ITIL® 4 Specialist: High-velocity IT

Sample Paper 1

Answers and Rationales

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Sample Paper 1: Answers and Rationales

Q	A	Syllabus Ref	Rationale
1	A	1.1.a	**A. Correct. A digital organization is "an organization that is enabled by digital technology to do business significantly differently, or to do significantly different business". Ref 2.3** B. Incorrect. Safety culture relates to the "shared beliefs, perceptions, and values" that an organization fosters (not its use of technology). Safety culture is "a climate in which people are comfortable being (and expressing) themselves". Ref 3.2.2.2 C. Incorrect. This change is focused on business enablement, but there is no indication that speed is a consideration. High-velocity IT is "the application of digital technology for significant business enablement, where time to market, time to customer, time to change, and speed in general are crucial". Ref 2.1 D. Incorrect. Continuous delivery relates to how software is released. Continuous delivery means that "built software can be released to production at any time". Ref 4.2.5
2	A	3.2.e	**A. Correct.** **(1) Experimentation is important for acceptance of uncertainty and continual learning. "It is important to favour experimentation and not be afraid to fail safely and mindfully. Practitioners should not be scared of the unknown. They should be able to accept that things are not perfect, and have techniques to deal with that". Ref 3.1.1** **(2) "It is important that practitioners commit themselves to continually learning and improving their knowledge and the level of information they have. Data-driven experiments can be used to challenge and improve hypotheses." Ref 3.1.5** B, C, D. Incorrect. (3) Experimentation is important for continual learning. However, it is less critical for getting customer's job done. The other key behaviour pattern requiring experimentation is acceptance of ambiguity and uncertainty. Ref. 3.1.1, 3.1.4, 3.1.5 (4) Experimentation is important for acceptance of ambiguity and uncertainty. However, it is less critical for the 'trust and be trusted' pattern. The other key behaviour pattern requiring experimentation is continual learning. Ref. 3.1.1, 3.1.2, 3.1.5
3	D	4.8.c	A. Incorrect. The purpose of the problem management practice is "to reduce the likelihood and impact of incidents by identifying actual and potential causes of incidents, and managing workarounds and known errors". Ref *ITIL® 4 Problem Management* Official Practice Guide 2.1 B. Incorrect. The purpose of the risk management practice is "to ensure that the organization understands and effectively handles risks". Ref *ITIL® 4 Risk Management* Official Practice Guide 2.1 C. Incorrect. "The purpose of the service design practice is to design products and services that are fit for purpose and use, and that can be delivered by the organization and its ecosystem." Ref *ITIL® 4 Service Design* Official Practice Guide 2.10 **D. Correct. "As a bi-directional communications gateway between the service provider and its users, a key focus of the service desk practice is to effectively capture, record, and integrate communications into relevant value streams."** **Ref *ITIL® 4 Service Desk* Official Practice Guide 2.4.2**

Q	A	Syllabus Ref	Rationale
4	A	4.9	**A. Correct. "Integrating information security duties into the daily work of practitioners" is the best way to ensure security. "Staff who have been trained well, and who follow information security policies and other controls, can help to detect, prevent, and correct security incidents. Poorly trained or insufficiently motivated staff can be a major vulnerability." Ref 4.5.2** B. Incorrect. "Traditionally, duties are separated in order to reduce the risk of fraud and error; for example, the risk that untested and unauthorized code will be deployed into production. This can, however, lead to delay, and frustration at the perceived bureaucracy. The separation of duties is not an objective in itself: it is a method of reaching an objective." Ref 4.5.2 C. Incorrect. "In high-velocity environments, information security is integrated as much as possible into the daily work of development and operations". Ref 4.5.2 D. Incorrect. "In high-velocity environments, information security is integrated as much as possible into the daily work of development and operations". Ref 4.5.2
5	A	3.1.c	**A. Correct. Making batch sizes of work as small as feasible is a Lean principle that is also found in agile. In the context of Lean, "[...] small batch sizes of work is one of the best predictors of short lead times. It is therefore beneficial to break down larger pieces of work into smaller items". In the context of agile, "building on the lean principle that small batch sizes of work are beneficial to throughput, working software is delivered in frequent increments." Ref 2.5.2.1, 2.5.2.2** B. Incorrect. Limiting work-in-progress allows people to focus and helps to increase throughput and so is not viewed as a constraint. "Another lean technique to improve throughput is to reduce work-in-progress." Ref 2.5.2.1 C. Incorrect. Lean encourages the use of pull systems such as Kanban to improve the flow of work. "Instead of utilizing each workstation in a value stream to maximum capacity and 'pushing' work onto the next workstation, work should be 'pulled' when a particular workstation requires input". Ref 2.5.2.1 D. Incorrect. Both Lean and agile encourage transparency and the use of visual control mechanisms such as Kanban boards to make work visible. "Kanban boards can be used to support this way of working by providing a visualization of the backlog of work, the work in progress, and the completed work." Ref 2.5.2.1

Q	A	Syllabus Ref	Rationale
6	B	1.1.b	A. Incorrect. Although continuous deployment may be an aim of organizations looking to increase velocity, it is not a requirement. Continuous deployment may not be practical or possible for companies constrained by regulatory or other requirements. Continuous deployment means that “changes go through the pipeline and are automatically put into the production environment, enabling multiple production deployments per day”. Ref 4.2.5 **B. Correct. High-velocity IT is "the application of digital technology for significant business enablement, where time to market, time to customer, time to change, and speed in general are crucial”. Ref 2.1** C. Incorrect. High-velocity “equates with high performance in general” and does not come at the expense of the utility (value) or warranty of the solution. Ref 2.1 D. Incorrect. “HVIT provides many organizations with higher degrees of digital enablement, but it is not always a prudent investment. For some organizations, it does not make sense to undertake such a transformation, as they have other, higher priorities.” Ref 2.1
7	D	3.1.d	A. Incorrect. This describes a situation that can arise when considering the ethics associated with high-velocity IT approaches. Ethics is "a system of principles that defines what is good for individuals and society". Ref 3.2.1.1 B. Incorrect. This answer describes a lean approach. Lean "helps to improve throughput and reduce waste. HVIT environments benefit from approaches with Lean characteristics due to the pressure on time to market and time to customer". Ref 2.5.2 C. Incorrect. This describes service-dominant logic. Service-dominant logic is "a mental model of an (economic) exchange in which organizations co-create value by applying their competencies and other resources for the benefit of each other". Ref 2.5.2.5 **D. Correct. "Disciplined scientific thinking with incremental improvements reduces our natural bias to jump to the wrong conclusions. Practice and coaching help us form and sustain new habits, after which we can start improvising. One approach to scientific experimentation is Toyota Kata". Ref 3.2.3.3**
8	C	4.7	A. Incorrect. The service desk practice may contribute some understanding of user experience needs, but is not likely to contribute to an understanding of customer experience nearly as well as the business analysis practice. "Being empathetic and having the emotional intelligence to understand users’ experiential needs." Ref 4.4.1, Table 4.21 B. Incorrect. The service catalogue management practice may document the intended customer experience, but is reliant on other practices for information. Service catalogue management may help set expectations for customer and user experience by "describing services and offerings in terms of technical as well as experiential aspects". Ref 4.4.1, Table 4.21 **C. Correct. "Business analysis: understanding user needs and translating them into customer experience or user experience requirements, in addition to traditional requirements regarding utility and warranty."**

Q	A	Syllabus Ref	Rationale
			Ref 4.4.1, Table 4.21 D. Incorrect. The software development and management practice may impact user and customer experience by how user interfaces are designed, but will not help to understand the experiences that would be valued. "The desired service experience informs the design of the user interface." Ref 4.4.1, Table 4.21
9	D	4.6.c	A. Incorrect. Although "incident management data can benefit from the highly-automated capabilities provided by AIOps tools that augment manual work", and this will likely improve resolution time, this will not have direct impact on service reliability and resilience. Ref Table 4.18 B. Incorrect. Although "AIOps data can be used to detect changes to configuration items, helping to identify unauthorized changes", it will not have direct impact on service reliability and resilience. Ref Table 4.18 C. Incorrect. Although "the combination of knowledge of IT processes, operations, performance results, and data processing algorithms supports critical business functions", improvements in knowledge management will not have a direct impact on service reliability and resilience. Ref Table 4.18 **D. Correct. "AIOps enables value co-creation through an integrated set of business and operational metrics, thereby reducing the frequency of operational events or incidents because they are predicted and prevented." By reducing the frequency of incidents, the organization directly improves service reliability and resilience. Ref Table 4.18**
10	C	1.1.d	A. Incorrect. The focus of site reliability engineering is on IT operations (versus business enablement) and there is no indication that speed is a consideration. "SRE applies a software development mindset to IT operations, and helps to bridge the gap between development and operations." The focus of high-velocity IT is on "significant business enablement, where time to market, time to customer, time to change, and speed in general are crucial". Ref 2.1, 2.5.2.3 B. Incorrect. Site reliability engineering is an approach (not a technology) that "applies a software development mindset to IT operations, and helps to bridge the gap between development and operations". "IT transformation is focused on how IT services and information systems are developed, run, and supported." Ref 2.4.1, 2.5.2.3 **C. Correct. This relates to a centralized IT department. "In organizations where business and IT are regarded as separate organizational functions, 'IT transformation' is often used to denote major change that improves how IT services are provided." The focus of site reliability engineering is on IT operations. "IT transformation is focused on how IT services and IS are developed, run, and supported." Ref 2.4.1** D. Incorrect. Site reliability engineering is an approach (not a technology) that focuses on IT operations. "IT transformation is focused on how IT services and information systems are developed, run, and supported." Digital transformation involves the "use of digital technology to enable a significant improvement in the realization of an organization's objectives that could not feasibly have been achieved by non-digital means". Ref 2.4, 2.4.1

Q	A	Syllabus Ref	Rationale
11	D	4.4.a	A. Incorrect. The software development and management practice includes "the detailed design, building, running, and management of loosely coupled software components" (versus architectures). Ref Table 4.6 B. Incorrect. Although more loosely coupled architectures benefit the deployment management practice, it is the architecture management practice that includes the design of architectures. "The scope of deployments and deployment patterns is reduced with the decoupling of system architecture." Ref Table 4.6 C. Incorrect. "Understanding consumer needs and translating them into detailed requirements for each component of a loosely coupled service architecture." This relates to the business analysis practice. Ref Table 4.6 **D. Correct. The architecture management practice includes "designing loosely coupled service, technical, and information architectures". Ref Table 4.6**
12	A	4.8.a	**A. Correct. "The relationship management practice includes techniques and tools that help to understand the stakeholders' interests and ensure that their needs and expectations are managed and met."** **Ref *ITIL® 4 Relationship Management* Official Practice Guide 2.4.3.1** B. Incorrect. The service desk practice does not have activities relating to disputes over stakeholder requirements. "The relationship management practice includes techniques and tools that help to understand the stakeholders' interests and ensure that their needs and expectations are managed and met." Ref *ITIL® 4 Relationship Management* Official Practice Guide 2.4.3.1 C. Incorrect. The architecture management practice does not have activities relating to disputes over stakeholder requirements. "The relationship management practice includes techniques and tools that help to understand the stakeholders' interests and ensure that their needs and expectations are managed and met." Ref *ITIL® 4 Relationship Management* Official Practice Guide 2.4.3.1 D. Incorrect. The risk management practice does not have activities relating to disputes over stakeholder requirements. "The relationship management practice includes techniques and tools that help to understand the stakeholders' interests and ensure that their needs and expectations are managed and met." Ref *ITIL® 4 Relationship Management* Official Practice Guide 2.4.3.1
13	D	4.1	A. Incorrect. The minimum viable approach is used when "developing products and services, particularly when the market is volatile and unpredictable", not as a way to gain insight regarding the variables that drive desired behaviours. Ref 4.1.2 B. Incorrect. Calculating the cost of delay does not provide insight regarding which variables drive the desired behaviours. Cost of delay "refers to the financial and non-financial benefits that would be lost if a service activity or task were delayed". Ref 4.1.1.1 C. Incorrect. Although "design thinking is particularly useful when addressing [...] problems that have [...] conflicting hypotheses", balancing the needs and interests of all stakeholders would not necessarily achieve the objective, which is to drive certain behaviours. Ref 3.2.1.2 **D. Correct. A/B testing makes it possible to isolate the effect of a new feature and measure user behaviour to gather solid**

Q	A	Syllabus Ref	Rationale
			data. "A/B testing is a time-limited experiment in which one group of users [...] is provided with an old version of a product or service. At the same time, another group of users [...] is provided with a new version of the product or service that includes the new feature. Assuming all other factors influencing both groups are equal, the measurements of the groups can be compared, thus gathering data for a value-based decision." Ref 4.1.4
14	C	3.2.d	A. Incorrect. According to the Cynefin framework, this approach is more suited to a highly predictable situation (an obvious context). "Clear: clear causality, where predetermined best practice should be applied". Ref 3.2.3.1 B. Incorrect. According to the Cynefin framework, this approach is more suited when there is enough information to be analysed (a complicated context). "Complicated; unclear but knowable causality that can be determined by analysis or expertise, followed by good practice". Ref 3.2.3.1 **C. Correct. The conflicting hypotheses of the business managers and their difficulty in articulating their requirements indicate that this is a complex context. "Complex: unclear and unknowable causality requiring safe-to-fail experimentation (emergent practice)". Ref 3.2.3.1** D. Incorrect. According to the Cynefin framework, this approach is more suited to extremely urgent and important issues (a chaotic context). "Chaotic: a more extreme form of complexity that demands immediate action to transition the situation to complex (novel practice)". Ref 3.2.3.1
15	B	4.4.c	A. Incorrect. This describes continuous deployment. "Changes go through the pipeline and are automatically put into the production environment, enabling multiple production deployments per day. Continuous deployment relies on continuous delivery." Ref 4.2.5 **B. Correct. "The systematic/automatic installation of specific versions or packages of software to a predetermined environment (integration, user acceptance testing, production)" is supported by deployment management, but in case of continuous delivery deployment to production is not done automatically and should follow an agreed set of rules and conditions: "an approach to software development in which software can be released to production at any time. Frequent deployments are possible, but deployment decisions are taken case by case, usually because organizations prefer a slower rate of deployment." Ref 4.2.5, Table 4.10** C. Incorrect. "Running root-cause analyses and post-mortems" is a responsibility of the problem management practice. Ref Table 4.19 D. Incorrect. This is a responsibility of the architecture management practice: "designing and improving service, technical, and information architecture to leverage CI/CD capabilities". Ref Table 4.10

Q	A	Syllabus Ref	Rationale
16	C	4.6.e	A. Incorrect. This is an example of a capacity and performance management activity associated with chaos engineering. "When running this type of test, performance information should be captured. As a result, improvements should be identified that will ensure services are designed for optimum performance, scalability, and capacity." Ref Table 4.15 B. Incorrect. This is an example of a problem management activity associated with chaos engineering. "Proactively detecting problems by introducing random failures and looking for potential flaws in services/components." Ref Table 4.15 **C. Correct. "Designing service continuity measures with sufficient resilience and redundancy to cope with the unexpected outages caused by chaos engineering tools" is a service continuity management activity associated with chaos engineering. Ref Table 4.15** D. Incorrect. This is an example of an architecture management activity associated with chaos engineering. "Considering interactions between services and components in order to support demand." Ref Table 4.15
17	C	4.8.b	A. Incorrect. The scenario already states that services have the right functionality. "Designing a new or changed product or service should not be done in isolation, but should be considerate of the impact it will have on: [...] all relevant parties, including customers, users, and suppliers [...]." Ref *ITIL® 4 Service Design* Official Practice Guide 2.1 B. Incorrect. The scenario already states that the services meet all service levels expected by the customers. "Designing a new or changed product or service should not be done in isolation, but should be considerate of the impact it will have on: [...] all relevant parties, including customers, users, and suppliers[...]." Ref *ITIL® 4 Service Design* Official Practice Guide 2.1 **C. Correct. The introduction of new functionality necessitates user training. "Designing a new or changed product or service should not be done in isolation, but should be considerate of the impact it will have on: [...] all relevant parties, including customers, users, and suppliers [...]".** **Ref *ITIL® 4 Service Design* Official Practice Guide 2.1** D. Incorrect. "Designing a new or changed product or service should not be done in isolation, but should be considerate of the impact it will have on: [...] all relevant parties, including customers, users, and suppliers [...]." The documented service levels should be written in a way that customers understand; training on how to understand the service levels should not be necessary. Also, understanding the service levels would not alter the sponsors' perceptions that the business process performance has not improved. Ref *ITIL® 4 Service Design* Official Practice Guide 2.1
18	A	4.8.b	**A. Correct. "[...] it is important to consider iterative and incremental approaches to service design, which can ensure that products and services introduced to live operation can continually adapt in alignment with the evolving needs of the organization and its customers."** **Ref *ITIL® 4 Service Design* Official Practice Guide 2.1** B. Incorrect. It is important to consider the necessary "measurements and metrics", but in this scenario the customer

Q	A	Syllabus Ref	Rationale
			and user satisfaction levels are known, and action is needed to improve those levels. Ref *ITIL® 4 Service Design* Official Practice Guide 2.1 C. Incorrect. "It is important that a holistic, results-driven approach to all aspects of service design is adopted", but this solution exacerbates the issue in the scenario by lengthening the initial service design period and locking down the design details for long periods. Ref *ITIL® 4 Service Design* Official Practice Guide 2.1 D. Incorrect. Solutions should address "the needs of both the organization and customer in a cost-effective and resilient way". This approach might increase customer satisfaction but does not address the unnecessarily lengthy initial design period, and imposes extra costs on the service provider, which will hinder value creation for the service provider. Ref *ITIL® 4 Service Design* Official Practice Guide 2.1
19	A	4.4.d	**A. Correct. The service validation and testing practice recommends that testing is conducted continuously. "Unit, integration, and regression testing is conducted on an ongoing basis throughout the development lifecycle." Ref Table 4.12** B. Incorrect. This is a deployment management activity. "Changes or deployments that cause the continuous testing to fail trigger the team's Andon cord. The team members then swarm to resolve the issue." This approach will not ensure that adequate testing occurs. Ref Table 4.12 C. Incorrect. Although this is an activity of the service validation and testing practice, the focus is on chaos engineering, versus CI/CD. "Chaos engineering testing principles can help to evaluate service reliability." Ref Table 4.15 D. Incorrect. This is an activity of the deployment management practice. "The systematic/automatic installation of specific versions or packages of software to a predetermined environment (integration, user acceptance testing, production)." Automation of software deployment into a test environment may have a minimal impact on the ability to conduct testing. Ref Table 4.10
20	A	4.10.b	**A. Correct. "Creating a balanced and practical approach between enterprise risk management, technical risk management, and new ways of working" is how the risk management practice contributes to the objective of assured conformance. Ref 4.5.1, Table 4.22** B. Incorrect. The purpose of the relationship management practice is "to establish and nurture the links between the organization and its stakeholders at strategic and tactical levels". It does not play a major role in assuring conformance. Ref *ITIL® 4 Relationship Management* Official Practice Guide 2.1 C. Incorrect. "The purpose of the availability management practice is to ensure that services deliver the agreed levels of availability to meet the needs of customers and users." It does not play a major role in assuring conformance. Ref *ITIL® 4 Availability Management* Official Practice Guide 2.1 D. Incorrect. "The purpose of the infrastructure and platform management practice is to oversee the infrastructure and platforms used by an organization." It does not play a major role

Q	A	Syllabus Ref	Rationale
			in assuring conformance. Ref *ITIL® 4 Infrastructure and Platform Management* Official Practice Guide 2.1
21	C	2.1.d	A. Incorrect. "The ITIL service value chain is useful for describing, at a fairly high level of abstraction, the types of activities that a service provider executes." "Service consumers and service providers have different perspectives on digital products. They each have their own product lifecycles, which overlap during the period of engagement between the consumer and provider. For the service provider, the lifecycle of a product lasts for as long as there are potential customers for that product. For the service consumer, the lifecycle continues for as long as the product is used, and strictly speaking is a product use lifecycle." Ref 2.6.3, 2.6.2 B. Incorrect. Value streams define the actual series of steps a service provider (versus a consumer) takes to create and deliver products and services. "HVIT organizations often are product/service-oriented and have multiple value streams that reflect the diversity of their products and services. Their operating models therefore comprise multiple value streams." "Service consumers and service providers have different perspectives on digital products. They each have their own lifecycles, which overlap during the period of engagement. For the service provider, the lifecycle of a product lasts for as long as there are potential customers for the product. For the service consumer, the lifecycle continues for as long as the product is used, and strictly speaking is a product use lifecycle." Ref 2.6.4, 2.6.2 **C. Correct. The digital product lifecycle(s) represent the service provider and consumer perspectives relative to co-creating value. "Service consumers and service providers have different perspectives on digital products. They each have their own product lifecycles, which overlap during the period of engagement between the consumer and provider. For the service provider, the lifecycle of a product lasts for as long as there are potential customers for that product. For the service consumer, the lifecycle continues for as long as the product is used, and strictly speaking is a product use lifecycle." Ref 2.6.2** D. Incorrect. The relationship management practice involves a service provider establishing and nurturing links with its stakeholders. "Service consumers and service providers have different perspectives on digital products. They each have their own product lifecycles, which overlap during the period of engagement between the consumer and provider. For the service provider, the lifecycle of a product lasts for as long as there are potential customers for that product. For the service consumer, the lifecycle continues for as long as the product is used, and strictly speaking is a product use lifecycle." Ref 2.6.2
22	D	1.1.c	A. Incorrect. Continuous delivery relates to how software is released. Continuous delivery means that "built software can be released to production at any time". Ref 4.2.5 B. Incorrect. Automation is not the product itself (it is not directly delivering value). It is being used to speed up the shipment of products, which may or may not be digital. "ITIL defines a product as a configuration of an organization's resources designed to

Q	A	Syllabus Ref	Rationale
			offer value for a consumer." "A product is digital when digital technology plays a significant role in its goods, resources, or associated service interactions." Ref 2.6.1 C. Incorrect. The use of automation in this case relates to how business services are handled, versus IT services. "IT transformation is focused on how IT services and information systems are developed, run, and supported." Ref 2.4.1 **D. Correct. Digital transformation involves the "use of digital technology to enable a significant improvement in the realization of an organization's objectives that could not feasibly have been achieved by non-digital means". "'Digital transformation' is often used to indicate major investment in digitizing, robotizing, and other forms of automation that enable organizations to do business significantly differently, or do significantly different business." Ref 2.4**
23	B	2.1.c	A. Incorrect. This relates to the information and technology dimension. "Freely flowing information is a characteristic of a high-trust organization. This is consistent with the generative culture that is often found in High-velocity IT organizations." Ref 2.6.7 **B. Correct. "In HVIT environments, where IT is an integral part of the organization's products and services, it is likely that the IT function will be an integral part of the lines of business that are responsible for the various products and services." Ref 2.6.6.1** C. Incorrect. This relates to the information and technology dimension. "Freely flowing information is a characteristic of a high-trust organization. This is consistent with the generative culture that is often found in HVIT organizations." Ref 2.6.7 D. Incorrect. This relates to the partners and suppliers dimension and how suppliers fit within the value stream. "It is therefore crucial to analyse the dependencies and take appropriate action". Ref 2.3.7
24	B	3.2.b	**B. Correct.** **(2) Managers need to be realistic about failure and "acknowledge that failure will happen and that people are not to blame, but the system", and "it is therefore crucial that things like not blaming people and treating failures as improvement opportunities are more than espoused corporate values". Ref 3.2.2.2** **(3) "In HVIT environments, it is crucial that people feel able to share their opinions and experiment with improvement without the fear of judgement or embarrassment." This is necessary in order for continual learning. Ref 3.2.2.2** A, C, D. Incorrect. (1) Stress and burnout can be reduced by "paying attention to unfair treatment, toxic relationships, lack of recognition, lack of control, conflicting values, and insufficient resources". Ref 3.1.2 (4) There is no indication of conflict within the team. Open and honest communication, even when it involves conflict, is critical in a safety culture. Stress and burnout can be reduced by "paying attention to unfair treatment, toxic relationships, lack of recognition, lack of control, conflicting values, and insufficient resources". Ref 3.1.2

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25	B	4.4.e	A. Incorrect. This is how the business analysis practice contributes to the "fast development" objective: "understanding consumer needs and translating them into detailed requirements for each component [...]". Ref 4.2.2, Table 4.6 **B. Correct. The software development and management practice should be involved in deciding the approach taken to developing software quickly and reliably. The software development and management practice contributes to fast development by "developing software architecture and code to leverage fast delivery/provisioning of virtual hardware infrastructure". Ref Table 4.5** C. Incorrect. This is how the software development and management practice contributes to the "resilient operations" objective. "Software can be developed (or configured) to meet a definition of done before it is deployed into live environments, ensuring that code is understandable, maintainable, and ready to support future changes." Ref 4.3.3, Table 4.16 D. Incorrect. This answer refers to how the software development and management practice contributes to “valuable investments”, not “fast development”. The software development and management practice contributes to valuable investment by "using a minimum viable approach as a decision-making tool to prioritize work on software features". Ref 4.1.2, Table 4.2
26	B	4.6.f	A. Incorrect. "The purpose of the monitoring and event management practice is to support the normal operation of service components by observing, analysing, and appropriately responding to changes of state in those components." Ref *ITIL® 4 Monitoring and Event Management* Official Practice Guide 2.1 **B. Correct. The infrastructure and platform management practice includes “identifying and reducing technical debt by creating or modifying infrastructure and platform service components". Ref Table 4.14** C. Incorrect. The purpose of the service desk practice includes capturing “demand for incident resolution” and engaging with users. “Communicating with external users who need assistance with incidents and requests requires knowledge of existing technical debt and efforts planned to resolve it." Ref Table 4.14, *ITIL® 4 Service Desk* Official Practice Guide 2.1 D. Incorrect. "The purpose of the incident management practice is to minimize the negative impact of incidents by restoring normal service operation as quickly as possible." Ref *ITIL® 4 Incident Management* Official Practice Guide 2.1
27	C	4.6.b	A. Incorrect. Although ChatOps can be used to improve collaboration during incidents, it is, in this context, a reactive approach. “ChatOps is a model in which people, tools, process, and automation are connected in a transparent flow.” Ref 4.3.6 B. Incorrect. This approach is useful, but it is not the BEST approach as it is less proactive and does not take into consideration the need for capacity planning relative to the marketing campaigns. “Improving monitoring in order to better understand the system when things go wrong.” Ref Table 4.19 **C. Correct. This approach recommends proactive monitoring and also takes into consideration the need for capacity planning relative to the marketing campaigns. “AIOps**

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			platforms are used to enhance and partially replace many primary IT operations functions, such as availability and performance monitoring, failure recognition, predictive analysis, and event correlation and analysis." "AIOps provides capabilities for identifying patterns and anomalies, determining the capacity and utilization of assets, and planning the capacity of future products or services." Ref 4.3.5, Table 4.18 D. Incorrect. This approach is useful, but it is not the BEST approach, as it does not recommend doing anything with the information and does not take into consideration the need for capacity planning relative to the marketing campaigns. "When running this type of test, performance information should be captured. As a result, improvements should be identified that will ensure services are designed for optimum performance, scalability, and capacity." Ref Table 4.15
28	B	4.2.a	A. Incorrect. Portfolio management supports valuable investments by "continually prioritizing service offerings based on value, incorporating the cost of delay". Cost of delay "refers to the financial and non-financial benefits that would be lost if a service activity or task were delayed". Initiative B has the highest combined financial and non-financial impact of delay and should be prioritized. Ref Table 4.1, 4.1.1.1 **B. Correct. Portfolio management supports valuable investments by "continually prioritizing service offerings based on value, incorporating the cost of delay". Cost of delay "refers to the financial and non-financial benefits that would be lost if a service activity or task were delayed". Initiative B has the highest combined financial and non-financial impact of delay and should be prioritized. Ref Table 4.1, 4.1.1.1** C. Incorrect. Portfolio management supports valuable investments by "continually prioritizing service offerings based on value, incorporating the cost of delay". Cost of delay "refers to the financial and non-financial benefits that would be lost if a service activity or task were delayed. Initiative B has the highest combined financial and non-financial impact of delay and should be prioritized. Ref Table 4.1, 4.1.1.1 D. Incorrect. Portfolio management supports valuable investments by "continually prioritizing service offerings based on value, incorporating the cost of delay". Cost of delay "refers to the financial and non-financial benefits that would be lost if a service activity or task were delayed". Initiative B has the highest combined financial and non-financial impact of delay and should be prioritized. Ref Table 4.1, 4.1.1.1
29	A	1.3.b	**A. Correct. "The fast development objective is mainly achieved by the application development and infrastructure engineering that takes place as part of the design and transition and obtain/build value chain activities." Ref 2.5.1** B. Incorrect. 'Design and transition' is a value chain activity helping to achieve fast development, however 'deliver and support' is not. "The fast development objective is mainly achieved by the application development and infrastructure engineering that takes place as part of the design and transition and obtain/build value chain activities." Ref 2.5.1 C. Incorrect. 'Obtain/build' is a correct value chain activity

Q	A	Syllabus Ref	Rationale
			associated to fast development, however 'deliver and support' is not. "The fast development objective is mainly achieved by the application development and infrastructure engineering that takes place as part of the design and transition and obtain/build value chain activities." Ref 2.5.1 D. Incorrect. 'Resilient operations' is not a service value chain activity; it is one of the HVIT objectives. Ref 2.5.1
30	A	1.2	**A. Correct. "[...] there may be situations where risks are consciously taken in order to gain or retain competitive advantage." Ref 2.1** B. Incorrect. This activity is more associated with operational technology, which is "the application of digital technology for detecting or causing changes in physical devices through monitoring and/or control". Ref 2.2.2 C. Incorrect. There might be an impact on the culture of the organization, because organizations "may choose not to try to increase velocity because they think the amount of cultural change involved would be too difficult to achieve, or unlikely to generate an acceptable return on investment". Ref 2.1 D. Incorrect. "Increasing velocity within an organization will always involve costs and risks, particularly when there is a steep change rather than gradual improvement." Ref 2.1
31	C	3.1.b	A. Incorrect. 'Design thinking' refers to the "cognitive and practical processes by which design concepts are developed". Ref 3.2.1.2 B. Incorrect. 'Integration of duties' is "having a task that is prone to fraud or error performed by one person because other controls have been applied. This serves as an alternative to separation (or segregation) of duties". Ref 4.5.2 **C. Correct. 'Safety culture' is a climate in which people are comfortable being (and expressing) themselves. In such a culture, people "are therefore more likely to point out risks than when they fear that this would damage their reputation and position". Ref 3.2.2.2** D. Incorrect. 'Toyota Kata' is "a mental model and behaviour pattern for scientific thinking and routines for practice and coaching." Ref 3.2.3.3
32	D	4.5	A. Incorrect. This answer focuses on the functional requirements and supports the high-velocity objective 'valuable investments'. Instead, the organization should focus on the objective 'resilient operations'. "Techniques that can be used to achieve valuable investments include: [...] prioritization techniques". Ref 4.1 B. Incorrect. The question implies that more focus is required on the high-velocity objective 'resilient operations', not reverting to old ways. Reverting to old methods of development is a backward step and cannot be guaranteed to resolve the issues. More attention should be given to the resilience and performance requirement of the software. "The scope of the resilient operations objective includes ensuring that digital products are available for use whenever needed." Ref 4.3 C. Incorrect. This answer focuses on the high-velocity objective 'co-created value'. Instead, the organization should focus on the objective 'resilient operations'. "The scope of the co-created value objective includes co-creating value from digital products through the close collaboration of the service provider and the service consumer." Ref 4.4

Q	A	Syllabus Ref	Rationale
			D. Correct. From the question it can be seen that more focus is required on the high-velocity objective 'resilient operations'. Extending the 'definition of done' to include resilience requirements is a good way to enhance the agile approach and address the operational issues. "A definition of done describes criteria that are related to the functionality that contributes to a product's or service's utility, and the non-functional criteria that contribute to its warranty. These non-functional criteria should be defined and agreed with whoever is responsible for operations. A definition of done that includes non-functional criteria therefore contributes to resilient operations and to value co-created through improved usability, and also to faster development because less rework is needed". Ref 4.3.3
33	A	4.6.d	**A. Correct. Problem management contributes to technical debt management by "applying problem control and error control methods to manage technical debt". Ref Table 4.14** B. Incorrect. Although chaos engineering can be used for "proactively detecting problems by introducing random failures and looking for potential flaws in services/components", this does not address the technical debt related to problems and incidents that have already happened. Ref Table 4.15 C. Incorrect. Although "incident resolution and management requires knowledge of existing technical debt and the efforts planned to resolve it", this cannot be achieved by simply escalating incidents to a problem resolution team. Instead, the organization should "apply problem control and error control methods to manage technical debt". Ref Table 4.14 D. Incorrect. Although this may reduce the impact of incidents, it does not address the technical debt. Problem management should "apply problem control and error control methods to manage technical debt". Ref Table 4.14
34	A	1.3.a	**A. Correct. The valuable investments objective involves identifying and justifying digital investments. "New digital products and services should be envisaged and evaluated in terms of profitability", and "it is also important to continually evaluate investments after they have been justified and approved, because more valuable options for investment may exist". Ref 4.1** B. Incorrect. 'Fast development' involves realizing "new and improved digital products and services frequently, quickly, and reliably". Ref 4.2 C. Incorrect. 'Resilient operations' involve ensuring "that digital products are available for use whenever needed". Ref 4.3 D. Incorrect. 'Assured conformance' involves assuring "that service provision and service consumption comply with corporate and regulatory directives with respect to governance, risk, and compliance". There is no reference to corporate and regulatory directives in this question. Ref 4.5

Q	A	Syllabus Ref	Rationale
35	A	4.2.b	**A. Correct. The relationship management practice is best placed to liaise with all stakeholders to resolve conflict and prioritize requirements. The relationship management practice contributes to valuable investments by "involvement in establishing customers' priorities for new or changed products and services" and "involvement in addressing complaints and mediating conflicting requirements". Ref Table 4.3** B. Incorrect. The service validation and testing practice supports the 'valuable investment' objective by checking that components support the minimum viable product. It cannot resolve conflict between user requirements. The service validation and testing practice contributes to valuable investments by "developing test cases to check that all service components support the minimum viable product or service". Ref Table 4.2 C. Incorrect. The information security management practice does support the 'valuable investment' objective, but it does not help to resolve conflicting user requirements. The purpose of the information security management practice is "to protect the information needed by the organization to conduct its business". Ref *ITIL*® 4 *Information Security Management* Official Practice Guide 2.1 D. Incorrect. The risk management practice does support the 'valuable investment' objective, but it does not help to resolve conflicting user requirements. "The purpose of the risk management practice is to ensure that the organization understands and effectively handles risks." Ref *ITIL*® 4 *Risk Management* Official Practice Guide 2.1
36	A	4.3	**A. Correct. Kanban would help to visualize and understand the workloads. "Kanban is a set of principles, practices, and regular activities aimed at developing and managing a predictable, rhythmic, and constant flow of work." Ref 4.2.7** B. Incorrect. Retrospectives would help the organization to understand how well a sprint was undertaken. As the issue of human workload has already been identified, retrospectives would not help to resolve it. "In agile, a retrospective is a team meeting held by a team at the end of an iteration (or 'sprint') or project to discuss what went well, what could be improved, and how to benefit from the findings in the future." Ref 4.2.3.1 C. Incorrect. 'Infrastructure as code' would help to increase the speed of deployment but would not resolve the issue of the lack of understanding of human workloads. "Infrastructure as code (IaC) enables faster provisioning of environments, contributing to faster development and more resilient operations." Ref 4.2.1 D. Incorrect. Loosely coupled information system architecture would help to increase the speed of deployment, through limiting the interactions required between teams, but it would not resolve the issue of the lack of understanding of human workloads. "Loosely coupled information system architecture is based on relatively small, independent components. This architecture enables work to be done in small, relatively independent, product- or service-based teams and platform-based teams." Ref 4.2.2

Q	A	Syllabus Ref	Rationale
37	C	4.6.a	A. Incorrect. It is the deployment management practice that should verify components before moving them to live environments, not the availability management practice. The deployment management practice contributes to the 'resilient operation' objective. "When moving releases to live environments, teams should verify that deliverables for support are complete: all requirements, user stories, and tests should be accepted." Ref 4.3.3, Table 4.16 B. Incorrect. The service validation and testing practice contribution to 'definition of done' is "testing activities can be structured around a definition of done to ensure that multiple types of tests are conducted". Ref 4.3.3, Table 4.16 **C. Correct. The availability management practice ensures that negotiated warranty requirements can be included in the 'definition of done'. The availability management practice contributes to the 'resilient operations' objective. "Detailed warranty requirements for the new or changed service should be negotiated and agreed with stakeholders." Ref 4.3.3, Table 4.16** D. Incorrect. It is the 'software development and management' practice that will ensure that code is understandable, maintainable, and able to support future changes, not the availability management practice. The software development and management practice contributes to the 'resilient operations' objective. "Software can be developed (or configured) to meet a definition of done before it is deployed into live environments, ensuring that code is understandable, maintainable, and ready to support future changes." Ref 4.3.3, Table 4.16
38	C	4.4.b	A. Incorrect. CI/CD automates integration testing and deployment, but it does not automate business analysis activity. "Continuous integration is the automation achieved in the build and code testing process each time the code is committed." "Continuous delivery is focused on the process of building and testing new releases and promoting them to the production environment." Ref 4.2.5 B. Incorrect. Business analysis activities should be interwoven throughout the development period. "When this practice is performed by the product team, it is less project-driven and more of a continual activity." Ref *ITIL® 4 Business Analysis* Official Practice Guide 2.1 **C. Correct. Business analysis activities should be embedded within the development activities. "When this practice is performed by the product team, it is less project-driven and more of a continual activity."** **Ref *ITIL® 4 Business Analysis* Official Practice Guide 2.1** D. Incorrect. "In the agile context, the business analysis practice is associated less with a specific team or role but is increasingly applied by multi-skilled practitioners performing roles such as product or service owner." Ref *ITIL® 4 Business Analysis* Official Practice Guide 2.1

Q	A	Syllabus Ref	Rationale
39	C	2.1.b	A. Incorrect. "The fast development objective is mainly achieved by the application development and infrastructure engineering that takes place as part of the design and transition and obtain/build value chain activities." Ref 2.5.1 B. Incorrect. "The valuable investments objective is mainly achieved by the decision-making that occurs as part of the plan value chain activity." Ref 2.5.1 **C. Correct. "The five objectives are closely related to specific value chain activities, except for assured conformance, that applies to the whole value chain." Ref 2.5.1** D. Incorrect. "The resilient operations objective is mainly achieved by running and maintaining the system as part of the deliver and support value chain activity." Ref 2.5.1
40	C	4.10.a	A. Incorrect. A supplier may be able to test the plans to some extent, but it is important that the teams involved in managing security incidents are involved in a walk through. "Regularly testing information security plans and controls will result in the discovery of flaws and inefficiencies, which can then be improved in updates." Ref *ITIL® 4 Information Security Management* Official Practice Guide 2.4.3 B. Incorrect. Chaos engineering can be used to find and terminate some instances of security vulnerabilities, which will help to prevent security incidents, but it will not be able to fully test and improve plans for detecting and correcting security incidents. "Security monkey: finds and terminates instances of security violations or vulnerabilities." "Regularly testing information security plans and controls will result in the discovery of flaws and inefficiencies, which can then be improved in updates." Ref 4.3.2, *ITIL® 4 Information Security Management* Official Practice Guide 2.4.3 **C. Correct. "Therefore, testing is a critical part of the overall information security management practice. It is the only way to ensure that the plans and controls work in practice". "Regularly testing information security plans and controls will result in the discovery of flaws and inefficiencies, which can then be improved in updates."** **Ref *ITIL® 4 Information Security Management* Official Practice Guide 2.4.3** D. Incorrect. The question makes it clear that plans have already been designed to manage information security incidents, and that the organization wants to make sure these plans will be effective. Designing more controls will not achieve this, it is important to test the controls that have already been designed to ensure that they work properly. "Untested plans rarely work as intended, if they work at all." Ref *ITIL® 4 Information Security Management* Official Practice Guide 2.4.3

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