

Additional Documents

Mock Exam

Q1

Learning Objective #:	1.1.1
Learning Objective Name:	Describe collision and broadcast domains
Which statement is true about the collision and broadcast domains? <ul style="list-style-type: none">• All ports of a Hub are in the same collision domain with different broadcast domains.• All ports of a Hub are in different collision domains with different broadcast domains.• All ports of a Router are in the same collision domain with different broadcast domains.• All ports of a Router are in different collision domains with different broadcast domains.	

Q2

Learning Objective #:	1.2.1
Learning Objective Name:	Describe the difference between a router and a switch
What is the difference between a router and a switch? <ul style="list-style-type: none">• A router forwards packets based on the destination MAC address, while a switch forwards these based on the destination IP address.• A router forwards packets based on the destination IP address, while a switch forwards these based on the destination MAC address.• Both, router and switch, forward packets based on the destination IP address.• Both, router and switch, forward packets based on the destination MAC address.	

Q3

Learning Objective #:	1.2.2
Learning Objective Name:	List routing protocols (OSPF, IS-IS, RIP, BGP) and their functions
Which option indicates the routing protocols in the increasing order of Administrative distance? <ul style="list-style-type: none">• IS-IS, OSPF, RIP, Internal BGP• RIP, IS-IS, Internal BGP, OSPF• OSPF, IS-IS, RIP, Internal BGP• Internal BGP, IS-IS, OSPF, RIP	

Q4

Learning Objective #:	1.2.3
Learning Objective Name:	Describe how longest match routing works
When a router makes a forwarding decision, which item always wins for the routes in the routing table? <ul style="list-style-type: none">• Path cost of the route• Length of the network mask of the route• Routes learnt from multiple routing protocols• Routes learnt from the Highest Router ID	

Q5

Learning Objective #:	1.3.1
Learning Objective Name:	Describe the common components of an optical transport network
What is the disadvantage of Optical Transport Network compared to SONET/SDH? <ul style="list-style-type: none"> • Stronger Forward Error Correction • Switching Scalability • New Hardware and Management System • Transparent Transport of Client Signals 	

Q6

Learning Objective #:	1.4.1
Learning Objective Name:	Define the functions of the following IP Concepts: IP Subnetting, ARP, DHCP, DNS
What does the ARP protocol resolve? <ul style="list-style-type: none"> • IP address to MAC address • Hostname to IP address • Hostname to MAC address • IP address to TCP port 	

Q7

Learning Objective #:	2.1.1
Learning Objective Name:	Identify the History of SDN :Clean Slate, Ethane, OpenFlow™ , donation to ONF
Which University had the Clean Slate, an interdisciplinary research program where OpenFlow and SDN later became a major follow-up projects? <ul style="list-style-type: none"> • MIT • Stanford • Harvard • Cambridge 	

Q8

Learning Objective #:	2.2.1
Learning Objective Name:	Define the definition of SDN and key concepts: Plane Separation, Simplified Forwarding Element, Centralized Control, Network Automation, Virtualization, and Openness
What is the ONF definition of SDN? <ul style="list-style-type: none"> • Control and Data Plane separation with centralized control and programmable networks • Control and Data Plane separation with distributed control • Control and Data Plane separation with distributed control and programmable networks • Control and Data Plane separation with programmable networks 	

Q9

Learning Objective #:	2.2.2
Learning Objective Name:	Describe the value proposition of SDN
Identify the SDN value proposition <ul style="list-style-type: none"> • More Operational and Capital Costs More Agility • Less Operational and Capital Costs More Agility • More OPEX Costs Less CAPEX Costs Less Agility • Less Operational Costs More CAPEX Costs Less Agility 	

Q10

Learning Objective #:	2.3.1
Learning Objective Name:	Identify SDN Use Cases in the Data Center
Which SDN use case is encountered in an Enterprise Data Center? <ul style="list-style-type: none"> • Seamless Mobility and BYOD • Mice/Elephant Flow Optimization • Virtual Provider Edge • Virtual Firewall and Virtual DPI 	

Q11

Learning Objective #:	2.3.2
Learning Objective Name:	Identify SDN Use Cases in Campus Networks
Which SDN use case is encountered in Campus Networks? <ul style="list-style-type: none"> • Virtual Customer Premesis Equipment • Network Access Control • Multi-layer Optimization • Mobile Wifi Offload 	

Q12

Learning Objective #:	2.3.3
Learning Objective Name:	Identify SDN Use Cases in Service Providers
Which SDN use case is encountered in Service Providers? <ul style="list-style-type: none"> • Seamless Mobility and BYOD • Virtual Customer Premises Equipment and Service Function Chaining • Unified Communications • SD-WAN 	

Q13

Learning Objective #:	2.3.4
Learning Objective Name:	Identify SDN Use Cases in the Enterprise
Which SDN use case is encountered in Enterprise Networks?	
<ul style="list-style-type: none"> • Unified Communications Optimization • Virtual EPC and Virtual IMS • Virtual Router and Virtual Firewall • Mobile Wifi Offload 	

Q14

Learning Objective #:	2.3.5
Learning Objective Name:	Identify SDN Use Cases in Mobile
Which SDN use case is encountered in Mobile Networks?	
<ul style="list-style-type: none"> • Centralized Radio Resource Management • SD-WAN • Unified Communications • Mice/Elephant Flow Optimization 	

Q15

Learning Objective #:	2.4.1
Learning Objective Name:	Identify physical SDN Devices: Switches, Controllers
Consider the following statements about SDN controllers and select the correct option:	
<ul style="list-style-type: none"> • Statement A: An SDN controller can manage multiple SDN switches. • Statement B: An SDN controller can work in federation. 	
<ul style="list-style-type: none"> • Statement A is true, and Statement B is false. • Statement B is true, and Statement A is false. • Both, Statement A and Statement B, are true. • Both, Statement A and Statement B, are false. 	

Q16

Learning Objective #:	2.4.2
Learning Objective Name:	Identify SDN software Components and Concepts: Orchestration, API's
Which statement is true about SDN controllers?	
<ul style="list-style-type: none"> • An SDN application should communicate with only one SDN controller at a time. • REST API with XML is the only way to communicate with an SDN controller. • SDN controllers and SDN applications should be written in the same programming language. • Multiple SDN applications can communicate with an SDN controller at the same time. 	

Q17

Learning Objective #:	3.1.1
Learning Objective Name:	Describe the TCP level secure channel/communication/session establishment between controller/switch
Identify the communication protocol between Openflow controller and Openflow switch <ul style="list-style-type: none"> • REST API with OpenFlow extensions • SOAP API with OpenFlow extensions • TCP/TLS with OpenFlow headers • RPC. With OpenFlow messages 	

Q18

Learning Objective #:	3.1.2
Learning Objective Name:	Describe the setting up of a flow
Identify the sequence of operations between Openflow controller and switch <ul style="list-style-type: none"> • An OpenFlow controller and a switch exchange features capabilities before a successful connection is established. • An OpenFlow controller and a switch exchange "Hello" messages and negotiate on the common supported version before a successful connection is established. • An OpenFlow controller can initiate a connection request to a switch and send "Hello" messages in parallel. • An OpenFlow switch can initiate a connection request to a controller and send the supported features in parallel. 	

Q19

Learning Objective #:	3.1.3
Learning Objective Name:	Identify Proactive vs Reactive Flows
Which statement is correct about proactive and reactive flows? <ul style="list-style-type: none"> • Proactive flows can be programmed only during initial connection setup. • An OpenFlow controller cannot support proactive and reactive flows together at the same time. • Proactive flows can be programmed anytime, however, reactive flows are programmed when network packets are received by a controller from multiple switches. • Reactive flows are programmed when higher level SDN application requests for network provisioning changes. 	

Q20

Learning Objective #:	3.2.1
Learning Objective Name:	Identify the types of Open Flow Messages
What type of OpenFlow message is OFPT_HELLO? <ul style="list-style-type: none"> • Controller to Switch • Symmetric • Asynchronous • Controller to Controller 	

Q21

Learning Objective #:	3.2.2
Learning Objective Name:	Describe the purposes of open flow messages
What is the purpose of OpenFlow messages? <ul style="list-style-type: none"> • Add, update, and delete actions to the flow entries in the flow tables • Notify the controller having an error • Add, delete, and modify group entries and set switch port properties • Set and query configuration parameters 	

Q22

Learning Objective #:	3.3.1
Learning Objective Name:	Describe the Flow Table Entry Format
What is the first action when an OpenFlow table performs pipeline processing: <ul style="list-style-type: none"> • Find the highest table miss matching flow entry • Find the highest flags matching flow entry • Find the highest timeouts matching flow entry • Find the highest priority matching flow entry 	

Q23

Learning Objective #:	3.3.2
Learning Objective Name:	Identify various Statistics/Counters available in OpenFlow
What types of counters are available in OpenFlow and configurable on all OpenFlow compliant switches? <ul style="list-style-type: none"> • MAC Table and Group Bucket • Flow Table and Group Bucket • Group Bucket and Port table • Flow Table and Port Table 	

Q24

Learning Objective #:	3.3.3
Learning Objective Name:	List various match types and actions
What is the Flow Match Header structure called? <ul style="list-style-type: none"> • OFP_MATCH • OXM_CLASS • OXM_TLV • OXM_OF_PKT_REG 	

Q25

Learning Objective #:	3.4.1
Learning Objective Name:	Describe the difference between open flow versions
What improvement is made on the OpenFlow switch “Programmability” in version 1.3? <ul style="list-style-type: none"> • Egress tables • Event filtering • Flow monitoring • Table features 	

Q26

Learning Objective #:	3.5.1
Learning Objective Name:	Describe OF-Config purpose
What is OF-Config? <ul style="list-style-type: none"> • A protocol that operates on time scale as flows are added and deleted • The protocol enables dynamic association of the OpenFlow related resources of an OpenFlow Capable Switch with specific OpenFlow Logical Switches • The protocol assumes full control over the resources that is assigned to it • The protocol reports how the partitioning of resources on an OpenFlow Capable Switch is achieved 	

Q27

Learning Objective #:	4.1.1
Learning Objective Name:	Who is the ONF and what do they do?
Which statement best describes the purpose and function of ONF? <ul style="list-style-type: none"> • A global collaboration of developers and cloud computing technologists producing the open standard cloud computing platforms. • A user-driven organization dedicated to the promotion and adoption of Open Virtual Networking. • A user-driven organization dedicated to the promotion and adoption of SDN through open standards development. • A community driven organization that provides all the features needed to provide an on-premises (private) cloud offering, and to offer public cloud services. 	

Q28

Learning Objective #:	4.1.2
Learning Objective Name:	What is the current structure of the ONF: Technical Working Groups, Activities and Initiatives
The ONF Technical Communities is composed of which of the following set of entities? <ul style="list-style-type: none"> • Community, Groups, and Members • Areas, Councils, and Groups • Councils, Branches, and Standards • Companies, Councils, and Groups 	

Q29

Learning Objective #:	4.2.1
Learning Objective Name:	Describe SDN Standards Bodies and Industry alliances
Which option represents are SDN Standards Bodies and Industry Alliances?	
<ul style="list-style-type: none"> • ODCA and IETF • TSI and IETF • TSI and IBBF • IETF and IBBF 	

Q30

Learning Objective #:	4.3.1
Learning Objective Name:	Identify the Software Layers of SDN
Which of the following layers are embedded within the service interface?	
<ol style="list-style-type: none"> 1. Device and resource Abstraction Layer (DAL) 2. Control Abstraction Layer (CAL) 3. Management Abstraction Layer (MAL) 4. Network Services Abstraction Layer (NSAL) 	
<ul style="list-style-type: none"> • 1 and 4 • 1 and 2 • 2 and 3 • 3 and 4 	

Q31

Learning Objective #:	4.3.2
Learning Objective Name:	List Packet and Optical Integration method
ONF created the Optical Transport Working Group, which will develop the SDN strategies for packet-optical integration. What is the method called?	
<ul style="list-style-type: none"> • Distributed SDN • Multi-layer SDN • Network-Layer SDN • Physical-Layer SDN 	

Q32

Learning Objective #:	4.3.3
Learning Objective Name:	Describe Migration Strategies
Which of the following items are the SDN Migration best practices?	
<ol style="list-style-type: none"> 1. Planning phase 2. Identifying impacts 3. Pre- and post-migration check lists 4. Migration tools 	
<ul style="list-style-type: none"> • 1 and 2 • 2 and 3 • 1, 2, and 3 • 1, 2, 3, and 4 	

Q33

Learning Objective #:	4.3.4
Learning Objective Name:	Describe Security and Availability issues in SDN
<p>“SDN security needs to be built into the architecture, as well as delivered as a service to protect the availability, integrity, and privacy of all connected resources and information.”</p> <p>Which two architectures are being referred in the preceding statement?</p> <ul style="list-style-type: none"> • Policy driven and perimeter protection around the controller • Policy driven and robust policy framework • Perimeter protection around the controller and robust policy framework • Access card and control and robust policy framework 	

Q34

Learning Objective #:	4.3.5
Learning Objective Name:	Identify proper Controller Placement and Redundancy
<p>Which is the ideal controller placement and redundancy?</p> <ul style="list-style-type: none"> • A single controller node with a single tiered architecture • A cluster of controller nodes with a single tiered architecture • A single controller node with a three tiered architecture • A cluster of controller nodes with a three tiered architecture 	

Q35

Learning Objective #:	4.3.6
Learning Objective Name:	Describe types of SDN Applications (service chaining, virtualized network functions, analytics)
<p>Which is a common type of SDN applications?</p> <ul style="list-style-type: none"> • Server virtualization • OS virtualization • Cloud computing applications • Virtualized network services 	

Q36

Learning Objective #:	4.3.7
Learning Objective Name:	Define the use and purpose of Hybrid Mode Switches
<p>Which statement correctly describes Hybrid SDN Switching?</p> <ul style="list-style-type: none"> • Engineers can run standard switching protocols simultaneously on the physical hardware • Combination of circuit and packet switching where data transfer rate can be increased and delay time can be reduced. • Traditional networking and SDN protocols operate in the same environment • Augmented packet-based switching to create a hybrid solution 	

Q37

Learning Objective #:	5.1.1
Learning Objective Name:	List Open Source OpenFlow Controllers
What of the following controllers are open source SDN controllers?	
<ol style="list-style-type: none"> 1. OpenDaylight open source SDN controller 2. OpenStack SDN controller 3. Floodlight open SDN controller 4. Ryu OpenFlow controller 	
<ul style="list-style-type: none"> • 1, 3, and 4 • 1, 2, and 3 • 2, 3, and 4 • 1, 2, and 4 	

Q38

Learning Objective #:	5.1.2
Learning Objective Name:	Identify Open Source Initiatives (OPNFV, OCP, ODCA, Open Config)
Under which OCP project does the switch “Abstraction Layer” reside?	
<ul style="list-style-type: none"> • Storage • Open Rack • Data Center • Networking 	

Q39

Learning Objective #:	5.1.3
Learning Objective Name:	Describe Open Source SDN Distributions
Which open source distribution uses ONO, OCP, and BGP?	
<ul style="list-style-type: none"> • Helium SR4 • Dart • Atrium • Floodlight v0.85 	

Q40

Learning Objective #:	5.1.4
Learning Objective Name:	List SDN Open Source Utilities and Tools
Which option mentions SDN open source utilities/tools?	
<ul style="list-style-type: none"> • Floodlight and Open Switch • OpenStack Networking “Neutron” and Floodlight • Open Switch and OpenStack Networking “Neutron” • Floodlight and Hyperable 	

Additional Documents

Answers

Q1

Learning Objective #:	1.1.1
Learning Objective Name:	Describe collision and broadcast domains
Which statement is true about the collision and broadcast domains? <ul style="list-style-type: none">All ports of a Hub are in the same collision domain with different broadcast domains.All ports of a Hub are in different collision domains with different broadcast domains.All ports of a Router are in the same collision domain with different broadcast domains.All ports of a Router are in different collision domains with different broadcast domains.	

Q2

Learning Objective #:	1.2.1
Learning Objective Name:	Describe the difference between a router and a switch
What is the difference between a router and a switch? <ul style="list-style-type: none">A router forwards packets based on the destination MAC address, while a switch forwards these based on the destination IP address.A router forwards packets based on the destination IP address, while a switch forwards these based on the destination MAC address.Both, router and switch, forward packets based on the destination IP address.Both, router and switch, forward packets based on the destination MAC address.	

Q3

Learning Objective #:	1.2.2
Learning Objective Name:	List routing protocols (OSPF, IS-IS, RIP, BGP) and their functions
Which option indicates the routing protocols in the increasing order of Administrative distance? <ul style="list-style-type: none">IS-IS, OSPF, RIP, Internal BGPRIP, IS-IS, Internal BGP, OSPFOSPF, IS-IS, RIP, Internal BGPInternal BGP, IS-IS, OSPF, RIP	

Q4

Learning Objective #:	1.2.3
Learning Objective Name:	Describe how longest match routing works
When a router makes a forwarding decision, which item always wins for the routes in the routing table? <ul style="list-style-type: none">Path cost of the routeLength of the network mask of the routeRoutes learnt from multiple routing protocolsRoutes learnt from the Highest Router ID	

Q5

Learning Objective #:	1.3.1
Learning Objective Name:	Describe the common components of an optical transport network
What is the disadvantage of Optical Transport Network compared to SONET/SDH? <ul style="list-style-type: none"> Stronger Forward Error Correction Switching Scalability New Hardware and Management System Transparent Transport of Client Signals 	

Q6

Learning Objective #:	1.4.1
Learning Objective Name:	Define the functions of the following IP Concepts: IP Subnetting, ARP, DHCP, DNS
What does the ARP protocol resolve? <ul style="list-style-type: none"> IP address to MAC address Hostname to IP address Hostname to MAC address IP address to TCP port 	

Q7

Learning Objective #:	2.1.1
Learning Objective Name:	Identify the History of SDN :Clean Slate, Ethane, OpenFlow™ , donation to ONF
Which University had the Clean Slate, an interdisciplinary research program where OpenFlow and SDN later became a major follow-up projects? <ul style="list-style-type: none"> MIT Stanford Harvard Cambridge 	

Q8

Learning Objective #:	2.2.1
Learning Objective Name:	Define the definition of SDN and key concepts: Plane Separation, Simplified Forwarding Element, Centralized Control, Network Automation, Virtualization, and Openness
What is the ONF definition of SDN? <ul style="list-style-type: none"> Control and Data Plane separation with centralized control and programmable networks Control and Data Plane separation with distributed control Control and Data Plane separation with distributed control and programmable networks Control and Data Plane separation with programmable networks 	

Q9

Learning Objective #:	2.2.2
Learning Objective Name:	Describe the value proposition of SDN
Identify the SDN value proposition <ul style="list-style-type: none"> • More Operational and Capital Costs More Agility • Less Operational and Capital Costs More Agility • More OPEX Costs Less CAPEX Costs Less Agility • Less Operational Costs More CAPEX Costs Less Agility 	

Q10

Learning Objective #:	2.3.1
Learning Objective Name:	Identify SDN Use Cases in the Data Center
Which SDN use case is encountered in an Enterprise Data Center? <ul style="list-style-type: none"> • Seamless Mobility and BYOD • Mice/Elephant Flow Optimization • Virtual Provider Edge • Virtual Firewall and Virtual DPI 	

Q11

Learning Objective #:	2.3.2
Learning Objective Name:	Identify SDN Use Cases in Campus Networks
Which SDN use case is encountered in Campus Networks? <ul style="list-style-type: none"> • Virtual Customer Premises Equipment • Network Access Control • Multi-layer Optimization • Mobile Wifi Offload 	

Q12

Learning Objective #:	2.3.3
Learning Objective Name:	Identify SDN Use Cases in Service Providers
Which SDN use case is encountered in Service Providers? <ul style="list-style-type: none"> • Seamless Mobility and BYOD • Virtual Customer Premises Equipment and Service Function Chaining • Unified Communications • SD-WAN 	

Q13

Learning Objective #:	2.3.4
Learning Objective Name:	Identify SDN Use Cases in the Enterprise
Which SDN use case is encountered in Enterprise Networks?	
<ul style="list-style-type: none"> • Unified Communications Optimization • Virtual EPC and Virtual IMS • Virtual Router and Virtual Firewall • Mobile Wifi Offload 	

Q14

Learning Objective #:	2.3.5
Learning Objective Name:	Identify SDN Use Cases in Mobile
Which SDN use case is encountered in Mobile Networks?	
<ul style="list-style-type: none"> • Centralized Radio Resource Management • SD-WAN • Unified Communications • Mice/Elephant Flow Optimization 	

Q15

Learning Objective #:	2.4.1
Learning Objective Name:	Identify physical SDN Devices: Switches, Controllers
Consider the following statements about SDN controllers and select the correct option:	
<ul style="list-style-type: none"> • Statement A: An SDN controller can manage multiple SDN switches. • Statement B: An SDN controller can work in federation. • Statement A is true, and Statement B is false. • Statement B is true, and Statement A is false. • Both, Statement A and Statement B, are true. • Both, Statement A and Statement B, are false. 	

Q16

Learning Objective #:	2.4.2
Learning Objective Name:	Identify SDN software Components and Concepts: Orchestration, API's
Which statement is true about SDN controllers?	
<ul style="list-style-type: none"> • An SDN application should communicate with only one SDN controller at a time. • REST API with XML is the only way to communicate with an SDN controller. • SDN controllers and SDN applications should be written in the same programming language. • Multiple SDN applications can communicate with an SDN controller at the same time. 	

Q17

Learning Objective #:	3.1.1
Learning Objective Name:	Describe the TCP level secure channel/communication/session establishment between controller/switch
Identify the communication protocol between Openflow controller and Openflow switch <ul style="list-style-type: none"> • REST API with OpenFlow extensions • SOAP API with OpenFlow extensions • TCP/TLS with OpenFlow headers • RPC. With OpenFlow messages 	

Q18

Learning Objective #:	3.1.2
Learning Objective Name:	Describe the setting up of a flow
Identify the sequence of operations between Openflow controller and switch <ul style="list-style-type: none"> • An OpenFlow controller and a switch exchange features capabilities before a successful connection is established. • An OpenFlow controller and a switch exchange “Hello” messages and negotiate on the common supported version before a successful connection is established. • An OpenFlow controller can initiate a connection request to a switch and send “Hello” messages in parallel. • An OpenFlow switch can initiate a connection request to a controller and send the supported features in parallel. 	

Q19

Learning Objective #:	3.1.3
Learning Objective Name:	Identify Proactive vs Reactive Flows
Which statement is correct about proactive and reactive flows? <ul style="list-style-type: none"> • Proactive flows can be programmed only during initial connection setup. • An OpenFlow controller cannot support proactive and reactive flows together at the same time. • Proactive flows can be programmed anytime, however, reactive flows are programmed when network packets are received by a controller from multiple switches. • Reactive flows are programmed when higher level SDN application requests for network provisioning changes. 	

Q20

Learning Objective #:	3.2.1
Learning Objective Name:	Identify the types of Open Flow Messages
What type of OpenFlow message is OFPT_HELLO? <ul style="list-style-type: none"> • Controller to Switch • Symmetric • Asynchronous • Controller to Controller 	

Q21

Learning Objective #:	3.2.2
Learning Objective Name:	Describe the purposes of open flow messages
What is the purpose of OpenFlow messages? <ul style="list-style-type: none"> • Add, update, and delete actions to the flow entries in the flow tables • Notify the controller having an error • Add, delete, and modify group entries and set switch port properties • Set and query configuration parameters 	

Q22

Learning Objective #:	3.3.1
Learning Objective Name:	Describe the Flow Table Entry Format
What is the first action when an OpenFlow table performs pipeline processing: <ul style="list-style-type: none"> • Find the highest table miss matching flow entry • Find the highest flags matching flow entry • Find the highest timeouts matching flow entry • Find the highest priority matching flow entry 	

Q23

Learning Objective #:	3.3.2
Learning Objective Name:	Identify various Statistics/Counters available in OpenFlow
What types of counters are available in OpenFlow and configurable on all OpenFlow compliant switches? <ul style="list-style-type: none"> • MAC Table and Group Bucket • Flow Table and Group Bucket • Group Bucket and Port table • Flow Table and Port Table 	

Q24

Learning Objective #:	3.3.3
Learning Objective Name:	List various match types and actions
What is the Flow Match Header structure called? <ul style="list-style-type: none"> • OFF_MATCH • OXM_CLASS • OXM_TLV • OXM_OF_PKT_REG 	

Q25

Learning Objective #:	3.4.1
Learning Objective Name:	Describe the difference between open flow versions
What improvement is made on the OpenFlow switch "Programmability" in version 1.3? <ul style="list-style-type: none"> • Egress tables • Event filtering • Flow monitoring • Table features 	

Q26

Learning Objective #:	3.5.1
Learning Objective Name:	Describe OF-Config purpose
What is OF-Config? <ul style="list-style-type: none"> • A protocol that operates on time scale as flows are added and deleted • The protocol enables dynamic association of the OpenFlow related resources of an OpenFlow Capable Switch with specific OpenFlow Logical Switches • The protocol assumes full control over the resources that is assigned to it • The protocol reports how the partitioning of resources on an OpenFlow Capable Switch is achieved 	

Q27

Learning Objective #:	4.1.1
Learning Objective Name:	Who is the ONF and what do they do?
Which statement best describes the purpose and function of ONF? <ul style="list-style-type: none"> • A global collaboration of developers and cloud computing technologists producing the open standard cloud computing platforms. • A user-driven organization dedicated to the promotion and adoption of Open Virtual Networking. • A user-driven organization dedicated to the promotion and adoption of SDN through open standards development. • A community driven organization that provides all the features needed to provide an on-premises (private) cloud offering, and to offer public cloud services. 	

Q28

Learning Objective #:	4.1.2
Learning Objective Name:	What is the current structure of the ONF: Technical Working Groups, Activities and Initiatives
The ONF Technical Communities is composed of which of the following set of entities? <ul style="list-style-type: none"> • Community, Groups, and Members • Areas, Councils, and Groups • Councils, Branches, and Standards • Companies, Councils, and Groups 	

Q29

Learning Objective #:	4.2.1
Learning Objective Name:	Describe SDN Standards Bodies and Industry alliances
Which option represents are SDN Standards Bodies and Industry Alliances?	
<ul style="list-style-type: none"> • ODCA and IETF • TSI and IETF • TSI and IBBF • IETF and IBBF 	

Q30

Learning Objective #:	4.3.1
Learning Objective Name:	Identify the Software Layers of SDN
Which of the following layers are embedded within the service interface?	
<ol style="list-style-type: none"> 1. Device and resource Abstraction Layer (DAL) 2. Control Abstraction Layer (CAL) 3. Management Abstraction Layer (MAL) 4. Network Services Abstraction Layer (NSAL) 	
<ul style="list-style-type: none"> • 1 and 4 • 1 and 2 • 2 and 3 • 3 and 4 	

Q31

Learning Objective #:	4.3.2
Learning Objective Name:	List Packet and Optical Integration method
ONF created the Optical Transport Working Group, which will develop the SDN strategies for packet-optical integration. What is the method called?	
<ul style="list-style-type: none"> • Distributed SDN • Multi-layer SDN • Network-Layer SDN • Physical-Layer SDN 	

Q32

Learning Objective #:	4.3.3
Learning Objective Name:	Describe Migration Strategies
Which of the following items are the SDN Migration best practices?	
<ol style="list-style-type: none"> 1. Planning phase 2. Identifying impacts 3. Pre- and post-migration check lists 4. Migration tools 	
<ul style="list-style-type: none"> • 1 and 2 • 2 and 3 • 1, 2, and 3 • 1, 2, 3, and 4 	

Q33

Learning Objective #:	4.3.4
Learning Objective Name:	Describe Security and Availability issues in SDN
<p>“SDN security needs to be built into the architecture, as well as delivered as a service to protect the availability, integrity, and privacy of all connected resources and information.”</p> <p>Which two architectures are being referred in the preceding statement?</p> <ul style="list-style-type: none"> • Policy driven and perimeter protection around the controller • Policy driven and robust policy framework • Perimeter protection around the controller and robust policy framework • Access card and control and robust policy framework 	

Q34

Learning Objective #:	4.3.5
Learning Objective Name:	Identify proper Controller Placement and Redundancy
<p>Which is the ideal controller placement and redundancy?</p> <ul style="list-style-type: none"> • A single controller node with a single tiered architecture • A cluster of controller nodes with a single tiered architecture • A single controller node with a three tiered architecture • A cluster of controller nodes with a three tiered architecture 	

Q35

Learning Objective #:	4.3.6
Learning Objective Name:	Describe types of SDN Applications (service chaining, virtualized network functions, analytics)
<p>Which is a common type of SDN applications?</p> <ul style="list-style-type: none"> • Server virtualization • OS virtualization • Cloud computing applications • Virtualized network services 	

Q36

Learning Objective #:	4.3.7
Learning Objective Name:	Define the use and purpose of Hybrid Mode Switches
<p>Which statement correctly describes Hybrid SDN Switching?</p> <ul style="list-style-type: none"> • Engineers can run standard switching protocols simultaneously on the physical hardware • Combination of circuit and packet switching where data transfer rate can be increased and delay time can be reduced. • Traditional networking and SDN protocols operate in the same environment • Augmented packet-based switching to create a hybrid solution 	

Q37

Learning Objective #:	5.1.1
Learning Objective Name:	List Open Source OpenFlow Controllers
<p>What of the following controllers are open source SDN controllers?</p> <ol style="list-style-type: none"> 1. OpenDaylight open source SDN controller 2. OpenStack SDN controller 3. Floodlight open SDN controller 4. Ryu OpenFlow controller <ul style="list-style-type: none"> • 1, 3, and 4 • 1, 2, and 3 • 2, 3, and 4 • 1, 2, and 4 	

Q38

Learning Objective #:	5.1.2
Learning Objective Name:	Identify Open Source Initiatives (OPNFV, OCP, ODCA, Open Config)
<p>Under which OCP project does the switch “Abstraction Layer” reside?</p> <ul style="list-style-type: none"> • Storage • Open Rack • Data Center • Networking 	

Q39

Learning Objective #:	5.1.3
Learning Objective Name:	Describe Open Source SDN Distributions
<p>Which open source distribution uses ONO, OCP, and BGP?</p> <ul style="list-style-type: none"> • Helium SR4 • Dart • Atrium • Floodlight v0.85 	

Q40

Learning Objective #:	5.1.4
Learning Objective Name:	List SDN Open Source Utilities and Tools
<p>Which option mentions SDN open source utilities/tools?</p> <ul style="list-style-type: none"> • Floodlight and Open Switch • OpenStack Networking “Neutron” and Floodlight • Open Switch and OpenStack Networking “Neutron” • Floodlight and Hyperable 	