe® for organizing orchestration of end-to-end quality is a system team. This can be compared to the Support Team end-to-end Quality.

A. Incorrect
Test orchestration is specifically related to test automation and not necessarily related to the role of the end-to-end quality orchestrator.
See book section 32.4 and syllabus section 7.7.
B. Correct
See section 32.4.1 of the book.
C. Incorrect
The statement about test orchestration is correct. The product owner however is not the one to define HOW to automate the tests, this is a task for a test automation specialist which may be a developer or tester role.
See syllabus section 7.7.2 and 7.7.4.
D. Incorrect
This explanation is not an answer to the question of the CIO.
The statement itself is correct, it is described in the syllabus section 8.3.4

2.28. LO32 - Investigate & assess outcome (K2 – 1 point)

A student researches the "investigate & assess outcome" topic of TMAP. In his thesis he has written down four statements. You notice the student does not understand everything yet, only one of the statements is totally correct.
Which statement is correct?

A. Pair debugging is a frequently used technique by developers to prevent anomalies in the system.
B. Testing errors do not concern faults in the system itself and therefore have a lower priority for further examination.
C. When the expected and actual outcomes do not match, the test has failed; a quality risk has materialized, and the requirement is not yet implemented. The tester will need to do some investigation.
D. Faults in the program code do not result in registration of a failed test because these kinds of faults are the responsibility of the developer, and generally we do not log unit tests nor test results.

A. Incorrect.
Pair debugging is applied by team members who work together on the investigation of a failed test case.
See section 34.1 of the book
B. Incorrect.
It is wise to start examining the test case itself to make sure the team did not make a testing error, to prevent them from wasting other people's time with an anomaly report.
C. Correct
See chapter 34 introduction.
D. Incorrect.
Faults in the program code can be found during unit-, system- or acceptance testing (or any other kind of test variety). Each fault that cannot be solved immediately, should be logged.

2.29. LO34 - Root cause analysis (K2 – 1 point)

The "escaped fault ratio" is an important indicator that helps to improve the IT delivery process. Which statement is correct?
A. The "escaped fault ratio" indicates that Quality Engineering activities have prevented fault to escape to a later phase.
B. An increased "escaped fault ratio" indicates that the IT delivery process has improved.
C. The "escaped fault ratio" indicates the number of production incidents. They escaped as it were from the high performance IT team before releasing the product or system.
D. The "escaped fault ratio" contributes to improvement of the detective quality measures.

A. Incorrect
The opposite is true. QE activities contribute to preventing escaped faults.
B. Incorrect
When detecting faults earlier, the indicator must go down.
C. Incorrect
Escapes are about all fault that are detected a later stage than where they were introduced.
D. Correct
Discovering faults or failures earlier in the process requires also helps to improve detective quality measures.

2.30. LO35 - Personal, interpersonal and team skills (K3 – 2 points)

Your QualityLand team suddenly has a need for test data management because a new application needs anonymized and scrambled test data based on the production data. Nobody in your cross-functional team has experience with this type of test data management.
How can the staff organization add additional skills to your team?

A. The staff organization consists of people that can perform specialized tasks to support teams in executing their tasks. This can be organized in shared services of system teams.
B. The staff organization is a more organic community of interest, a group of people that want to share knowledge, tools, code and practices. Anybody who is interested can join.
C. Key to become effective is to grab every learning opportunity ("learn fast"). So the staff organization organizes a training course with some additional coaching to support the team members in learning how to do data management.
D. The team and the staff organization together apply the so-called "flocking" where the people get alerted that something unforeseen happens and they all start working on that particular task to make sure this task is performed well.

A. Correct
See section 36.8 of the book and 7.1.3 of the syllabus.
B. Incorrect
This is the description of a guild, not of the staff organization. See section 9.3.4 of the book.
C. Incorrect
Although "learn fast" is a key personal and team skill, in this situation where a team suddenly needs to perform a new task a training course and coaching will not help soon enough. Also the staff organization does not supply training courses and coaching.
D. Incorrect
Flocking is an example of unfavorable team behavior (book section 36.4). A small group of people should determine the best solution. Which may be to get help from the staff organization, for example with a shared service for test data management.

2.31. LO36 - Test varieties (K3 – 2 points)

You are the end-to-end quality orchestrator of QualityLand. For a new value stream that you are involved in, five cross-functional teams will deliver parts of the total IT solution to support the business process. Looking at the ambitions of the product owner, the individual teams will not have time to perform test varieties that are supposed to be executed in the "Business Test Stage" of the CI/CD pipeline.
Together with the scrum masters of the involved teams you must define the test varieties that are relevant in this situation. One of the scrum masters reminds you of the test policy that states that all tests that are repeated multiple times should be automated.
Which of these solutions describes the setup of test varieties that you would advise keeping in mind the various relevant perspectives?

A. In a situation like this the best solution is to organize flexible test varieties that respond to the available people at the moment the tests must be prepared and executed.
Automation of the tests will be done by a shared service team to relieve the members of the involved teams from this specialized task.
Non-functional tests will all be done by system teams because the non-functionals (such as performance, security and usability) will entirely be tested in the business test stage and the teams don't have time to do those test varieties.
B. Every involved team will do static code analysis using tools and manual code reviews before the code is merged in the main branch.
Every involved team will do dynamic unit testing based on Test Driven Development.
The API-based interface tests and the tests from a business perspective (such as acceptance tests and end-to-end-regression tests) will be automated by a virtual testing team that exists of people from the involved teams.
Non-functional tests are integrated with other test varieties because the teams don't have non-functional specialists available.
C. Every involved team will do static testing, especially during refinement of user stories and manual and automated code reviews during pull requests.
Every involved team will do dynamic testing, especially automated unit testing and testing of interfaces on API level.
The non-functional aspect performance is tested both by individual teams in their build pipeline and by a specialized system team of operations experts in the release pipeline.
Acceptance testing and end-to-end regression testing are performed by a system team of testing experts from the staff organization in the business test stage of the release pipeline.
D. The involved teams will ask people from other involved teams to do code-reviews and unit testing to have maximum exchange of knowledge and skills between teams.
Since the teams don't have time for business testing they will ask representatives from the business departments to prepare and perform the manual acceptance tests and end-to-end regression tests (these cannot be automated because business people don't have these skills).
Non-functional tests such as maintainability and portability will be integrated in the unit testing and integration testing that is done by the teams.

A. Incorrect
The concept of flexible test varieties is not described in TMAP so this is not a known term. The idea of test varieties is that the people involved make plans about what risks they want to cover in what way and what information about quality and business value

they want to measure.
So there should be some kind of strategy that also entails how testing is organized in test varieties.
Since the test policy states all repeated tests must be automated, it wouldn't work to have shared services do these tests, because especially in the build pipeline the team itself must do the testing within their scope. And non-functionals can at least be partially done by the teams too.

B. Incorrect
The parts about static code analysis and code reviews, and about unit testing based on TDD are correct.
The part about API and business tests is not correct because the virtual team needs people from the involved teams and they (according to the information in this case) have no time to perform test varieties in the business test stage.
The part about integrated non-functional tests is incorrect because the reason of not having specialists would force them to delegate these tests to another team instead of doing the tests themselves.

C. Correct
This correctly includes the different responsibilities of the individual teams and the overall responsibility. Since the teams have no time to do business tests these are done by system teams from the staff organization.
See book chapter 37 and syllabus sections 7.4 and 8.2.5.3 and 8.3.4.

D. Incorrect
Although collaboration and exchange of knowledge should be promoted, still teams are responsible for their own deliverables and in most situations it is not efficient to have other teams be involved in reviewing and unit testing.
Of course business representatives may be involved in some manual acceptance testing. But according to the policy the regression test should be automated and since business people don't have these skills the staff organization should be involved (for example by a system team).
The remark about maintainability and portability is correct, this is possible. But other non-functionals should not be forgotten, and other non-functional tests often cannot be done entirely within the build pipeline.

2.32. LO37 - End-to-end regression testing (K2 – 1 point)

QualityLand has introduced a new app with in-app-purchases. To support the payments of these purchases the app has a real-time connection to an external payment provider. This provider has their own test environment that QualityLand can connect to. The team of the provider works with an Agile mindset just like your team.
You have picked up the task to organize the end-to-end regression tests for the new app.
What are the challenges that apply for this task?

A. The main challenges for working in an Agile at scale situation are:
   - The impact a virtual end-to-end testing team has on the velocity of the teams
   - To find a specialist that can visualize in which areas test automation adds value and organize test automation for the end-to-end test.
B. The main challenges for working in an Agile at scale situation are:
   - Lack of knowledge sharing between teams
   - Applying a shared way of working
   - Ensuring end-to-end quality
C. The main challenges for working in an Agile at scale situation are:
   - You need to do the quality risk analysis both for the increment as well as for the individual sprints.
   - Teams often don't have the knowledge, time and resources to properly organize and perform end-to-end tests.
D. The main challenges for working in an Agile at scale situation are:
   - End-to-end parties
   - People
   - Change dynamics
   - Test environments
   - Test data
   - End-to-end QA process

A. Incorrect
   The first statement is mentioned in section 8.2.3.1 of the syllabus but not as a main challenge.
   The second statement is mentioned in section 8.2.4.1 of the syllabus but not as a main challenge.
B. Correct
   See section 8.1.5 of the syllabus.
C. Incorrect
   The first statement is mentioned in section 8.2.5.2 of the syllabus but not as a main challenge.
   The second statement is mentioned in section 14.3.2 of the book and reflects one of the main challenges.
D. Incorrect
   This is the full list of the six end-to-end areas of interest where management of end-to-end quality can achieve the greatest benefits. See section 8.2.2 of the syllabus.

2.33. LO38 - End-to-end QA at scale (K3 – 2 points)

The IT manager of QualityLand has visited a conference where he attended a presentation about the Scaled Agile Framework (also known as SAFe®).
She now asks you (the most experienced Scrum master) to work together to prepare QualityLand for becoming a true "Agile at Scale" organization.
One of the things to organize is the end-to-end quality assurance.
The IT manager and you describe the first steps in this transition. What is the best description of these steps?

A. You will start making a quality strategy. Some tasks cannot be done by the involved agile teams so you will need to organize support teams (these may be system teams, shared services or virtual teams).
   The test strategy at scale contains activities for teams and also end-to-end testing and skills needed to ensure quality of the solution as a whole.
B. The first step is to organize end-to-end regression testing by a support team. A newly assigned end-to-end quality orchestrator will take operational responsibility for the creation of test cases and test data and for the execution of this test. Investigation and assessing of the outcome of the tests will be done by the agile teams because the support team doesn't have the relevant knowledge.
C. The first step is to instruct all teams that from now on they must make sure that all features are independent so that teams won't get involved in "chains of systems" or even a "mesh of systems". This way QualityLand will ensure easy orchestration of the end-to-end quality so that you as a scrum master can also perform the task of end-to-end quality orchestrator.
D. At the conference the IT manager learned that SAFe® comprises multiple QA-related subjects. From these subjects you select Built-in Quality, Relentless Improvement and Test Driven Development as first steps to organize end-to-end QA. Built-in Quality will be assigned to the new end-to-end Quality Orchestrator. The existing continuous improvement of one of the teams will be intensified so they can also improve other teams. Test Driven Development is new to all teams so this will be implemented as a shared service by the staff organization.

A. Correct
   See syllabus 8.2 and 8.3
B. Incorrect
   End-to-end testing is part of end-to-end quality assurance. But the orchestrator will not take operational responsibility.
   Also it doesn't make sense to have most activities done by a support team but leave investigation and assessing of outcome to the agile teams themselves.
C. Incorrect
   It is an illusion to think that there will not be any feature dependencies in a large organization.
   Also the roles of scrum master and end-to-end quality orchestrator are not likely to be combined.
   See syllabus 8.2 and 8.3
D. Incorrect
   The mentioned QA-related subjects indeed are from SAFe®. But the end-to-end quality orchestrator cannot be accountable for built-in quality, this is responsibility of

everybody involved, starting with the members of the agile teams. Relentless, or continuous, improvement must be integrated in the approach of all teams, it is not feasible for one team to improve the other teams.
Test Driven Development is a development practice that must be integrated in the activities of every team so this cannot be implemented as a shares service outside of the teams.

2.34. LO39 – The value of unstructured testing (K2 – 1 point)

Which activities contribute to avoid unstructured testing?

A. Focus on day-to-day business only. Focus on positive test cases only. Focus on easy interactions with the system that produce results immediately. Focus on functional testing only.
B. First think about the goal of the testing. What information needs to be given to stakeholders? Then think about how this information can be obtained. Which test ideas, test situations and/or test cases would help you get this information? Then design and execute tests in a formal or less formal way.
C. Apply a commonly accepted test approach such as error guessing.
D. Start test execution as soon as possible to make progress early in the process, for example because of time pressure or the desire to show the new system to the stakeholders.

A. Incorrect
These are all examples of applying unstructured testing (book section 48.6)
B. Correct.
Book 48.7.
C. Incorrect.
Error guessing is, despite commonly accepted, still a way of unstructured testing.
D. Incorrect
When there is time pressure it is even more important to first think, by adding a little bit of structure, the information supplied to the stakeholders can already be largely improved (book section 48.5)

2.35. LO40 - Quality characteristics and non-functional testing
(K3 – 2 points)

The QualityLand amusement park introduces a new mobile app that is specifically focused on children from 5 to 8 years that can use this app on the mobile device of their parents. The purpose of the app is to prepare them for the visit to the park. They will see what kind of attractions are in the park and get to know the characters they will see in the park.
Your role in the team is business analyst and you discuss with the product owner what is important for this app.
The product owner explains that functionality of course is the starting point. Besides that, the product owner is keen on the speed with which video-content will be shown (because as you know children have a short span of attention, so if it takes too long they will loose interest). Also the app must take into account that children are not good at understanding text so they must be able to operate the app using icons and other graphical means. The product owner thinks this app will contribute much to the pleasure that children will have before and during the visit of the park, but wants to have this tested. And the last point of concern is that all children must be able to use the app, also children that have the old mobile device of their parents, in which case it may not be the latest operating system.
Which are the relevant quality characteristics that you will take into account when creating and testing this mobile app together with your team?

A. The important quality characteristics are:
   - Performance - capacity (product quality)
   - Reliability - fault tolerance (product quality)
   - Context coverage - flexibility (quality in use)
   - Maintainability - reusability (product quality)
B. The important quality characteristics are:
   - Performance - time behavior (product quality)
   - Usability - operability (product quality)
   - Satisfaction - pleasure (quality in use)
   - Portability - adaptability (product quality)
C. The important quality characteristics are:
   - Functionality suitability (product quality)
   - Security - integrity (product quality)
   - Effectiveness (quality in use)
   - Personality - charisma (product quality)
D. The important quality characteristics are:
   - Maintainability - testability (product quality)
   - Satisfaction - comfort (quality in use)
   - Freedom from risk - health and safety risk (quality in use)
   - Maintainability - modifiability (product quality)

A. Incorrect
   Performance is of concern, but it is not the capacity that is of concern but the time behavior.
   Reliability and fault tolerance relate to the tolerance of the system to faults occuring in the system, not to user error (which is usability).
   Although flexibility may be important, this does not directly relate to the pleasure that children will have.

Maintainability - reusability relates to the maintenance of the system, for example to make changes. It does not relate to reusability of old hardware.

B. Correct
These are the four quality characteristics that were mentioned by the product owner.
See the appendix of the book.

C. Incorrect
Functionality is important but not a specific concern of the product owner.
Security generally is important but not specifically mentioned by the product owner.
Effectiveness also is not specifically mentioned.
Personality-charisma is a quality characteristic that is introduced specifically related to artificial intelligence, which is not relevant here.

D. Incorrect
Testability is not mentioned by the product owner.
Comfort is not of specific concern here.
Health and safety risk are not of specific concern here.
Modifiability relates to modification of the system, not of the device it is used on.

2.36. LO41 - Fixing phase (K2 – 1 point)

Which statement is correct?

A. A fixing phase should be implemented at the end of the development cycle to fix all faults that have previously been undetected in the IT delivery activities.
B. Introducing a fixing phase in the IT delivery process makes more sense in traditional IT delivery models than in modern high-performance IT delivery models.
C. Not all faults need to be fixed. People want to continuously have insight in the quality level and the remaining risks, and when necessary improve quality throughout the lifecycle. If this means some faults remain, that is fine as long as the stakeholders know it and have the necessary workarounds.
D. Testing at the end of an IT delivery lifecycle is an efficient way to implement quality engineering.

A. Incorrect
The section is called "do NOT implement a fixing phase"
See book section 5.1

B. Incorrect
Not having a fixing phase applies to every kind of IT delivery model.
See book section 5.1

C. Correct
See book section 5.1

D. Incorrect
Quality engineering activities should be implemented throughout the IT delivery lifecycle. This so-called shift-left ensures that faults are prevented or detected as early as possible making the process as efficient as possible.
See figure 32.1 and other parts of the book.

2.37. LO42 - Stakeholder management (K3 – 2 points)

As a test lead, you are a member of the system team and you want to start an improvement process, where the focus will mainly be on 'Built-in Quality', to increase the quality of delivery by the teams and thus the necessity and impact of chain and acceptance testing will decrease. You are convinced that this will shorten the lead time of delivery as well as a considerable reduction in costs (less testing, fewer defects, less rework). You have well substantiated your proposal and you have even set up a show case for a team that has already made significant steps in the field of built-in quality and which also shows the shortening of the lead time and the cost reduction.

Suppose you do not get in touch with one of your most important stakeholders. You will not receive any responses to your e-mails and the appointments you make with him via his / her agenda are always canceled. What is the best way to ensure that your stakeholder gets the information you think he should get?

A. You will continue to send emails with that information on a weekly basis. If he / she does not read it, at least you have done your best and you are not to blame.
B. You approach another stakeholder whom you know is in contact with the original stakeholder, and ask him / her to inform that stakeholder or ask how best to get in touch.
C. You stop trying to make contact. You can show that you've done everything you can and if he / she doesn't respond, it won't be important.
D. You walk into the conference room where he / she is having a meeting, to ask how best to get in touch.

A. Incorrect
Choose another strategy in this case.
B. Correct
In this case look for a workaround.
C. Incorrect
Never give up!
D. Incorrect
This will not be very much appreciated.

2.38. LO43 – Governance (K2 – 1 point)

In the coffee corner of the QualityLand office building the CEO asks you what IT governance is about and who are responsible.
What do you explain?

A. IT governance is about defining the pursued business value, translating it into objectives and defining the right indicators to establish the confidence in the quality of the IT solution. People involved are the Business Analyst and the Product Owner.
B. IT governance is about aligning business value and IT objectives with the quality levels on a tactical level. Also it is about making the team doing things right.
The product owner is responsible for good IT governance.
C. Governance contributes to quality at speed by striving for the absolute highest possible quality and by having the right education for the people in the support teams.
Governance is done by the end-to-end quality orchestrator.
D. Governance is about aligning business goals and IT objectives on a strategic level. Also it is about making doing the right thing also the easy thing. When QualityLand was still small IT governance was the responsibility of the scrum master but now we have grown it is the responsibility of the scrum-of-scrums and the end-to-end quality orchestrator.

A. Incorrect
This explanation relates to the VOICE model which is more on operational and tactical level, not to governance which is at operational level.
See book chapter 3 and syllabus section 7.3
B. Incorrect
It is not about aligning business value but about aligning business goals (of which business value is derived). And it is at strategic level. And doing things right is not enough, also they must do the right things and governance tries to make doing the right things also doing the easy things. For the involved people see the explanation of the correct answer.
C. Incorrect
Although Governance indeed contributes to quality at speed, Quality engineering in general is about building in quality, where the quality level must be aligned with the business goals and IT objectives. So not the absolute highest possible quality but the right quality at the right moment. Education of support teams is not a focus point of governance.
The end-to-end quality orchestrator is one of the involved people.
D. Correct
See syllabus 7.3.

2.39. LO44 - Creating a test strategy and test plan (K3 – 2 points)

At QualityLand you are involved in the creation of a new feature in the cash register application for the souvenir shop. This feature is an extra scanner that allows the frequent visitors to scan their member card (using a barcode on the card) to get extra discounts. The Product Owner says that the speed of scanning is very important so the customers don't have to wait and also this scanning must not interfere with the activities of the employee who is entering the souvenirs that are purchased.
You and your team create a test strategy.

Which of the following parts of this test strategy are correct for this new feature?

A. Feature: Scan member card
Quality characteristic: Usability
Risk class: A
Static quality measures: ●● Usability review using checklist
Dynamic quality measures: ●●● Usability testing in a usability lab
Other quality measures: ● feature toggle for A/B testing
Quality characteristic: Reliability
Risk class: C
Static quality measures: ● Code review
Dynamic quality measures: ●● recoverability testing
Other quality measures: - (none)

B. Feature: Scan member card
Quality characteristic: Performance
Risk class: B
Static quality measures: ●● Review of infrastructure design
Dynamic quality measures: ●● Performance testing using load model
Other quality measures: ● applying design patterns
Quality characteristic: Portability
Risk class: B
Static quality measures: ● 4-amigos session
Dynamic quality measures: ●● Model Based Testing
Other quality measures: ●●● Refactoring and patching

C. Feature: Scan member card
Quality characteristic: Performance
Risk class: A
Static quality measures: ● review of code architecture and system architecture
Dynamic quality measures: ●●● Performance testing using load model
Other quality measures: ● applying coding standards
Quality characteristic: Compatibility
Risk class: A
Static quality measures: ●● review of interfacing and connectivity
Dynamic quality measures: ●●● API testing
Other quality measures: ●● Pair programming

D. Feature: Scan member card
Quality characteristic: Security
Risk class: A
Static quality measures: ●● Security scan using SonarQube
Dynamic quality measures: ●● Penetration testing

Other quality measures: ● interview with OWASP consultant
Quality characteristic: Maintainability
Risk class: C
Static quality measures: ● code review as part of pull request
Dynamic quality measures: - (no specific quality measure)
Other quality measures: ●●● Manual code reviews and automated static analysis

A. Incorrect
The quality characteristics Usability and Reliability are not the highest priority as mentioned by the product owner.
The quality measures for mentioned with usability testing in itself do make sense and align with risk level and test intensity.
For reliability there should not be 2 bullets with dynamic quality measures since the risk class is C so 1 bullet is the maximum.

B. Incorrect
The part about Performance could make sense, this case doesn't contain enough information to be sure whether the risk class should be A or B and the quality measures for performance make sense.
Portability is not a logical choice for quality characteristic because this relates to transferring the feature to other hardware or usage environment but it will only run on the QualityLand cash register. A 4-amigos session appears to be quite a "heavy" quality measure for 1 bullet. Also the risk class is B but the other quality measures has 3 bullets which should never be more than 2 bullets.

C. Correct
This solution aligns with the statements of the product owner that speed is important (performance) and no interference may occur (compatibility).
So these characteristics have the highest risk and therefore at least one of the quality measures must get 3 bullets (●●●).
The quality measures mentioned align with the feature, the characteristics and the test intensity that is needed.
See book section 5.2.1, 5.2.2, 26 and 46.1 and syllabus 7.4 and 8.2.5.2.

D. Incorrect
Both quality characteristics are not mentioned by the product owner.
Security has risk class A but none of the quality measures had 3 bullets.
Maintainability has risk class C but one of the quality measures has 3 bullets.
The other quality measures for maintainability are in fact static quality measures.

2.40. LO45 - Psychological safety (K3 – 2 points)

You are scrum master at the Agile team of QualityLand and in the last retrospective a new team member joined and remarked that it would be good to have explicit measures to support psychological safety so that new team members know how to behave and what to expect of each other.
Your task is to describe how this psychological safety will be organized. You have identified the following possible measures/rules/activities. Which of these do indeed support psychological safety?

[P] Metrics of team performance
[Q] Metrics of individual performance
[R] Focus on solving anomalies and discuss how to avoid such anomaly in the future, don't focus on who caused the anomaly
[S] Put the team member who caused the highest number of anomalies in this sprint on the "fail wall"
[T] Conduct lessons learned sessions as part of retrospective but also together with people from outside the team
[U] Creating a test strategy that aligns with the risk class

A. The measures that support psychological safety are:
   [Q], [S] and [U]
B. The measures that support psychological safety are:
   [P], [R] and [T]
C. The measures that support psychological safety are:
   [P], [Q], [R] and [T]
D. The measures that support psychological safety are:
   [Q], [R], [T] and [U]

A. Incorrect
   See explanation of correct answer.
B. Correct
   The correct measures are:
   [P] Measuring team performance helps finding trends and learning opportunities.
   [R] When anomalies are discussed it is not about people but it is about product and process.
   [T] Lessons learned are important and all people for whom they are relevant should be able to benefit.
   The incorrect measures are:
   [Q] Individual metrics may result in a blaming culture which doesn't create a safe to fail environment.
   [S] A fail wall may be good to learn from previous mistakes, but mentioning the person responsible may result in a blaming culture (see above).
   [U] A test strategy is important but doesn't have anything specific to do with psychological safety.
C. Incorrect
   See explanation of correct answer.
D. Incorrect
   See explanation of correct answer.

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