Sample Exam

Edition 202602

Content

Introduction

This is the EXIN DevOps Foundation (DEVOPSF.EN) sample exam. The Rules and Regulations for EXIN's examinations apply to this exam.

This exam consists of 40 multiple-choice questions. Each multiple-choice question has a number of possible answers, of which only one is correct, unless otherwise stated.

The maximum number of points that can be obtained for this exam is 40. Each correct answer is worth 1 point. You need 26 points or more to pass the exam.

The time allowed for this exam is 60 minutes.

Good luck!

Sample exam

1 / 40
Which thought is **false** in Agile?

A) Business and development work together throughout the project.
B) Responding to change is valued over following a plan.
C) Satisfying the customer through exact fulfillment of their requirements is a priority.
D) Working software is the primary measure of progress.

2 / 40
According to the US National Institute of Standards and Technology (NIST), what is **not** an essential cloud computing characteristics?

A) Broad network access
B) Pay-per-use system
C) Rapid elasticity
D) Resource pooling

3 / 40
IT work within DevOps is organized differently from more traditional practices. To make the change possible, a number of infrastructure management technologies are necessary.

Which are **two** of those infrastructure management technologies?

Please remember to select 2 answers.

A) Digital Kanban boards
B) Infrastructure as a Service (IaaS)
C) Low-code/no-code platforms
D) Test automation platform
E) Virtualization (hypervisors)

4 / 40
DevOps relies heavily on the principles and practices of Lean Production. One of the types of waste in IT is 'task switching'.

From which original type of waste is this the translation for IT?

A) Motion
B) Overproduction
C) Transportation
D) Waiting

5 / 40
The most valuable information of a value stream map (VSM) is taken from three key metrics.

Which **three** key metrics are meant?

Please remember to select 3 answers.

A) Flow
B) Lead time
C) Percentage complete and accurate
D) Process time
E) Process time divided by lead time
F) Value completed minus waste

6 / 40
When switching to DevOps, a greater return on information technology is expected.

What differentiates DevOps from Agile, Scrum and Lean to meet this expectation?

A) DevOps accelerates the delivery of new and modified products between Dev and Ops.
B) DevOps accelerates the delivery of new and modified products to the market and customers.
C) DevOps ensures a quicker response to changes in the infrastructure within budget.
D) DevOps ensures a quicker response to incidents that hinder the organization's value stream.

7 / 40
A commonly understood definition of the term 'time-to-market' is:

The time between business idea and the possibility of a customer purchase.

Which **two** DevOps practices help reduce the time-to-market **most**?

Please remember to choose 2 answers.

A) Automated testing
B) Centralizing decision-making
C) Loosely-coupled architecture
D) Using Kanban boards
E) Value stream mapping (VSM)

8 / 40
Which **two** common practices reduce technical debt **most** directly?

Please remember to select 2 answers.

A) Change management practices
B) Incident management practices
C) Increasing resources
D) Facing the issue
E) Refactoring
F) Release management practices

9 / 40
Which significant advantage does DevOps bring to an organization?

A) Eliminate fragility of a business system
B) Lower costs for the customer
C) Reduce cultural challenges

10 / 40
Sometimes, it is thought that DevOps is a part of Agile.

To which question, that has nothing to do with Agile, does DevOps give an answer?

A) What can be done to release the software we develop quick enough to take a large market share?
B) What relationship with our customers is necessary, so that we understand their requirements better?
C) What should be done with a released product to make it useful and easy to operate?

11 / 40
Why is the concept 'value stream' so important in DevOps?

A) The value stream helps to analyze the as-is map and any attempts to improve metrics.
B) The value stream helps to realize a smooth and uniform flow through all process steps.
C) The value stream helps to realize local optimization in the current work practice.

12 / 40
What is the **first** step in value stream mapping?

A) Create the requirements specification
B) Document the work done
C) Identify the key steps in the process

13 / 40
A value stream map (VSM) shows clearly where the inefficiencies in a value stream are.

Why should a VSM be made?

A) To help optimize business processes
B) To see which people are not working hard enough
C) To speed up the work in progress (WIP)
D) To visualize which product line should be ended

14 / 40
Tasks need to be prioritized. This prioritization takes place in the queue at the entry of the value stream.

Why does this prioritization often cause problems?

A) Because at this point, the decision is made how to build the deployment pipeline for the tasks that can be automated. This takes time, which causes delays.
B) Because enabling measurements of the key indicators in the value stream is done incorrectly or inefficiently, which leads to problems.
C) Because implementation of the use of visualization tools along with work-in-progress limits (WIP-limits), with which one can identify the bottlenecks of the tasks, is done incorrectly.
D) Because the development of the as-is version and the to-be version of the stream must be created, as well as a list of the changes required. This takes a lot of time.
E) Because when many decisions are made before work even starts, like in the traditional approach, this causes massive delays.

15 / 40
Which idea is the origin of the concept 'deployment pipeline'?

A) A pipeline that carries a liquid creating flow
B) An assembly line such as a car plant
C) Modern processors that use parallel pipelining
D) The idea of using more than one assembly line
E) The process of deploying people to do different jobs

16 / 40
When implementing the deployment pipeline, problems are encountered. Initially, there are not enough pre-developed tests to ensure steady operation of the Production environment.

Which solution **best** addresses this problem?

A) Create the pipeline and as many automations as possible, but do not use them until all the proper tests are in place.
B) Increase the coverage of the code with tests as technical debt, which must be addressed as soon as possible.
C) Let the pipeline run with the developed tests and deal with the potential issues in Production when they arise.
D) Use the pipeline as an integration system to deliver the written code to test and quality assurance (QA) only.

17 / 40
A good version control system is one of the highest predictors of high performance in DevOps.

What is necessary to apply version control successfully?

A) A change in the culture of working with information and configuration
B) A significant increase in the speed of change implementation
C) The deliberate introduction of chaos and instability in Production
D) The use of a formalized and automated change management process

18 / 40
For DevOps, finding the balance between moving quickly and maintaining application reliability is important.

How does version control support this?

A) By allowing any member of the team to freely delete unnecessary files and documents
B) By allowing the formation of small independent and self-sufficient development teams
C) By applying specialized tools to eliminate or reduce waste and optimize processes

19 / 40
What benefit does configuration management have?

A) It allows any team member to delete unwanted files without risk.
B) It allows key team members to be absent without problems.
C) It allows team members to see who changed which code at what date.

20 / 40
Configuration management makes it possible to scale IT infrastructure and software systems, without needing more people working on them.

How should changes to such a scaled environment ideally be done?

A) Through continuous integration
B) Through fully controlled scripts
C) Through test automation
D) Through the deployment pipeline

21 / 40
A clear definition of done is (DoD) critical in DevOps and considers the value for the customer.

What is a good description of 'done' for DevOps?

A) A requirement is done when it has been built.
B) A requirement is done when it has been tested.
C) A requirement is done when the product is accepted.
D) A requirement is done when the product is in Production.

22 / 40
In traditional practices many things can go wrong with releases: some changes are not documented, the system has not been backed up fully, or there is no previous state of the system saved.

How does DevOps ensure frequent releases **without** these problems?

A) By automating releases
B) By letting Operations release
C) By making releases very small
D) By not documenting all changes

23 / 40
A company uses continuous deployment.

Who should decide when to release **new functionality**?

A) The business
B) The customer
C) The IT department
D) The user

24 / 40
According to DevOps practices, what is the **best** way to increase the level of operational control?

A) Automating all manual operations
B) Defining appropriate roles and responsibilities
C) Designing control procedures
D) Improving operational governance

25 / 40
What is the DevOps way of solving incidents?

A) Escalate to the problem management team and create a solution until they solve the incident
B) Investigate the incident, run diagnostics, then identify and implement a workaround
C) See if a related incident occurred earlier and implement a similar solution to the problem
D) Trace the incident back to a recent deployment and roll the system back to a previous stable state

26 / 40
In DevOps, what should be done when process deficiencies are found?

A) All changes should be submitted to a backlog, so they can be released in a project or a Kaizen event.
B) Fixes should be found and implemented as soon as possible after detection of the deficiency.
C) Fixes should be found, approved by the change manager, and released based on priority.
D) Fixes should be found, approved by the continuous improvement manager, and released immediately.
E) Fixes should be postponed until the change can be included in an appropriate iteration.

27 / 40
What does **not** help a DevOps team to successfully develop and deliver working software?

A) Forming a DevOps team for a short period of time during a project
B) Identifying, fixing and learning from errors as soon as they are found
C) Organizing DevOps teams around an organizational mission
D) Writing code for software to have built-in quality as a main goal

28 / 40
DevOps recommends continuous updates of the work done.

What is the **best** way to continuously keep **all** team members informed on the progress of a flow?

A) Discussing it with team members during the day
B) Discussing progress during the daily stand-up
C) Informing the Product Owner face to face
D) Sending update e-mails to the Scrum Master
E) Using visualization such as a Kanban board

29 / 40
A team adds items from the backlog to a batch.

Which **two** things must be considered?

Please remember to select 2 answers.

A) The capacity needed to complete the backlog item
B) The current size of technical debt
C) The entire pipeline, end to end
D) The preferred meeting times of the team members
E) The vacation plans of the team members

30 / 40
In which **two** ways does DevOps take operational requirements into account?

Please remember to select 2 answers.

A) By creating a definition of done (DoD)
B) By doing value stream mapping (VSM)
C) By using Agile and Scrum processes
D) By using business needs as input
E) By writing out requirements upfront

31 / 40
What is an advantage of having a DevOps team work together for a longer period?

A) The team does not have to improve the process anymore.
B) The team uses their experience to innovate and improve the process.
C) The team will start working more independently.
D) There is time left to process unexpected requests more often.

32 / 40
A team works in one-week iterations and frequently encounters bottlenecks.

What would be the **best** reaction of the team when they identify a bottleneck?

A) Eliminate the bottleneck as soon as possible after it is identified
B) Lengthen only the iteration in which a bottleneck is found
C) Limit the regular number of tasks in a batch to reduce batch size
D) Use visualization tools along with work-in-progress limits (WIP-limits)

33 / 40
When can the use of DevOps for organizational and technological changes lead to chaos and loss of control?

A) When the core business of the organization highly depends on IT
B) When the organization is complex and wants to solve chronic problems
C) When the organization requires rapid changes to test new business ideas
D) When the rate of change in the IT used by the organization is high

34 / 40
There are many reasons for a company to become interested in DevOps.

When should companies become interested in DevOps?

A) When Agile practices do not seem to fit the company
B) When no other method gives the necessary results
C) When Scrum and Lean practices have been implemented

35 / 40
What can cause difficulties when DevOps is adopted?

A) Cross-functional teams
B) Limited use of virtualization
C) Microservice architecture

36 / 40
An IT system is still being developed and maintained by many employees as a single entity.

What difficulty with adopting DevOps practices can be expected?

A) Assigning DevOps teams to separate areas of responsibility
B) Creating cross-functional teams to work on the organizational structure
C) Maintaining and versioning multiple APIs for backward compatibility

37 / 40
Commercial off-the-shelf software (COTS) is used to quickly get the results needed, because it takes time to develop custom software.

What is **true** about COTS?

A) COTS generally eliminates complexity in the integration.
B) COTS lowers the total cost of ownership for the business.
C) COTS requires customization to configure the system.
D) COTS should be used to support strategic business lines.

38 / 40
What is a **difficulty** of a rigid or monolithic IT architecture?

A) Changing and developing the IT architecture itself is difficult to do
B) Modifying services within the architecture is done independently
C) Updating to a new version without disabling the current version
D) Waiting for all components to be ready for a large-scale migration

39 / 40
It is recommended that organizations customize and select DevOps practices that work in that organization. Organization-specific questions must be raised, and organization-specific answers must be found.

Why is this a **good** idea?

A) Because DevOps publications do not always reflect reality and underreport difficulties and failures
B) Because that is the way to become a DevOps engineer that can be hired for implementing DevOps
C) Because the management teams know best how to implement DevOps in their own organization
D) Because there are too few publications and events about DevOps to form independent opinions

40 / 40
An organization has a legacy IT infrastructure. They want to start with DevOps.

What is a common approach in such an organization?

A) To start implementing DevOps as a software product, install it and start it
B) To start with a basic pipeline that performs at least assembly and initial testing
C) To start with a selection of the product with the greatest opportunities for optimization
D) To start with identifying those systems that are loosely connected with others
E) To start with the allocation of a certain proportion of working time for the improvement

Answer key

1 / 40
Which thought is **false** in Agile?

A) Business and development work together throughout the project.
B) Responding to change is valued over following a plan.
C) Satisfying the customer through exact fulfillment of their requirements is a priority.
D) Working software is the primary measure of progress.

A) Incorrect. "Business people and developers must work together daily on the project" is part of the Agile Manifesto.
B) Incorrect. Responding to change over following a plan is part of the Agile Manifesto.
C) Correct. Satisfying customers through exact fulfillment of their requirements is not part of the Agile Manifesto, and it is not an aim of Agile. (Literature: A, Chapter 1.1.1)
D) Incorrect. Working software as the primary measure of progress is part of the Agile Manifesto.

2 / 40
According to the US National Institute of Standards and Technology (NIST), what is **not** an essential cloud computing characteristics?

A) Broad network access
B) Pay-per-use system
C) Rapid elasticity
D) Resource pooling

A) Incorrect. Broad network access is one of the essential cloud computing characteristics mentioned by the US NIST.
B) Correct. The pay-per-use system is often used but is not one of the essential cloud computing characteristics mentioned by the US NIST. Other types of contracts are possible. (Literature: A, Chapter 1.1.2)
C) Incorrect. Rapid elasticity is one of the essential cloud computing characteristics mentioned by the US NIST.
D) Incorrect. Resource pooling is one of the essential cloud computing characteristics mentioned by the US NIST.

3 / 40
IT work within DevOps is organized differently from more traditional practices. To make the change possible, a number of infrastructure management technologies are necessary.

Which are **two** of those infrastructure management technologies?

Please remember to select 2 answers.

A) Digital Kanban boards
B) Infrastructure as a Service (IaaS)
C) Low-code/no-code platforms
D) Test automation platform
E) Virtualization (hypervisors)

A) Incorrect. Kanban boards are a workflow management method, not an infrastructure technology.
B) Correct. IaaS is one of the foundational infrastructure technology referred to in the question. (Literature: A, Chapter 1)
C) Incorrect. Low-code/no-code platforms are application development platforms, not foundational infrastructure technologies for DevOps.
D) Incorrect. Test automation platform are useful for software quality and delivery speed, but not an infrastructure management technology that enabled DevOps' reorganization of IT work.
E) Correct. Virtualization is the other foundational infrastructure technology referred to in the question. (Literature: A, Chapter 1)

4 / 40
DevOps relies heavily on the principles and practices of Lean Production. One of the types of waste in IT is 'task switching'.

From which original type of waste is this the translation for IT?

A) Motion
B) Overproduction
C) Transportation
D) Waiting

A) Incorrect. Handoffs in IT corresponds to motion in Lean.
B) Incorrect. Extra feature in IT corresponds to overproduction in Lean.
C) Correct. Task switching in IT corresponds to transportation in Lean. (Literature: A, Chapter 2.1.1)
D) Incorrect. Waiting in IT corresponds to waiting in Lean.

5 / 40
The most valuable information of a value stream map (VSM) is taken from three key metrics.

Which **three** key metrics are meant?

Please remember to select 3 answers.

A) Flow
B) Lead time
C) Percentage complete and accurate
D) Process time
E) Process time divided by lead time
F) Value completed minus waste

A) Incorrect. Flow is a lean concept and the value stream is used to create steady and even flow, but it is not a metric in itself.
B) Correct. Lead time is a key metric. (Literature: A, Chapter 3.1)
C) Correct. Percentage complete and accurate is a key metric of the VSM that helps to gather the most valuable information. (Literature: A, Chapter 3.1)
D) Correct. Process time is a key metric of the VSM that helps to gather the most valuable information. (Literature: A, Chapter 3.1)
E) Incorrect. Process time and lead time are both key metrics, but the ratio between them is not a useful measure.
F) Incorrect. Value completed minus waste is not a metric. Both are DevOps concepts, though.

6 / 40
When switching to DevOps, a greater return on information technology is expected.

What differentiates DevOps from Agile, Scrum and Lean to meet this expectation?

A) DevOps accelerates the delivery of new and modified products between Dev and Ops.
B) DevOps accelerates the delivery of new and modified products to the market and customers.
C) DevOps ensures a quicker response to changes in the infrastructure within budget.
D) DevOps ensures a quicker response to incidents that hinder the organization's value stream.

A) Incorrect. Accelerating the delivery of products between departments is a consequence of DevOps. However, since it does not deliver value to the customer, it is not an expected value from DevOps to achieve greater return on IT.
B) Correct. This is how DevOps will produce greater return on IT; by accelerating the delivery of products to customers in Production, helping the business realize value faster and better. (Literature: A, Chapter 1.2)
C) Incorrect. Changes to the infrastructure are an internal need from IT, also adherence to budget. The business will not get greater returns on IT just from changing the infrastructure.
D) Incorrect. This is not a way to achieve greater return on IT. Even though quicker responses will produce a better user experience, it does not help to produce greater returns on its own.

7 / 40
A commonly understood definition of the term 'time-to-market' is:

The time between business idea and the possibility of a customer purchase.

Which **two** DevOps practices help reduce the time-to-market **most**?

Please remember to choose 2 answers.

A) Automated testing
B) Centralizing decision-making
C) Loosely-coupled architecture
D) Using Kanban boards
E) Value stream mapping (VSM)

A) Correct. Fast, reliable tests shorten feedback loops and enable quicker, safer releases. Independent deployments, made possible by the loosely-coupled architecture, allow smaller, more frequent releases, reducing time-to-market. (Literature: A, Chapter 1)
B) Incorrect. Centralized control and stage gates delay decisions and releases.
C) Correct. Fast, reliable tests shorten feedback loops and enable quicker, safer releases. Independent deployments, made possible by the loosely-coupled architecture, allow smaller, more frequent releases, reducing time-to-market. (Literature: A, Chapter 1)
D) Incorrect. Although visualizing work on a Kanban board may help the work to be more visible, it does not necessarily ensure that the work is done any faster or the time-to-market is reduced.
E) Incorrect. VSM is diagnostic: it visualizes flow, queues, and bottlenecks but does not shorten time-to-market.

8 / 40
Which **two** common practices reduce technical debt **most** directly?

Please remember to select 2 answers.

A) Change management practices
B) Incident management practices
C) Increasing resources
D) Facing the issue
E) Refactoring
F) Release management practices

A)
B)
C)
D)
E)
F)

9 / 40
Which significant advantage does DevOps bring to an organization?

A) Eliminate fragility of a business system
B) Lower costs for the customer
C) Reduce cultural challenges

A) Correct. "DevOps is expected to address: reducing time to market, reducing technical debt and eliminating fragility." (Literature: A, Chapter 1.3.3)
B) Incorrect. DevOps practices can be more expensive and there is no focus on reducing the costs for the customer.
C) Incorrect. Although DevOps encourages a diverse team, this does not guarantee a reduction of cultural challenges.

10 / 40
Sometimes, it is thought that DevOps is a part of Agile.

To which question, that has nothing to do with Agile, does DevOps give an answer?

A) What can be done to release the software we develop quick enough to take a large market share?
B) What relationship with our customers is necessary, so that we understand their requirements better?
C) What should be done with a released product to make it useful and easy to operate?

A) Incorrect. The release of a product is both part of Agile and DevOps. Agile helps to quickly release functioning parts of the final product. DevOps further explores ways of delivering real value to actual customers better.
B) Incorrect. The relationship with the customer and the requirement gathering are both part of Agile and DevOps. Product Owners will maintain close contact with the customer to ensure value is being added to the product.
C) Correct. Thinking about the release and operate phases during development are not necessarily part of Agile, but they are an essential part of DevOps. (Literature: A, Chapter 1.5.1)

11 / 40
Why is the concept 'value stream' so important in DevOps?

A) The value stream helps to analyze the as-is map and any attempts to improve metrics.
B) The value stream helps to realize a smooth and uniform flow through all process steps.
C) The value stream helps to realize local optimization in the current work practice.

A) Incorrect. The optimization work should not be limited to analyzing the as-is map. It is necessary to develop a to-be map, which may be quite different from the current work practice.
B) Correct. The concept of the value stream ensures that a smooth and uniform flow from one step to the next in the process can be created. (Literature: A, Chapter 3.1)
C) Incorrect. The value stream helps to identify and eliminate bottlenecks, while avoiding the local optimization trap.

12 / 40
What is the **first** step in value stream mapping?

A) Create the requirements specification
B) Document the work done
C) Identify the key steps in the process

A) Incorrect. The first step should be to identify key steps for the team's particular process and organization.
B) Incorrect. Documentation of the work done should be done only after identifying the key steps. Work done on non-essential steps is not part of the value stream map (VSM).
C) Correct. This should be the first step when value stream mapping. The organization should look at the process for which they want to create a value stream map (VSM) and identify the key steps where work is done, and value is added. (Literature: A, Chapter 3.1)

13 / 40
A value stream map (VSM) shows clearly where the inefficiencies in a value stream are.

Why should a VSM be made?

A) To help optimize business processes
B) To see which people are not working hard enough
C) To speed up the work in progress (WIP)
D) To visualize which product line should be ended

A) Correct. This is the reason one should have in mind when creating the value stream map (VSM) and this is where the exercise has the most value. (Literature: A, Chapter 3.1)
B) Incorrect. The reason to do a value stream mapping is not to see who is redundant, who should get fired first or who is not pulling their weight. Instead, the processes should be optimized, so that the people in the company can start producing higher quantities with higher quality.
C) Incorrect. Although the process may speed up, the work itself does not necessarily need to speed up. Rather, the work itself may slow down to avoid errors and increase first-time-right, which can save a step of quality control. Speeding up the work is not the goal, eliminating waste and adding more value to the business is.
D) Incorrect. Although the business may decide to end a business line or a product line based on the value stream map (VSM), this is never the goal of value stream mapping. Instead, value stream mapping should only be done for viable products.

14 / 40
Tasks need to be prioritized. This prioritization takes place in the queue at the entry of the value stream.

Why does this prioritization often cause problems?

A) Because at this point, the decision is made how to build the deployment pipeline for the tasks that can be automated. This takes time, which causes delays.
B) Because enabling measurements of the key indicators in the value stream is done incorrectly or inefficiently, which leads to problems.
C) Because implementation of the use of visualization tools along with work-in-progress limits (WIP-limits), with which one can identify the bottlenecks of the tasks, is done incorrectly.
D) Because the development of the as-is version and the to-be version of the stream must be created, as well as a list of the changes required. This takes a lot of time.
E) Because when many decisions are made before work even starts, like in the traditional approach, this causes massive delays.

A) Incorrect. This step is taken later in the process and does not cause problems at the queue at the entry of the value stream.
B) Incorrect. This is not an objective of the first step of the value stream (maximization of the number of metrics) and should not be done at this point, so this should not cause the problems mentioned.
C) Incorrect. In this way a state of an even flow without delays is achieved and bottlenecks are shown, but this is not the problem that occurs at the point mentioned.
D) Incorrect. This is achieved later in the process of the value stream, so this should not cause problems at the point mentioned.
E) Correct. When an organization keeps using many traditional practices, where all decisions regarding the work are made before starting the work, this causes the problems mentioned. (Literature: A, Chapter 4.10)

15 / 40
Which idea is the origin of the concept 'deployment pipeline'?

A) A pipeline that carries a liquid creating flow
B) An assembly line such as a car plant
C) Modern processors that use parallel pipelining
D) The idea of using more than one assembly line
E) The process of deploying people to do different jobs

A) Incorrect. This is a common inaccurate opinion and not the proper meaning of the concept.
B) Incorrect. This is a common inaccurate opinion and not the proper meaning of the concept.
C) Correct. Humble and Farley clarified that when they coined the term they used the idea of pipelining from modern processors architecture that allows it to produce far faster results. (Literature: A, Chapter 3.2)
D) Incorrect. This is a common inaccurate opinion and not the proper meaning of the concept.
E) Incorrect. This is a common inaccurate opinion and not the proper meaning of the concept.

16 / 40
When implementing the deployment pipeline, problems are encountered. Initially, there are not enough pre-developed tests to ensure steady operation of the Production environment.

Which solution **best** addresses this problem?

A) Create the pipeline and as many automations as possible, but do not use them until all the proper tests are in place.
B) Increase the coverage of the code with tests as technical debt, which must be addressed as soon as possible.
C) Let the pipeline run with the developed tests and deal with the potential issues in Production when they arise.
D) Use the pipeline as an integration system to deliver the written code to test and quality assurance (QA) only.

A) Incorrect. Creating the pipeline and not using it until all the tests are in place will take too much time, which loses the business money. An iterative approach should be attempted, with the most important tests first and continuously generating new tests to increase coverage.
B) Correct. Increasing the coverage of the code with tests is the only solution for this problem. (Literature: A, Chapter 3.2)
C) Incorrect. Letting the pipeline run with a small set of tests creates poor testing coverage and potentially creates many issues in Production. This hinders the adoption of the pipeline.
D) Incorrect. The deployment pipeline aims to deliver working code to Production, not just to test and QA, so it will not fit its purpose.

17 / 40
A good version control system is one of the highest predictors of high performance in DevOps.

What is necessary to apply version control successfully?

A) A change in the culture of working with information and configuration
B) A significant increase in the speed of change implementation
C) The deliberate introduction of chaos and instability in Production
D) The use of a formalized and automated change management process

A) Correct. Versioning allows for control over all the relevant parts of the system in operation, unattainable with other tools. Version control done well requires a change in the culture of working with information and configuration. (Literature: A, Chapter 3.3)
B) Incorrect. The degree of automation has increased significantly in the last years due to the use of virtual cloud technologies, and so has the speed of the change implementation, but that is not a required principle for version control.
C) Incorrect. One of the great practices of DevOps related to anti-fragility is the deliberate introduction of chaos and instability into the Production environment. This technique is known by various names: game day, chaos monkey, simian army. None of these are required principles for version control.
D) Incorrect. To deal with fragility in the IT infrastructure, some organizations use formalized and automated change management processes designed to structure the flow of changes and minimize the risks associated with their implementation, but that is not a required principle for version control.

18 / 40
For DevOps, finding the balance between moving quickly and maintaining application reliability is important.

How does version control support this?

A) By allowing any member of the team to freely delete unnecessary files and documents
B) By allowing the formation of small independent and self-sufficient development teams
C) By applying specialized tools to eliminate or reduce waste and optimize processes

A) Correct. Version control allows any member of the team to freely delete unnecessary files and documents, without the risk of accidental loss of important information or product. (Literature: A, Chapter 3.3)
B) Incorrect. Forming small, self-sufficient and diverse teams is a key idea in DevOps, but it is not the way version control supports agility and reliability of the system.
C) Incorrect. This is a practical application of Lean Production ideas to IT. Use specialized tools to identify waste; then apply other specialized tools to eliminate or reduce waste. However, this is not the way version control supports agility and reliability of the system.

19 / 40
What benefit does configuration management have?

A) It allows any team member to delete unwanted files without risk.
B) It allows key team members to be absent without problems.
C) It allows team members to see who changed which code at what date.

A) Incorrect. It is version control that allows any team member to freely delete information. If anything goes wrong, the previous version can be restored.
B) Correct. When all changes are controlled by configuration management, the system is automatically restored to a previous stable state if necessary. In addition, if key team members leave, their knowledge is not lost but solidified in the configuration. (Literature: A, Chapter 3.4)
C) Incorrect. The records of what was changed when and by whom are part of version control and not of configuration management.

20 / 40
Configuration management makes it possible to scale IT infrastructure and software systems, without needing more people working on them.

How should changes to such a scaled environment ideally be done?

A) Through continuous integration
B) Through fully controlled scripts
C) Through test automation
D) Through the deployment pipeline

A) Incorrect. Continuous Integration is the second stage in implementing a deployment pipeline, but not the only way administrators should be allowed to change anything in Production. Ideally this is all done by automated scripts.
B) Correct. In fact, it can be argued that even administrators no longer should have rights in Production. They should not be allowed to change anything except through fully controlled (and automated) scripts. (Literature: A, Chapter 3.3 and 3.4)
C) Incorrect. Test automation is the third stage in implementing a deployment pipeline, but not the only way administrators should be allowed to change anything in Production. Ideally this is all done by automated scripts.
D) Incorrect. At an abstract level, a well-working and fully automated deployment pipeline is an automated manifestation of the process for getting software from version control into the hands of users. However, a manual deployment pipeline is possible. It is not a description of the way administrators should be allowed to change anything in Production. Ideally this is all done by automated scripts.

21 / 40
A clear definition of done is (DoD) critical in DevOps and considers the value for the customer.

What is a good description of 'done' for DevOps?

A) A requirement is done when it has been built.
B) A requirement is done when it has been tested.
C) A requirement is done when the product is accepted.
D) A requirement is done when the product is in Production.

A) Incorrect. Something is considered 'done' when value for the customer has been added. Building is just a phase in the DevOps pipeline, no added value is obtained yet.
B) Incorrect. Something is considered 'done' when value for the customer has been added. Testing is just a phase in the DevOps pipeline, no added value is obtained yet.
C) Incorrect. Something is considered 'done' when value for the customer has been added. Acceptance is just a phase in the DevOps pipeline, no added value is obtained yet.
D) Correct. Something is considered 'done' when value for the customer has been added. This is true when the product is in the Production environment. (Literature: A, Chapter 3.5)

22 / 40
In traditional practices many things can go wrong with releases: some changes are not documented, the system has not been backed up fully, or there is no previous state of the system saved.

How does DevOps ensure frequent releases **without** these problems?

A) By automating releases
B) By letting Operations release
C) By making releases very small
D) By not documenting all changes

A) Correct. Automation is an important factor in ensuring that releases are frequent and that the release process becomes routine. If all human factors of backing up, documenting and rolling back are automated, the chances of problems with releasing diminish dramatically. If a release cannot be implemented successfully, the system will alert the team to act. (Literature: A, Chapter 4.1)
B) Incorrect. Giving Operations control does not prevent the mentioned problems. Looking at Operations and integrating Development into their practices may shed light on which parts of the release process need automating and standardization. Just handing over releasing to Operations will not solve the problems mentioned.
C) Incorrect. The size of the release does not matter as much as the automation to make the routine releases work. The smaller releases will not necessarily prevent any of the problems mentioned. Releasing frequently will make the releases smaller.
D) Incorrect. This will make the problems worse. Introducing a versioning system, preferably automated, will help eliminate the problems caused by improper documentation.

23 / 40
A company uses continuous deployment.

Who should decide when to release **new functionality**?

A) The business
B) The customer
C) The IT department
D) The user

A) Correct. Releasing new functionality to be used becomes a business decision when using continuous deployment. The functionality may already have been deployed for a time before the business decides that it is time to switch the functionality on. The IT department releases features in their own tempo, the business decides when to release new functionality. (Literature: A, Chapter 4.1)
B) Incorrect. Although this stakeholder is important for the decision, releases are primarily a business decision.
C) Incorrect. Although this stakeholder is important for the decision, releases are primarily a business decision.
D) Incorrect. Although this stakeholder is important for the decision, releases are primarily a business decision.

24 / 40
According to DevOps practices, what is the **best** way to increase the level of operational control?

A) Automating all manual operations
B) Defining appropriate roles and responsibilities
C) Designing control procedures
D) Improving operational governance

A) Correct. Automating as many operations as possible will give total control, because all operations become instant and uniform. When an operation is suboptimal, changing the automation will also change all future operations. (Literature: A, Chapter 4.1.3)
B) Incorrect. Although defining roles and responsibilities is important, it does not directly impact the control over all operations.
C) Incorrect. Just designing procedures will not help. Once the procedures are designed, they should be automated, so no errors are made, and all operations are uniform.
D) Incorrect. Although this may be desirable anyway, just governing does not give more control. Automation ensures total control.

25 / 40
What is the DevOps way of solving incidents?

A) Escalate to the problem management team and create a solution until they solve the incident
B) Investigate the incident, run diagnostics, then identify and implement a workaround
C) See if a related incident occurred earlier and implement a similar solution to the problem
D) Trace the incident back to a recent deployment and roll the system back to a previous stable state

A) Incorrect. This solution may lead to a working workaround, in which case the real problem may never get solved.
B) Incorrect. Implementing a workaround does not solve the incident. This is not how one should operate.
C) Incorrect. The solution is most likely a workaround, which is not desirable. One should not wait until someone else fixes the problem.
D) Correct. According to the literature, "In case the incident is traced back to a recent deployment, the pipeline control system will automatically roll back to the previous known stable state". This is what should happen, whether this process is automated or still done manually. (Literature: A, Chapter 4.1)

26 / 40
In DevOps, what should be done when process deficiencies are found?

A) All changes should be submitted to a backlog, so they can be released in a project or a Kaizen event.
B) Fixes should be found and implemented as soon as possible after detection of the deficiency.
C) Fixes should be found, approved by the change manager, and released based on priority.
D) Fixes should be found, approved by the continuous improvement manager, and released immediately.
E) Fixes should be postponed until the change can be included in an appropriate iteration.

A) Incorrect. A large change event or a Kaizen event may be useful, but regular changes to the process as a part of continuous improvement should be done as quickly as possible.
B) Correct. Not fixing process deficiencies when they have been detected leads to more problems than necessary. "Therefore, DevOps uses a different approach: all identified process deficiencies should be eliminated immediately." (Literature: A, Chapter 4.1)
C) Incorrect. There is no change manager, and the fixes should be implemented immediately.
D) Incorrect. There is no continuous improvement manager to approve any fixes.
E) Incorrect. Postponing is not a great idea. It keeps the system inefficient and impacts the work negatively.

27 / 40
What does **not** help a DevOps team to successfully develop and deliver working software?

A) Forming a DevOps team for a short period of time during a project
B) Identifying, fixing and learning from errors as soon as they are found
C) Organizing DevOps teams around an organizational mission
D) Writing code for software to have built-in quality as a main goal

A) Correct. DevOps teams are formed for a longer period. This gives them the opportunity to use their experience in the future to deliver new software quicker and to keep innovating. (Literature: A, Chapter 4.2)
B) Incorrect. When batches are smaller, errors can be found more easily and corrected immediately. DevOps focuses on the Lean process of finding errors fast, fixing them in the process immediately and optimizing the process.
C) Incorrect. One of DevOps's main advantages is that the team adds value to the business by aligning their work to a specific organizational goal.
D) Incorrect. Focusing on built-in quality is a Lean property incorporated by DevOps. When one is coding for quality, it may take longer, but because fewer bugs are found and the system is built to be more robust, this adds value in the end.

28 / 40
DevOps recommends continuous updates of the work done.

What is the **best** way to continuously keep **all** team members informed on the progress of a flow?

A) Discussing it with team members during the day
B) Discussing progress during the daily stand-up
C) Informing the Product Owner face to face
D) Sending update e-mails to the Scrum Master
E) Using visualization such as a Kanban board

A) Incorrect. Discussion between team members is a rather inefficient way to keep everyone updated, even if everyone is in the same physical space.
B) Incorrect. DevOps does not require a daily stand-up, although this is common practice, since DevOps and Scrum work well together. During a daily stand-up, only issues for that day are discussed. It is not meant as a continuous update of all work done.
C) Incorrect. DevOps asks to keep all team members up to date. The Product Owner is just a single team member. In addition, face to face is not a good way to continuously update.
D) Incorrect. DevOps asks to keep all team members up to date. The Scrum Master is just a single team member. In addition, e-mail is not a good way to continuously update.
E) Correct. A Kanban board is used to show the progress of the team. All team members can continuously check the board to see all progress. (Literature: A, Chapter 4.3)

29 / 40
A team adds items from the backlog to a batch.

Which **two** things must be considered?

Please remember to select 2 answers.

A) The capacity needed to complete the backlog item
B) The current size of technical debt
C) The entire pipeline, end to end
D) The preferred meeting times of the team members
E) The vacation plans of the team members

A) Correct. The capacity needed to complete the backlog item determines how many items can fit in the batch/timebox and helps prevent overcommitment. (Literature: A, Chapter 4)
B) Incorrect. Technical debt should be managed via dedicated backlog items or reserved capacity; its overall size does not dictate which new items are added to the batch.
C) Correct. Considering the entire pipeline, end to end ensures each item can meet the Definition of Done and flow through all stages without creating bottlenecks. (Literature: A, Chapter 4)
D) Incorrect. Preferred meeting times do not influence which items are selected; scheduling preferences are handled separately from batch planning.
E) Incorrect. Vacation plans are accounted for in overall capacity; selection should be based on capacity and priority rather than individual vacation details.

30 / 40
In which **two** ways does DevOps take operational requirements into account?

Please remember to select 2 answers.

A) By creating a definition of done (DoD)
B) By doing value stream mapping (VSM)
C) By using Agile and Scrum processes
D) By using business needs as input
E) By writing out requirements upfront

A) Correct. Including operability criteria in the DoD makes them testable and required for each increment. (Literature: A, Chapter 4.6)
B) Correct. VSM looks end-to-end, surfacing operational needs across build, deploy, and run to integrate into delivery. (Literature: A, Chapter 4.6)
C) Incorrect. Frameworks alone do not ensure operability; ops requirements must be explicitly defined and prioritized.
D) Incorrect. Business inputs guide priorities, but operational requirements need explicit service level operations and Operations collaboration integrated into the backlog/DoD.
E) Incorrect. DevOps captures and refines operational requirements iteratively in backlog items and acceptance criteria, not via a fixed upfront specification.

31 / 40
What is an advantage of having a DevOps team work together for a longer period?

A) The team does not have to improve the process anymore.
B) The team uses their experience to innovate and improve the process.
C) The team will start working more independently.
D) There is time left to process unexpected requests more often.

A) Incorrect. DevOps teams are always looking to improve. That is what continuous improvement is for. A team that works together for longer may even feel more confident changing routines and improving processes.
B) Correct. DevOps teams that work together longer have the opportunity to use their experience in future development and to deliver more quickly and innovate the processes. (Literature: A, Chapter 4.9)
C) Incorrect. Working together does not mean that the team works more independently. They have the organizational mission to adhere to for direction. Other than that, they should be self-sufficient from the start.
D) Incorrect. A batch is planned with backlog items according to their priority. Processing many unexpected requests should never be a goal in DevOps. The requests should go in the backlog and be prioritized. Only then should they be taken up in the next iteration.

32 / 40
A team works in one-week iterations and frequently encounters bottlenecks.

What would be the **best** reaction of the team when they identify a bottleneck?

A) Eliminate the bottleneck as soon as possible after it is identified
B) Lengthen only the iteration in which a bottleneck is found
C) Limit the regular number of tasks in a batch to reduce batch size
D) Use visualization tools along with work-in-progress limits (WIP-limits)

A) Correct. Finding ways to eliminate the cause of the bottlenecks should be done as fast as possible. When the bottleneck is eliminated, the work could even get done in the iteration it was promised, although this is not common. (Literature: A, Chapter 4.11)
B) Incorrect. In this case, that is not the best way of dealing with the problem. Scrum allows occasional extensions of the iteration length. However, in DevOps there is even more focus on establishing rhythm than in Scrum. Therefore, one should only extend the iteration as a last resort.
C) Incorrect. Limiting the batch size helps to identify the problems causing the bottlenecks. It should be implemented as part of DevOps practices, though. It should not only be implemented after the team has identified a bottleneck.
D) Incorrect. This helps to identify bottlenecks, but it should not be implemented after the team has identified a bottleneck.

33 / 40
When can the use of DevOps for organizational and technological changes lead to chaos and loss of control?

A) When the core business of the organization highly depends on IT
B) When the organization is complex and wants to solve chronic problems
C) When the organization requires rapid changes to test new business ideas
D) When the rate of change in the IT used by the organization is high

A) Incorrect. Organizations (should) become interested in DevOps when the core business is highly dependent on information technology.
B) Correct. For complex situations, DevOps most likely will not bring much profit and will definitely give no quick wins. Chronic problems should be solved carefully, thoughtfully and judiciously. One should not just hope that DevOps is a magical cure for all problems. (Literature: A, Chapter 5.1)
C) Incorrect. Organizations (should) become interested in DevOps when the main business requires rapid changes to test new business ideas or hypotheses.
D) Incorrect. Organizations (should) become interested in DevOps when the rate of change occurring in the IT used, is high.

34 / 40
There are many reasons for a company to become interested in DevOps.

When should companies become interested in DevOps?

A) When Agile practices do not seem to fit the company
B) When no other method gives the necessary results
C) When Scrum and Lean practices have been implemented

A) Incorrect. This should be a trigger to seriously reconsider DevOps practices for a company. When Agile practices do not seem to be relevant to a company, there is no harm in looking into DevOps practices. However, since DevOps practices include many Agile concepts, DevOps may not be for that company.
B) Correct. Companies (should) become interested in DevOps when all other tried-and-tested methods of increasing effectiveness no longer give significant results. Even though this is not the best reason to start using DevOps practices, DevOps should definitely be investigated when nothing else works. (Literature: A, Chapter 5.1)
C) Incorrect. There is no need to wait until Scrum and Lean practices are implemented to start DevOps practices. In fact, many of the DevOps practices will rely on Scrum and Lean concepts. They should work with each other seamlessly. DevOps allows the company to choose whatever works best in that company.

35 / 40
What can cause difficulties when DevOps is adopted?

A) Cross-functional teams
B) Limited use of virtualization
C) Microservice architecture

A) Incorrect. DevOps teams are cross-functional; having cross-functional teams gives organizations a head start in DevOps.
B) Correct. Organizations using little virtualization will have difficulties implementing DevOps practices. (Literature: A, Chapter 5.1)
C) Incorrect. Microservice architecture emerged from a common set of DevOps ideologies gives organizations a head start in DevOps.

36 / 40
An IT system is still being developed and maintained by many employees as a single entity.

What difficulty with adopting DevOps practices can be expected?

A) Assigning DevOps teams to separate areas of responsibility
B) Creating cross-functional teams to work on the organizational structure
C) Maintaining and versioning multiple APIs for backward compatibility

A) Correct. A significant obstacle for the implementation of DevOps practices is a monolithic, rigidly bound IT architecture. Introduction of small teams requires the ability to assign a separate area of responsibility to each of them. In a situation where the IT system in question is still being developed and maintained by dozens or hundreds of employees as a single entity, it will be difficult to separate parts for individual independent teams that work asynchronously. (Literature: A, Chapter 5.1)
B) Incorrect. There is no inhibition in the creation of cross-functional teams themselves.
C) Incorrect. With a monolithic application, developers must only change the class name and API. With microservices, developers must change the version number of the API and maintain multiple APIs for backward compatibility. In this case, no microservices have been implemented yet, so this is not an expected problem. In addition, although it may require a system for versioning, this is not a problem, but progress and an expected result and ultimately benefit of implementing DevOps practices.

37 / 40
Commercial off-the-shelf software (COTS) is used to quickly get the results needed, because it takes time to develop custom software.

What is **true** about COTS?

A) COTS generally eliminates complexity in the integration.
B) COTS lowers the total cost of ownership for the business.
C) COTS requires customization to configure the system.
D) COTS should be used to support strategic business lines.

A) Incorrect. COTS is always limiting flexibility. It is not always possible to configure it the way the team wants or needs to.
B) Incorrect. Configuring such software will take time, which means extra effort and extra expenses. In addition, the value the business actually needs may not be delivered.
C) Correct. With scripting it is possible to configure COTS. However, there might be limitations and configuring the system still takes time. (Literature: A, Chapter 5.2)
D) Incorrect. COTS will not automatically support strategic business lines. Scripting will be necessary to make that possible (if it is possible at all). It is recommended not to use COTS for strategic business lines.

38 / 40
What is a **difficulty** of a rigid or monolithic IT architecture?

A) Changing and developing the IT architecture itself is difficult to do
B) Modifying services within the architecture is done independently
C) Updating to a new version without disabling the current version
D) Waiting for all components to be ready for a large-scale migration

A) Correct. This is a problem of a rigid IT architecture. The larger and more rigid the architecture, the more difficult it becomes to change anything, whilst still seeing what that change does to the rest of the architecture. (Literature: A, Chapter 5.3)
B) Incorrect. This is a solution of the problem. When all services can be modified independently, the architecture is no longer rigid.
C) Incorrect. This can be a challenge even when the architecture is not rigid.
D) Incorrect. It is not necessarily rigid when a large-scale migration is done, and all components should be made ready for that. This could happen in any type of IT architecture.

39 / 40
It is recommended that organizations customize and select DevOps practices that work in that organization. Organization-specific questions must be raised, and organization-specific answers must be found.

Why is this a **good** idea?

A) Because DevOps publications do not always reflect reality and underreport difficulties and failures
B) Because that is the way to become a DevOps engineer that can be hired for implementing DevOps
C) Because the management teams know best how to implement DevOps in their own organization
D) Because there are too few publications and events about DevOps to form independent opinions

A) Correct. The overwhelming amount of literature does not necessarily prepare the team for all struggles and failures reality may pose. It is important to filter your information and see what applies to the organization's situation most. (Literature: A, Chapter 5.6)
B) Incorrect. DevOps cannot be implemented and there is no engineer that can be hired to bring the new order to IT.
C) Incorrect. There is no such thing as implementing DevOps.
D) Incorrect. On the contrary, there are many publications and events to help the organization decide.

40 / 40
An organization has a legacy IT infrastructure. They want to start with DevOps.

What is a common approach in such an organization?

A) To start implementing DevOps as a software product, install it and start it
B) To start with a basic pipeline that performs at least assembly and initial testing
C) To start with a selection of the product with the greatest opportunities for optimization
D) To start with identifying those systems that are loosely connected with others
E) To start with the allocation of a certain proportion of working time for the improvement

A) Incorrect. DevOps is not a software product that can be installed and started.
B) Incorrect. This is not an approach to start with DevOps. This is required to proceed with the building of the deployment pipeline for the part of the stream that can be automated.
C) Incorrect. This is the start of developing the value stream mapping.
D) Correct. DevOps can start anywhere, wherever the business is now. Identifying loosely connected systems is the first step. (Literature: A, Chapter 5.6)
E) Incorrect. This relates to the technical debt.

Evaluation

The table below shows the correct answers to the questions in this sample exam.

Question	Answer	Question	Answer
1	C	**21**	D
2	B	**22**	A
3	B & E	**23**	A
4	C	**24**	A
5	B & C & D	**25**	D
6	B	**26**	B
7	A & C	**27**	A
8	D & E	**28**	E
9	A	**29**	A & C
10	C	**30**	A & B
11	B	**31**	B
12	C	**32**	A
13	A	**33**	B
14	E	**34**	B
15	C	**35**	B
16	B	**36**	A
17	A	**37**	C
18	A	**38**	A
19	B	**39**	A
20	B	**40**	D

Certified for what's next

Contact EXIN

www.exin.com