Sample Exam

Edition 201711

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Introduction

This is the sample exam EXIN DevOps Professional (DEVOPSP.EN). 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 the correct answer.

The maximum number of points that can be obtained for this exam is 40. Each correct answer is worth one point. If you obtain 26 points or more you will pass.

The time allowed for this exam is 90 minutes.

Good luck!

Sample exam

1 / 40
What is a principle of the Agile Manifesto?

A) To create a culture of continual and dynamic learning.
B) To create feedback and feedforward loops into our system of work.
C) To deliver working software frequently, from a couple of weeks to a couple of months.
D) To increase flow by making work visible, by reducing batch sizes and intervals of work, and by building quality.

2 / 40
To which of the Three Ways does "institutionalizing the improvement of daily work" belong?

A) Continuous learning and experimentation
B) Feedback
C) Flow

3 / 40
What is the difference between a System of Engagement (SoE) and a System of Records (SoR) in terms of pace of change?

A) SoE and SoR typically have the same pace of change.
B) SoE typically has a much higher pace of change than SoR.
C) SoE typically has a much lower pace of change than SoR.
D) This relationship differs per information system.

4 / 40
What is a benefit of having Development and Operations using a shared tool?

A) A unified backlog, where everyone prioritizes improvement projects from a global perspective.
B) Developers get feedback on how their applications perform in production, which includes fixing it when it breaks.
C) Enabling the team to perform deployments during normal business hours and conducting simple changeovers.
D) Transforming Operations knowledge into automated code that can be far more reliable and widely reused.

5 / 40
More market-oriented outcomes can be created by better integrating Operations capabilities into Development teams, making both more efficient and productive.

Which approach would **best** accomplish this?

A) Assign a Developer liaison to the Operations team
B) Create infrastructure self-services
C) Outsource the Operations team
D) Train Developers to do the work of Operations

6 / 40
A bank needs longer timescales to bring new or changed offerings to market, due to delays in the creation of new environments by Operations engineers.

What is **true** about the automatic creation of environments?

A) Automatically created environments can be used for all environments.
B) Automatically created environments can be used for all environments except the production environment due to security restrictions.
C) DevOps requires a review by Operations when automatically creating environments in production due to the four eyes principle.
D) DevOps requires the manual agreement of Operations when automatically creating environments in production due to the four eyes principle.

7 / 40
Which value should be included in a value map process block?

A) Application telemetry
B) Percent complete and accurate
C) Team velocity
D) Work in Progress (WiP)

8 / 40
In order to minimize risks to the business within DevOps, what is a **main** goal of version control?

A) Ensure the ability to alert when configuration changes from the desired state
B) Ensure the ability to re-create the previous state of the test environment
C) Ensure the ability to re-create the production environment and build processes
D) Ensure the ability to share the source code between different developers teams

9 / 40
An IT team gets together to review some changes that should be made in order to further adopt DevOps. They need to agree on a Definition of Done (DoD) that is aligned with the DevOps principles.

Which Definition of Done is a proper fit for DevOps?

A) The code has been integrated into the main branch and passed automated unit testing.
B) The code is running as expected on the Developer's laptop and passed unit testing.
C) The code is running in a production-like environment and passed user acceptance testing.

10 / 40
Which tooling can **best** be used to automate the building and configuration of environments?

A) A ticketing system for the provision of a development, test or acceptance environment
B) A tool that copies the production environment settings to the development, test and acceptance environments
C) Configuration files per environment that are manually distributed and maintained in order to keep the environments in sync
D) Infrastructure as code configuration management tools that enable the programmers in changing the environments themselves

11 / 40
A specific design goal of an automated test suite is to find errors as early in the testing as possible. The ideal testing automation pyramid shows the correct order in which the test must be performed.

Which test must be performed **first**?

A) Automated API Test
B) Automated Component Test
C) Automated Integration Test
D) Automated Unit Test

12 / 40
A DevOps team wants to increase velocity by using test-driven development.

Which order of actions is correct?

A)
1. Refactor
2. Write a test case
3. Write the functional code

B)
1. Write the functional code
2. Write a test case
3. Refactor

C)
1. Write a test case
2. Write the functional code
3. Refactor

13 / 40
An insurance company hires a DevOps professional to advise the DevOps team in choosing a branching strategy. The DevOps professional evaluates two strategies:

1. Optimize for individual productivity
2. Optimize for team productivity

Which statement about these two strategies is **true**?

A) Both strategies result in an equal amount of merging effort.
B) Strategy 1 results in far more merging effort than 2.
C) Strategy 2 results in far more merging effort than 1.

14 / 40
A retail company has radically changed the development process from waterfall to DevOps. Many choices have to be made in a short period of time. This is causing some technical debt. The time to market, for example, has increased dramatically. There are, however, ways to eliminate a lot of the delays.

Value stream mapping shows that 20% of the sprint time is spent on porting code, all maintained on separate code branches.

Which solution for this technical debt will result in a faster flow?

A) Adopt trunk-based development
B) Reproduce test failures on Developer workstations
C) Start doing canary releases
D) Use more telemetry

15 / 40
Which is a characteristic of an architecture that enables productivity, testability and safety?

A) Loosely-defined interfaces
B) Tightly-coupled
C) Well-defined APIs

16 / 40
What is the **best** telemetry approach to solve problems within DevOps?

A) Investing in telemetry tooling is important, and it should focus on the production environment, deployment pipeline and pre-production.
B) Investing in telemetry tooling is important, and it should focus on the production environment only.
C) Investing in telemetry tooling is not important, the focus should be on rebooting redundant services which is much cheaper.
D) Investing in telemetry tooling is not important, the focus should be on the user of the application who is a much more complete and cheaper monitor provision.

17 / 40
Within the monitoring framework, data should be collected from three layers.

What is **not** one of those three layers?

A) Application
B) Business Logic
C) Business Metrics
D) Operating System

18 / 40
For which audience does self-service access telemetry add value?

A) Developers only
B) Developers and operators only
C) Developers, operators and stakeholders only
D) Developers, operators, stakeholders and customers

19 / 40
In an environment that has automated testing, fast deployment processes and sufficient telemetry, which technique offers **most** DevOps benefits to the business?

A) Fix forward
B) Roll back
C) Take broken servers out
D) Turn off broken features

20 / 40
A software company has composed the following launching guidance requirements:

- Defect counts and severity: Does the application perform as designed?
- Monitoring coverage: Is the coverage of monitoring sufficient to restore service when things go wrong?
- Systems architecture: Is the service tightly-coupled enough to solve a high rate of incidents in production?
- Type/frequency of pager alerts: Is the application generating an insupportable number of alerts in production?

Which launching guidance requirement does not comply with the DevOps way of working?

A) Defect counts and severity: Does the application actually perform as designed?
B) Monitoring coverage: Is the coverage of monitoring sufficient to restore service when things go wrong?
C) System architecture: Is the service tightly-coupled enough to solve a high rate of incidents in production?
D) Type/frequency of pager alerts: Is the application generating an unsupportable number of alerts in production?

21 / 40
Which is a unique characteristic of the Hands-Off Readiness Review (HRR) and **not** of the Launch Readiness Review (LRR)?

A) HRR is far more stringent and has higher acceptance standards.
B) HRR is self-reported by the product teams.
C) HRR is signed off before any new service is made publicly available.
D) HRR is signed off before any new service receives live production traffic.

22 / 40
One of the most powerful techniques in interaction and user experience (UX) design is contextual inquiry.

What is the **best** description of contextual inquiry?

A) The product team asks users to respond to an application demonstration by the product team.
B) The product team interviews users on the use of the application at home.
C) The product team observes users who use the application in their natural environment.
D) The product team studies users during the user acceptance test in a special room with test equipment.

23 / 40
Startup company ABC is having serious challenges in developing features for a mobile navigation application that meet the expectations of the user.

What is the **best** approach to make sure features are directly aligned with the expectations of the user regarding the UX mobile navigation application?

A) Develop the UX mobile navigation application more fully so consumers have more advanced features and choices to navigate in the UX, providing the consumers more options to customize the UX.
B) Develop the UX mobile navigation application where consumers are randomly selected to be shown one of two versions of a UX they can choose from, either a control or a treatment.
C) Make corrections to the current UX features for the mobile navigation application so that ABC sticks to the core functionality of the UX without sacrificing quality.
D) Release one feature for the mobile navigation application to get feedback from the consumer on the current feature over a period of three weeks.

24 / 40
What approach can be used by a Development team to aid in the delivery of expected business outcomes?

A) Careful execution of numerous experiments
B) Full regression testing
C) Hypothesis-driven development
D) SDLC

25 / 40
Company ABC has had challenges in understanding the impact of code changes to their payroll application. Currently, the implemented code changes are poorly documented. The last code fix for example, was documented as follows: “Fix issue #1801 for payroll application”. The company notices that this is a bad pull request.

A good pull request includes the following:
- Why are we implementing the fix?
- Who is implementing the fix?

What else must be included in a good pull request?

A) The business units impacted by the fix
B) The potential risks and countermeasures of implementing the fix
C) The supporting release schedule for implementing the fix

26 / 40
Please consider the scenario below:

"The developer walks through the code while a colleague gives feedback."

Which review technique is described here?

A) Over-the-shoulder
B) Pair programming
C) Peer review
D) Tool-assisted review

27 / 40
Which review technique results directly in a decrease in coding errors?

A) Over-the-shoulder review
B) Pair programming
C) Peer review
D) Tool-assisted review

28 / 40
A cloud service provider wants to increase the capacity of their service by using a Simian Army Monkey.

Which Monkey is needed in this case?

A) Doctor Monkey
B) Janitor Monkey
C) Latency Monkey

29 / 40
Company ABC is adopting the DevOps way of working and wants to promote a learning environment that is open and blameless. ABC recently experienced a major application failure and was able to restore the application service.

What is the **first** task that must be completed during the blameless post-mortem meeting?

A) Construct a timeline of relevant events as they occurred during the major application failure
B) Identify countermeasures to prevent the major application failure from reoccurring in the future
C) Identify the root cause of the major application failure to propose a corrective action to prevent the major application failure from reoccurring in the future
D) Publish the post-mortem to a centralized location where the entire organization can access it and learn from the major application failure

30 / 40
What is required when creating resilience by injecting production failures?

A) Defining the failure mode
B) Organizing post mortem meetings
C) Training the people
D) Using a test environment

31 / 40
What is the **first** step of a plan for performing a game day?

A) Define and execute drills
B) Identify and address problems, and test
C) Plan the outage
D) Prepare and eliminate SPOFs

32 / 40
What is an example of a non-functional requirement?

A) Have forward and backward compatibility between versions
B) Make it possible to report on delayed schedules
C) Register financial transactions for a hotel booking system

33 / 40
Which activity should be performed for the successful creation of reusable Operations user stories?

A) Associate Operations user stories to the relevant development enhancements and defects
B) Define activities within the handoff process and then automate these activities using the appropriate tools and supporting workflows
C) Identify all required operational work activities and actors needed to complete them

34 / 40
Please consider the following elements:

- Change requests
- Deployment pipeline tools
- Compiled program executables
- Tutorials and standards

Which **two** elements are typically stored in a single shared source code repository?

A) 1 and 2
B) 1 and 4
C) 2 and 3
D) 2 and 4

35 / 40
What is the goal of converting local discoveries into global improvements?

A) To elevate the state of the practice of not just Dev and Ops, but also the entire organization.
B) To make it easier for all new and existing services to leverage the collective knowledge.
C) To make the work culture more collaborative and to make the systems safer and more resilient.
D) To reinforce a culture where everyone feels comfortable and responsible.

36 / 40
Developers can make it easy for any engineer to correctly create and use logging and encryption standards in their applications and environments.

Which is **not** a shared source code repository item that supports this?

A) Code libraries and their recommended configurations
B) Deployment packages
C) Operating System (OS) packages and builds
D) Secret management tools

37 / 40
When developers are introducing code, there is always the risk of enabling unauthorized access.

Which control does **not** mitigate that risk?

A) Code reviews
B) Code testing
C) Effective patching
D) Penetration testing

38 / 40
What is an example of creating telemetry in an application?

A) Operating system (OS) changes
B) Review of system logs on a daily basis
C) Security group changes
D) User password resets

39 / 40
Which process serves as a primary control to reduce Operations and security risks and also supports compliance requirements?

A) Change management process
B) Configuration management process
C) Release and deployment management process
D) Service level management process

40 / 40
What is a drawback when adopting the separation of duty control?

A) The separation of duty control can often impede development efforts by slowing down and reducing the feedback that engineers receive on their work.
B) The separation of duty control requires the Developer to submit changes to a code librarian, who would review and approve the change before it is promoted to production.
C) The separation of duty control results in unnecessary work since it requires inspection of code check-ins, and code reviews, providing the necessary reassurance about the quality of our work.

Answer key

1 / 40
What is a principle of the Agile Manifesto?

A) To create a culture of continual and dynamic learning.
B) To create feedback and feedforward loops into our system of work.
C) To deliver working software frequently, from a couple of weeks to a couple of months.
D) To increase flow by making work visible, by reducing batch sizes and intervals of work, and by building quality.

A) Incorrect. This belongs to the principle of continuous learning and experimentation.
B) Incorrect. This belongs to the principle of feedback.
C) Correct. This is one of the key principles of the Agile Manifesto. Other principles are the need for small, self-motivated teams, and working in a high-trust management model. (Literature: A, Introduction of Part 1)
D) Incorrect. This belongs to the principle of flow.

2 / 40
To which of the Three Ways does "institutionalizing the improvement of daily work" belong?

A) Continuous learning and experimentation
B) Feedback
C) Flow

A) Correct. The principle of the Third Way requires institutionalizing the improvement of daily work, converting local learnings into global learnings that can be used by the entire organization, as well as continually injecting tension into our daily work. (Literature: A, Chapter 4)
B) Incorrect. 'Institutionalizing the improvement of daily work' is a Continuous learning and experimentation principle.
C) Incorrect. 'Institutionalizing the improvement of daily work' is a Continuous learning and experimentation principle.

3 / 40
What is the difference between a System of Engagement (SoE) and a System of Records (SoR) in terms of pace of change?

A) SoE and SoR typically have the same pace of change.
B) SoE typically has a much higher pace of change than SoR.
C) SoE typically has a much lower pace of change than SoR.
D) This relationship differs per information system.

A) Incorrect. SoE typically has a much higher pace of change than SoR.
B) Correct. The pace of change for SoE is higher since it represents the user interface. Additionally, SoR is more complex to change. (Literature: A, Chapter 5)
C) Incorrect. SoE typically has a much higher pace of change than SoR.
D) Incorrect. A common statement can be given. SoE typically has a much higher pace of change than SoR.

4 / 40
What is a benefit of having Development and Operations using a shared tool?

A) A unified backlog, where everyone prioritizes improvement projects from a global perspective.
B) Developers get feedback on how their applications perform in production, which includes fixing it when it breaks.
C) Enabling the team to perform deployments during normal business hours and conducting simple changeovers.
D) Transforming Operations knowledge into automated code that can be far more reliable and widely reused.

A) Correct. With a unified backlog everyone prioritizes improvement projects from a global perspective, selecting work that has the highest value to the organization or has the most impact on reducing the technical debt. (Literature: A, Chapter 6)
B) Incorrect. This is a benefit that Development shares when doing pager rotation duties with Operations.
C) Incorrect. This is a benefit of automating and enabling low-risk releases.
D) Incorrect. This is a benefit of embedding Operations engineers into our service teams.

5 / 40
More market-oriented outcomes can be created by better integrating Operations capabilities into Development teams, making both more efficient and productive.

Which approach would **best** accomplish this?

A) Assign a Developer liaison to the Operations team
B) Create infrastructure self-services
C) Outsource the Operations team
D) Train Developers to do the work of Operations

A) Incorrect. It should be the other way around: “Assign an Operations liaison to the Development team”.
B) Correct. This is one of the three broad strategies for integrating Operations into Development:
• Create self-service capabilities to enable developers in the service teams to be productive.
• Embed Operations engineers into the service teams.
• Assign Operations liaisons to the service teams when embedding Operations is not possible.
(Literature: A, Chapter 8)
C) Incorrect. Outsourcing is not advised as a strategy. The employees of the outsourcer will be even further away from the Development team.
D) Incorrect. Developers can use infrastructure as code, however, this will not make the function of Operations obsolete.

6 / 40
A bank needs longer timescales to bring new or changed offerings to market, due to delays in the creation of new environments by Operations engineers.

What is **true** about the automatic creation of environments?

A) Automatically created environments can be used for all environments.
B) Automatically created environments can be used for all environments except the production environment due to security restrictions.
C) DevOps requires a review by Operations when automatically creating environments in production due to the four eyes principle.
D) DevOps requires the manual agreement of Operations when automatically creating environments in production due to the four eyes principle.

A) Correct. Continuous deployment requires no manual actions to be performed by using scripts. These scripts should be automated. This is valid for all environments. (Literature: A, Chapter 9)
B) Incorrect. The production environment should be created and maintained completely automatically.
C) Incorrect. There is no need to review automated scripts. Automated processes are monitored anyway.
D) Incorrect. There is no need for a manual four eyes principle, since the acceptance of the scripts and the deployment tool of the scripts are under change control.

7 / 40
Which value should be included in a value map process block?

A) Application telemetry
B) Percent complete and accurate
C) Team velocity
D) Work in Progress (WiP)

A) Incorrect. Application telemetry is used to monitor application behavior while it is running in order to report its health status, providing fast and accurate feedback and detection of errors.
B) Correct. This should be included in a value map process block as it is part of the key indicators to understand the quality delivered by that value stream as required by the business. (Literature: A, Chapter 6)
C) Incorrect. Team velocity is a value that is measured during a sprint and used during a sprint meeting to estimate the amount of work that can be done during the sprint.
D) Incorrect. WiP is a concept that should be included or derived from a Kanban board and it is not part of the Value Map, nor does it provide any value for the value stream analysis.

8 / 40
In order to minimize risks to the business within DevOps, what is a **main** goal of version control?

A) Ensure the ability to alert when configuration changes from the desired state
B) Ensure the ability to re-create the previous state of the test environment
C) Ensure the ability to re-create the production environment and build processes
D) Ensure the ability to share the source code between different developers teams

A) Incorrect. Even though version control is key so other tools use its information to detect configuration drifts from desired state, this is not the goal of version control itself, nor the best answer here, as version control should allow faster re-creation of environments to maintain quality of service and flow.
B) Incorrect. This could be a benefit of version control but is not the main goal of it within DevOps. Also the test environment is usually rebuilt for each test and re-creating it to a previous state is not very useful.
C) Correct. Version control within DevOps should allow to re-create production environments as well as build processes. Organizations that adopt this approach perform better than the ones that do not. (Literature: A, Chapter 9)
D) Incorrect. This is the purpose of version control when used just with a Development focus, but it is not the goal within DevOps, as version control in DevOps requires that all the areas store their artifacts, tools and processes within it in order to achieve performance, flow, communication between teams and predictability with reduction of waste in all the environments.

9 / 40
An IT team gets together to review some changes that should be made in order to further adopt DevOps. They need to agree on a Definition of Done (DoD) that is aligned with the DevOps principles.

Which Definition of Done is a proper fit for DevOps?

A) The code has been integrated into the main branch and passed automated unit testing.
B) The code is running as expected on the Developer's laptop and passed unit testing.
C) The code is running in a production-like environment and passed user acceptance testing.

A) Incorrect. This is the standard DoD from a Developer's perspective and does not achieve the goal of DevOps which is to deliver value to the business, so the Definition of Done should include shipping working code to a production-like environment, not integration into the main branch.
B) Incorrect. The fact that everything works on the Developer's laptop does not provide any warranties it will work in the production-like environment.
C) Correct. This assures the code is working as expected and is potentially shippable. (Literature: A, Chapter 9)

10 / 40
Which tooling can **best** be used to automate the building and configuration of environments?

A) A ticketing system for the provision of a development, test or acceptance environment
B) A tool that copies the production environment settings to the development, test and acceptance environments
C) Configuration files per environment that are manually distributed and maintained in order to keep the environments in sync
D) Infrastructure as code configuration management tools that enable the programmers in changing the environments themselves

A) Incorrect. A ticketing system for the provision of environments will impede flow in the deployment pipeline, generate more hands-off and therefore is a waste. Tools should be used to automate the provision of environments.
B) Incorrect. Within DevOps this is not the proposed way of working. An environment must be built from scratch. Also production data is not allowed to be used in the D-T-A environments.
C) Incorrect. Configuration files for environments must be automatically distributed.
D) Correct. This is one of the options to automate the building and configuration of the environment. Infrastructure as code can be used by the developers to build and configure the environments themselves. (Literature: A, Chapter 9)

11 / 40
A specific design goal of an automated test suite is to find errors as early in the testing as possible. The ideal testing automation pyramid shows the correct order in which the test must be performed.

Which test must be performed **first**?

A) Automated API Test
B) Automated Component Test
C) Automated Integration Test
D) Automated Unit Test

A) Incorrect. The Automated Unit Test must be performed first. This test is 4th in a sequence of 5.
B) Incorrect. The Automated Unit Test must be performed first. This test is 2nd in a sequence of 5.
C) Incorrect. The Automated Unit Test must be performed first. This test is 3rd in a sequence of 5.
D) Correct. This is the 1st test to be performed. (Literature: A, Chapter 10)

12 / 40
A DevOps team wants to increase velocity by using test-driven development.

Which order of actions is correct?

A)
1. Refactor
2. Write a test case
3. Write the functional code

B)
1. Write the functional code
2. Write a test case
3. Refactor

C)
1. Write a test case
2. Write the functional code
3. Refactor

A) Incorrect. First perform the testing, then the coding. Refactoring follows as the third step.
B) Incorrect. First perform the testing, then the coding. Refactoring follows as the third step.
C) Correct. First perform the testing, then the coding. Refactoring follows as the third step. (Literature: A, Chapter 10)

13 / 40
An insurance company hires a DevOps professional to advise the DevOps team in choosing a branching strategy. The DevOps professional evaluates two strategies:

1. Optimize for individual productivity
2. Optimize for team productivity

Which statement about these two strategies is **true**?

A) Both strategies result in an equal amount of merging effort.
B) Strategy 1 results in far more merging effort than 2.
C) Strategy 2 results in far more merging effort than 1.

A) Incorrect. Since strategy 1 results in a branch per person, merging becomes a nightmare. Regardless of which version management system is used, strategy 2 is much better.
B) Correct. Individual productivity means a branch per DevOps Developer by which he/she can produce software individually without integrating. Strategy 2 is about having no branch(es) at all, so development takes place in an 'unbroken line'. (Literature: A, Chapter 11)
C) Incorrect. Strategy 2 results in less merging effort because everyone works in a common area.

14 / 40
A retail company has radically changed the development process from waterfall to DevOps. Many choices have to be made in a short period of time. This is causing some technical debt. The time to market, for example, has increased dramatically. There are, however, ways to eliminate a lot of the delays.

Value stream mapping shows that 20% of the sprint time is spent on porting code, all maintained on separate code branches.

Which solution for this technical debt will result in a faster flow?

A) Adopt trunk-based development
B) Reproduce test failures on Developer workstations
C) Start doing canary releases
D) Use more telemetry

A) Correct. Trunk-based development means no branching is allowed and therefore the merging is eliminated. (Literature: A, Chapter 11)
B) Incorrect. The problem is the branching which causes problems while merging. Testing does not solve the delay.
C) Incorrect. Testing does not solve the delay, even when canary releases would have a positive impact on the Continuous Deployment perspective.
D) Incorrect. Telemetry does not solve the merging problem.

15 / 40
Which is a characteristic of an architecture that enables productivity, testability and safety?

A) Loosely-defined interfaces
B) Tightly-coupled
C) Well-defined APIs

A) Incorrect. Well-defined interfaces are a characteristic of an architecture that enables productivity, testability and safety, by enforcing how modules connect with each other. Loosely-defined interfaces are not.
B) Incorrect. A tightly-coupled architecture is monolithic or has modules that are too interconnected. Every time we attempt to commit code into trunk we risk creating global failures, each small change requires enormous amounts of communication and coordination over days, as well as approvals from any group that could potentially be affected.
C) Correct. Well-defined Application Programming Interfaces (APIs) allow an architecture that provides productivity, easier testing of services and safety. (Literature: A, Chapter 13)

16 / 40
What is the **best** telemetry approach to solve problems within DevOps?

A) Investing in telemetry tooling is important, and it should focus on the production environment, deployment pipeline and pre-production.
B) Investing in telemetry tooling is important, and it should focus on the production environment only.
C) Investing in telemetry tooling is not important, the focus should be on rebooting redundant services which is much cheaper.
D) Investing in telemetry tooling is not important, the focus should be on the user of the application who is a much more complete and cheaper monitor provision.

A) Correct. Problems do not only occur in the production environment, but also elsewhere. DevOps requires fast feedback. The feedback starts at the beginning of the pipeline. (Literature: A, Chapter 14)
B) Incorrect. Focusing on the production environment alone is not enough. The deployment pipeline and pre-production are important too to spot errors early.
C) Incorrect. Rebooting is not cheaper. A lot of production time is wasted to find the error.
D) Incorrect. If the user is the sole monitor of the service then the loss of production time is high since the monitor provision is much faster in detecting where and what goes wrong (if well implemented) and not all errors are found by the user. Only errors that the user can see are found, not the ones that are happening in the background.

17 / 40
Within the monitoring framework, data should be collected from three layers.

Which is **not** one of those three layers?

A) Application
B) Business Logic
C) Business Metrics
D) Operating System

A) Incorrect. Application is one of the three layers where data collection should be done in the monitoring framework.
B) Incorrect. Business Logic is one of the three layers where data collection should be done in the monitoring framework.
C) Correct. Business Metrics is not one of the three layers where data collection should be done in the monitoring framework. Business metrics is rather the result of the monitoring. (Literature: A, Chapter 14)
D) Incorrect. Operating System is one of the three layers where data collection should be done in the monitoring framework.

18 / 40
For which audience does self-service access telemetry add value?

A) Developers only
B) Developers and operators only
C) Developers, operators and stakeholders only
D) Developers, operators, stakeholders and customers

A) Incorrect. It also adds value for customers, stakeholders and operators.
B) Incorrect. It also adds value for customer and stakeholders.
C) Incorrect. It also adds value for customers.
D) Correct. Self-service access to telemetry adds value for all visitors. (Literature: A, Chapter 14)

19 / 40
In an environment that has automated testing, fast deployment processes and sufficient telemetry, which technique offers **most** DevOps benefits to the business?

A) Fix forward
B) Roll back
C) Take broken servers out
D) Turn off broken features

A) Correct. Even though this could be a risky choice, it is perfectly safe in this environment that has automated testing, fast deployment processes and sufficient telemetry. These will allow to quickly confirm whether everything is functioning correctly into production and deliver new functionalities and value to the business. The added value is that the errors are corrected instead of removing the new feature or take broken servers out. (Literature: A, Chapter 16)
B) Incorrect. Just like "turn off broken features", what "roll back" does is roll back the deployment to the previous state, fixing problems by removing the feature that caused the error. Therefore, it does not repair the error and takes new value out of production.
C) Incorrect. This option is focused on continuity of the service, but given that we have the proper processes, telemetry and testing in place, the better option is to deliver new business value.
D) Incorrect. Turn off broken features is the least risky option, but does not correct the error and takes new value out of production.

20 / 40
A software company has composed the following launching guidance requirements:

- Defect counts and severity: Does the application perform as designed?
- Monitoring coverage: Is the coverage of monitoring sufficient to restore service when things go wrong?
- Systems architecture: Is the service tightly-coupled enough to solve a high rate of incidents in production?
- Type/frequency of pager alerts: Is the application generating an insupportable number of alerts in production?

Which launching guidance requirement does not comply with the DevOps way of working?

A) Defect counts and severity: Does the application actually perform as designed?
B) Monitoring coverage: Is the coverage of monitoring sufficient to restore service when things go wrong?
C) System architecture: Is the service tightly-coupled enough to solve a high rate of incidents in production?
D) Type/frequency of pager alerts: Is the application generating an unsupportable number of alerts in production?

A) Incorrect. This requirement does comply with the DevOps way of working.
B) Incorrect. This requirement does comply with the DevOps way of working.
C) Correct. Within the DevOps way of working, the architecture should be loosely and not tightly coupled. The service should be loosely coupled in order to support a high rate of changes and deployments in production. (Literature: A, Chapter 16)
D) Incorrect. This requirement does comply with the DevOps way of working.

21 / 40
Which is a unique characteristic of the Hands-Off Readiness Review (HRR) and **not** of the Launch Readiness Review (LRR)?

A) HRR is far more stringent and has higher acceptance standards.
B) HRR is self-reported by the product teams.
C) HRR is signed off before any new service is made publicly available.
D) HRR is signed off before any new service receives live production traffic.

A) Correct. This is a unique characteristic of HRR, as it is signed off when the service is transitioned to an Operations-managed state. (Literature: A, Chapter 16)
B) Incorrect. This is a unique characteristic of LRR and not HRR.
C) Incorrect. This is a unique characteristic of LRR and not HRR.
D) Incorrect. This is a unique characteristic of LRR and not HRR.

22 / 40
One of the most powerful techniques in interaction and user experience (UX) design is contextual inquiry.

What is the **best** description of contextual inquiry?

A) The product team asks users to respond to an application demonstration by the product team.
B) The product team interviews users on the use of the application at home.
C) The product team observes users who use the application in their natural environment.
D) The product team studies users during the user acceptance test in a special room with test equipment.

A) Incorrect. Contextual inquiry is about observing how the user uses the application and not about a demonstration of the application by the supplier.
B) Incorrect. Contextual inquiry is about observing directly how the user is using the application and does not involve an interview about the use of the application.
C) Correct. This technique is about observing how the customer uses the application in a natural environment. (Literature: A, Chapter 16)
D) Incorrect. Contextual inquiry is about observing how the user uses the application in a natural environment, not in a special room with test equipment.

23 / 40
Startup company ABC is having serious challenges in developing features for a mobile navigation application that meet the expectations of the user.

What is the **best** approach to make sure features are directly aligned with the expectations of the user regarding the UX mobile navigation application?

A) Develop the UX mobile navigation application more fully so consumers have more advanced features and choices to navigate in the UX, providing the consumers more options to customize the UX.
B) Develop the UX mobile navigation application where consumers are randomly selected to be shown one of two versions of a UX they can choose from, either a control or a treatment.
C) Make corrections to the current UX features for the mobile navigation application so that ABC sticks to the core functionality of the UX without sacrificing quality.
D) Release one feature for the mobile navigation application to get feedback from the consumer on the current feature over a period of three weeks.

A) Incorrect. When we discover that a given feature is not achieving the desired results, adding more functionality or enhancements to the feature may be out-prioritized by other new features, ensuring that the under-performing feature will never achieve its intended business goal.
B) Correct. The most commonly used A/B technique in modern UX practice involves a website where visitors are randomly selected to be shown one of two versions of a page, either a control (the “A”) or a treatment (the “B”). Based on statistical analysis of the subsequent behavior of these two cohorts of users, we demonstrate whether there is a significant difference in the outcomes of the two, establishing a causal link between the treatment and the outcome. (Literature: A, Chapter 17)
C) Incorrect. When we discover that a given feature is not achieving the desired results, making corrections to the feature may be out-prioritized by other new features, ensuring that the under-performing feature will never achieve its intended business goal.
D) Incorrect. Each experiment is typically very time intensive per trial and takes weeks or even months to be completed.

24 / 40
What approach can be used by a Development team to aid in the delivery of expected business outcomes?

A) Careful execution of numerous experiments
B) Full regression testing
C) Hypothesis-driven development
D) SDLC

A) Incorrect. This is not an approach to aid in the delivery of expected business outcomes.
B) Incorrect. This is not an approach to aid in the delivery of expected business outcomes.
C) Correct. This is the best approach to aid in the delivery of expected business outcomes. (Literature: A, Chapter 17)
D) Incorrect. This is not an approach to aid in the delivery of expected business outcomes.

25 / 40
Company ABC has had challenges in understanding the impact of code changes to their payroll application. Currently, the implemented code changes are poorly documented. The last code fix for example, was documented as follows: “Fix issue #1801 for payroll application”. The company notices that this is a bad pull request.

A good pull request includes the following:
- Why are we implementing the fix?
- Who is implementing the fix?

What else **must** be included in a good pull request?

A) The business units impacted by the fix
B) The potential risks and countermeasures of implementing the fix
C) The supporting release schedule for implementing the fix

A) Incorrect. The potential risks and countermeasures of implementing the fix must be included.
B) Correct. An effective pull request needs to provide details on why we are implementing the fix, who is implementing the fix, and the potential risks and countermeasures in implementing the fix. (Literature: A, Chapter 18)
C) Incorrect. The potential risks and countermeasures of implementing the fix must be included.

26 / 40
Please consider the scenario below:

"The developer walks through the code while a colleague gives feedback."

Which review technique is described here?

A) Over-the-shoulder
B) Pair programming
C) Peer review
D) Tool-assisted review

A) Correct. The over-the-shoulder technique is the interaction between the author and a colleague after writing the code. (Literature: A, Chapter 18)
B) Incorrect. This review technique is performed during the coding and not afterwards.
C) Incorrect. This is performed afterwards but the author does not need to be present.
D) Incorrect. This review is performed by a tool and not by a person.

27 / 40
Which review technique results directly in a decrease in coding errors?

A) Over-the-shoulder review
B) Pair programming
C) Peer review
D) Tool-assisted review

A) Incorrect. This allows feedback while browsing the software that is already written.
B) Correct. Pair programming means writing software together. One person types, the other one checks. This results in direct feedback and fewer mistakes. (Literature: A, Chapter 18)
C) Incorrect. Peer review is a review performed after writing the software.
D) Incorrect. The tool-assisted review is limited in feedback and many checks are done after checking-in the code.

28 / 40
A cloud service provider wants to increase the capacity of their service by using a Simian Army Monkey.

Which Monkey is needed in this case?

A) Doctor Monkey
B) Janitor Monkey
C) Latency Monkey

A) Incorrect. The Doctor Monkey taps into health checks that run on each instance and finds unhealthy instances and proactively shuts them down if owners do not fix the root cause on time. This does not improve the capacity.
B) Correct. The Janitor Monkey ensures that their cloud environment is running free of clutter and waste; searches for unused resources and disposes of them. (Literature: A, Appendix 9)
C) Incorrect. The Latency Monkey induces artificial delays or downtime in their RESTful client-server communication layer to simulate service degradation and ensure that dependent services respond appropriately. This does not improve the capacity.

29 / 40
Company ABC is adopting the DevOps way of working and wants to promote a learning environment that is open and blameless. ABC recently experienced a major application failure and was able to restore the application service.

What is the **first** task that must be completed during the blameless post-mortem meeting?

A) Construct a timeline of relevant events as they occurred during the major application failure
B) Identify countermeasures to prevent the major application failure from reoccurring in the future
C) Identify the root cause of the major application failure to propose a corrective action to prevent the major application failure from reoccurring in the future
D) Publish the post-mortem to a centralized location where the entire organization can access it and learn from the major application failure

A) Correct. The first task in the blameless post-mortem meeting is to record the best possible understanding of the timeline of relevant events as they occurred. This includes all actions taken and at what time (ideally supported by chat logs, such as IRC or Slack), what effects have been observed (ideally in the form of the specific metrics from our production telemetry, as opposed to merely subjective narratives), all investigation paths that have been followed, and what resolutions were considered. (Literature: A, Chapter 19)
B) Incorrect. Identifying countermeasures is not the first task of conducting a blameless post-mortem meeting. This is an action that would occur after constructing the timeline.
C) Incorrect. Identifying the root cause is not the first task of conducting a blameless post-mortem meeting. This is an action that would occur after constructing the timeline.
D) Incorrect. Publishing the post-mortem is not the first task of conducting a blameless post-mortem meeting. This is an action that would occur only after the post-mortem has been documented completely.

30 / 40
What is required when creating resilience by injecting production failures?

A) Defining the failure mode
B) Organizing post mortem meetings
C) Training the people
D) Using a test environment

A) Correct. Failure mode definition is important in order to ensure that these failure modes operate as designed. (Literature: A, Chapter 19)
B) Incorrect. Post mortem meetings are not part of injection techniques.
C) Incorrect. People learn from the injection.
D) Incorrect. Only a production environment is needed.

31 / 40
What is the **first** step of a plan for performing a game day?

A) Define and execute drills
B) Identify and address problems, and test
C) Plan the outage
D) Prepare and eliminate SPOFs

A) Incorrect. The first aspect is to plan: "Plan the outage of a plant by a large-scale fault injection". “Define the plan and execute drills” is a task for the game makers.
B) Incorrect. The first aspect is to plan: "Plan the outage of a plant by a large-scale fault injection".
C) Correct. The steps should be as follows:
1. The first step is the planning of the outage
2. Based on the plan, the team can prepare the outage by taking measures
3. The measure may involve procedures that need to be tested
4. The outage is executed as planned
5. The defined process must be followed. (Literature: A, Chapter 19)

D) Incorrect. The first aspect is to plan: "Plan the outage of a plant by a large-scale fault injection".

32 / 40
What is an example of a non-functional requirement?

A) Have forward and backward compatibility between versions
B) Make it possible to report on delayed schedules
C) Register financial transactions for a hotel booking system

A) Correct. Forward and backward compatibility between versions is an example of a non-functional requirement. (Literature: A, Chapter 20)
B) Incorrect. The report is a function and thus not a non-functional requirement.
C) Incorrect. Financial transactions are a functionality. Non-functional requirements are related to the quality of the system.

33 / 40
Which activity should be performed for the successful creation of reusable Operations user stories?

A) Associate Operations user stories to the relevant development enhancements and defects
B) Define activities within the handoff process and then automate these activities using the appropriate tools and supporting workflows
C) Identify all required operational work activities and actors needed to complete them

A) Incorrect. This is not an activity that must be taken into account for the successful creation of reusable Operations user stories.
B) Correct. This is an activity that must be taken into account for the successful creation of reusable Operations user stories. (Literature: A, Chapter 20)
C) Incorrect. This is not an activity that must be taken into account for the successful creation of reusable Operations user stories.

34 / 40
Please consider the following elements:

1. Change requests
2. Deployment pipeline tools
3. Compiled program executables
4. Tutorials and standards

Which two elements are typically stored in a single shared source code repository?

A) 1 and 2
B) 1 and 4
C) 2 and 3
D) 2 and 4

A) Incorrect. Change requests (1) are not part of the single shared source code repository since these are not artifacts that encode knowledge and learning. Change requests are registered on the product backlog, which is not part of the shared source code repository. Deployment pipeline (2) tools are part of the single shared source code repository.
B) Incorrect. Change requests (1) are not part of the single shared source code repository since these are not artifacts that encode knowledge and learning. Change requests are registered on the product backlog, which is not part of the shared source code repository. Tutorials and standards (4) are part of the single share source code repository.
C) Incorrect. Compiled program executables (3) are not part of the shared source code repository since these are not artifacts that encode knowledge and learning. Executables are stored as binary in the artifact depository (output of the deployment pipeline) and not in the single shared source code repository (input of the deployment pipeline. Deployment pipeline tools (2) are part of the single shared source code repository.
D) Correct. Both deployment pipeline tools (2) and tutorials and standards (4) are part of the single shared source code repository, since these are artifacts that encode knowledge and learning. (Literature: A, Chapter 20)

35 / 40
What is the goal of converting local discoveries into global improvements?

A) To elevate the state of the practice of not just Dev and Ops, but also the entire organization.
B) To make it easier for all new and existing services to leverage the collective knowledge.
C) To make the work culture more collaborative and to make the systems safer and more resilient.
D) To reinforce a culture where everyone feels comfortable and responsible.

A) Correct. This is the goal of converting local discoveries into global improvements. (Literature: A, Chapter 20)
B) Incorrect. This is a goal of the underlying design for Operations through codified non-functional requirements (NFRs).
C) Incorrect. This is a goal of reserving time to create organizational learning and improvement.
D) Incorrect. This is a goal of enabling and injecting learning into daily work.

36 / 40
Developers can make it easy for any engineer to correctly create and use logging and encryption standards in their applications and environments.

Which is **not** a shared source code repository item that supports this?

A) Code libraries and their recommended configurations
B) Deployment packages
C) Operation System (OS) packages and builds
D) Secret management tools

A) Incorrect. Since code libraries and their recommended configurations have effective security-specific configuration settings for the components they use in their application, it makes it easy for any engineer to correctly create and use logging and encryption standards.
B) Correct. Deployment packages are a deliverable of an engineer (Operations) rather than a Developer (Development), therefore it is not an item that supports this. The question is about what a developer can do to make it easy for any engineer to correctly create and use logging and encryption standards in their applications. (Literature: A, Chapter 22)
C) Incorrect. OS packages and builds make it easy for any engineer to correctly create and use logging and encryption standards in their applications, as it provides effective security-specific configuration settings for the components they use in their application.
D) Incorrect. Secret management tools make it easy for any engineer to correctly create and use logging and encryption standards in their applications, as it provides effective security-specific configuration settings like connection settings, encryption keys etcetera.

37 / 40
When developers are introducing code, there is always the risk of enabling unauthorized access.

Which control does **not** mitigate that risk?

A) Code reviews
B) Code testing
C) Effective patching
D) Penetration testing

A) Incorrect. The code review can reveal the introduction of malice software code that enables access via backdoors.
B) Incorrect. The code testing can reveal the enabling of unauthorized access.
C) Correct. Effective patching does not reveal the introduction of code of the developer, it only solves bugs. (Literature: A, Chapter 22)
D) Incorrect. The penetration test can reveal weak spots in the application that have been created of left there on purpose to enable unauthorized access.

38 / 40
What is an example of creating telemetry in an application?

A) Operating system (OS) changes
B) Review of system logs on a daily basis
C) Security group changes
D) User password resets

A) Incorrect. This is use of telemetry for the infrastructure environment where the application is hosted, and not specifically to the application.
B) Incorrect. This is use of telemetry for the infrastructure environment where the application is hosted, and not specifically to the application.
C) Incorrect. This is use of telemetry for the infrastructure environment where the application is hosted, and not specifically to the application.
D) Correct. This is use of telemetry specific to an application. (Literature: A, Chapter 22)

39 / 40
Which process serves as a primary control to reduce Operations and security risks and also supports compliance requirements?

A) Change management process
B) Configuration management process
C) Release and deployment management process
D) Service level management process

A) Correct. Almost any IT organization of a significant size will have existing change management processes, which are the primary controls to reduce Operations and security risks. Compliance and security managers place reliance on change management processes for compliance requirements, and they typically require evidence that all changes have been authorized appropriately. (Literature: A, Chapter 23)
B) Incorrect. This process provides information about the services and each configuration item. This could be used to analyze and detect potential risks and improvements, but is not the process responsible for reduce those risks. Configuration management plans, implements, controls, reports and verifies configuration items.
C) Incorrect. Release and deployment management is the process that actually implements the approved release that can include numerous approved changes. The change management process controls and approves changes and then coordinates efforts with the release and deployment management process.
D) Incorrect. The SLM process ensures the delivery of the required level of service, as agreed with the business. It does state which compliance and security requirements are needed, but it is not the process that will help reduce those risks.

40 / 40
What is a drawback when adopting the separation of duty control?

A) The separation of duty control can often impede development efforts by slowing down and reducing the feedback that engineers receive on their work.
B) The separation of duty control requires the Developer to submit changes to a code librarian, who would review and approve the change before it is promoted to production.
C) The separation of duty control results in unnecessary work since it requires inspection of code check-ins, and code reviews, providing the necessary reassurance about the quality of our work.

A) Correct. Separation of duty can often impede this by slowing down and reducing the feedback engineers receive on their work. This prevents engineers from taking full responsibility for the quality of their work and reduces a firm's ability to create organizational learning. Consequently, wherever possible, we should avoid using separation of duties as a control. Instead, we should choose controls such as pair programming, continuous inspection of code check-ins, and code review. (Literature: A, Chapter 23)
B) Incorrect. This reflects the old approach supporting the Software Development Life Cycle (SDLC) and not DevOps. The recommended controls for DevOps include pair programming, continuous inspection of code check-ins, and code review controls. These controls provide us the necessary reassurance about the quality of our work. Furthermore, by putting these controls in place, if separation of duties is required, we can show that we achieve equivalent outcomes with the controls we have created.
C) Incorrect. We should avoid using separation of duties as a control. Instead, we should choose controls such as pair programming, continuous inspection of code check-ins, and code review. Furthermore, by putting these controls in place, if separation of duties is required, we can show that we achieve equivalent outcomes with the controls we have created.

Evaluation

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

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

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