Orientation Test

This test gives you the opportunity of testing your knowledge before you take part in the workshop(s). It is important that you answer each question without using any reference materials or other help.

The test consists of 22 questions. The answers are available in a separate document that is linked on our website. If you can answer less than 15 questions then we recommend that you take part in our Basic Workshop. Further information about this is available on our homepage.

All of the subject areas addresses here are relevant to successful participation in the LANCOM Workshop series. To be optimally prepared for the workshops you should be able to answer all of the questions correctly.

There is no time limit on answering the questions. The answers should occur to you relatively spontaneously without overly long consideration.

For questions with the ○ symbol, one answer only is correct. For questions with the ❒ symbol, multiple answers are correct; the correct number is indicated.

Question 1: What is the subnet mask of the following IP address: **10.1.2.45 /24**?

Answers:

1	○	The subnet mask belongs to class A and is 255.0.0.0.
2	○	The subnet mask belongs to class B and is 255.255.0.0.
3	○	The subnet mask belongs to class C and is 255.255.255.0.
4	○	The subnet mask belongs to class D and is 255.255.255.255.

Question 2: The diagram below shows the IP configuration of a Windows computer. How was the configuration generated on the system?

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Ethernetadapter LAN-Verbindung:

        Verbindungsspezifisches DNS-Suffix: lcs.intern
        Beschreibung. . . . . . . . . . . : Broadcom NetXtreme Gigabit Ethernet
        Physikalische Adresse . . . . . . : 00-16-41-A7-AD-21
        DHCP aktiviert. . . . . . . . . . : Ja
        Autokonfiguration aktiviert . . . : Ja
        IP-Adresse. . . . . . . . . . . . : 10.1.202.65
        Subnetzmaske. . . . . . . . . . . : 255.255.0.0
        Standardgateway . . . . . . . . . : 10.1.1.11
        DHCP-Server . . . . . . . . . . . : 10.1.1.11
        DNS-Server. . . . . . . . . . . . : 10.1.1.11
                                            10.1.1.10
        Primärer WINS-Server. . . . . . . : 10.1.1.11
        Sekundärer WINS-Server. . . . . . : 10.1.1.10
        Lease erhalten. . . . . . . . . . : Montag, 14. Januar 2008 10:57:49
        Lease läuft ab. . . . . . . . . . : Montag, 14. Januar 2008 19:17:49
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Answers:

1	○	The configuration was entered by hand by the system administrator.
2	○	The configuration was entered automatically by the DNS server.
3	○	The configuration was entered automatically by the DHCP server.
4	○	The configuration is static and given to the system via the network card ex-factory.

Question 3: Which of the following statements about routing are correct?

Answers (2 correct answers):

1	☐	Routing written in the ISO-OSI model on layer 7 (application)
2	☐	Routing means that data packets are forwarded to remote networks.
3	☐	Unlike a switch, the router can only process MAC addresses.
4	☐	Unlike a switch, the router can process IP addresses.

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Question 4: Topology connected through a switch is referred to as...

Answers:

1	○	Bus topology
2	○	Line topology
3	○	Star topology
4	○	Mesh topology

Question 5: Which answers describe the difference between SDSL and ADSL?

Answers (2 correct answers):

1	☐	SDSL means Slow DSL and is an economy version of DSL used by providers when the distance to the DLSAM is too great.
2	☐	SDSL stands for Symmetrical DSL and ADSL stands for Asymmetrical DSL.
3	☐	ADSL is available only to a limited extent; SDSL will be available everywhere for anybody interested as of mid 2008.
4	☐	SDSL provides fast uploads and downloads; ADSL provides downloads that are faster than uploads.

Question 6: A computer network is a distributed system of computers that can communicate with one another. The functional elements of a computer network are structured as what are referred to in informatics as layer models. One of these layer models is the OSI reference model that has 7 layers. Name the missing layers.

7 ▶	**Application Layer**
6 ▶	
5 ▶	**Session Layer**
4 ▶	**Transport Layer**
3 ▶	
2 ▶	**Data Link Layer**
1 ▶	
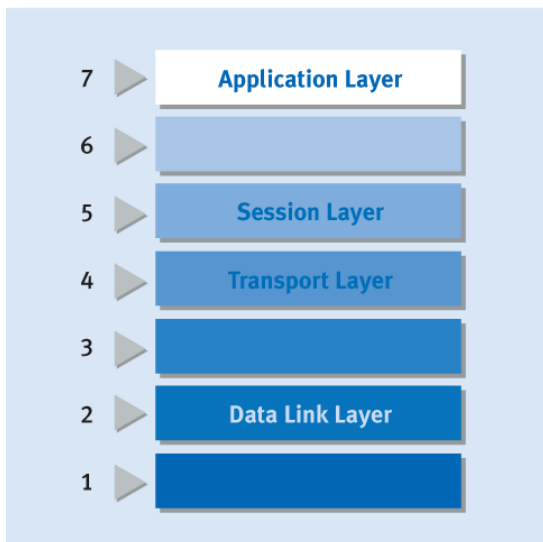
6	
3	
1	

Available:

   I.   Presentation Layer

  II.   Network Layer

 III.   Physical Layer

 IV.   Logical Layer

  V.   Virtual Layer

Question 7: Which of the following statements on ports and port release are correct?

Answers (3 correct answers):

1	☐	Under certain circumstances, ports on the router to a terminal device have to be released in order for communication with the terminal device to take place.
2	☐	During masquerading, routers do not have to deal with ports because that is the task of the terminal devices.
3	☐	Under certain circumstances, ports can be opened and closed dynamically.
4	☐	Routers can block ports as a part of their firewall function.

Question 8: Which of the following criteria describe the technology VLAN?

Answers (2 correct answers):

1	☐	A layer 2 switch distributes packets to ports that have been merged by IP address to form a VLAN.
2	☐	Access between devices is regulated by the MAC filter list
3	☐	Layer 2 or layer 3 switches can be used to merge multiple Ethernet ports to form logical networks.
4	☐	VLANs can be used to control access to various resources.

Question 9: The use of telnet and ftp is no longer recommended. Why?

Answers (2 correct answers):

1	☐	Communication between client and server is not encrypted.
2	☐	There are secure alternatives to telnet and ftp, such as ssh instead of telnet.
3	☐	Telnet is being completely replaced by secnet, and tftp by http.
4	☐	Telnet and ftp are not capable of routing.

Question 10: What is a proxy?

Answers:

1	○	A proxy provides a local network with access to the Internet. The proxy uses DHCP (Dynamic Host Configuration Protocol) to allocate IP addresses to all of the computers in a local network.
2	○	A proxy is an intermediate station in the path of communication.
3	○	A proxy is supposed to prevent intrusion into a company network by blocking all unauthorized communications from and to the Internet.
4	○	A proxy is a security measure that can be used in place of a firewall.

Question 11: In the Internet, we differentiate between the communications protocols TCP (Transmission Control Protocol) and UDP (User Datagram Protocol). Please allocate the term (TCP, UDP) to the correct definition.

Answers:

1	…….	is a connection-orientated communication protocol. It consists of three phases: Connection establishment, data transfer and connection termination.
2	…….	is a non-connection orientated communication protocol, i.e. it sends individual data packets without assuring their arrival.

Question 12: Which of the following options can be used to stay constantly available from the Internet (e.g. for VPN connections)?

Answers (2 correct answers):

1	☐	Dynamic DNS
2	☐	Allocation of a fixed MAC address
3	☐	Allocation of a domain name by denic
4	☐	Allocation of a fixed IP address

Question 13: The diagram below shows a routing table from a Windows computer. Which of the following statements can be verified based on the information in this table?

Answers (2 correct answers):

1	☐	The default gateway for this computer is 10.1.1.11.
2	☐	To reach the IP address 87.78.164.170 the route must be directed via the gateway 10.1.1.11.
3	☐	The broadcast for the local network where the client is located is addressed with 255.255.255.255.
4	☐	The default gateway for this computer is 10.1.202.65.

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Question 14: Which of the following statements is true of a gateway?

Answers (2 correct answers):

1	☐	The term "gateway" describes the transition between different networks, topologies and/or media.
2	☐	The "default gateway" is used in a network when no other path to devices outside of the local network is known.
3	☐	A gateway allows or prohibits access to external networks.
4	☐	The IP address X.X.X.255 in the local network is always the "default gateway" and may not be altered.

Question 15: Which of the following statements applies to the connection mode "Plain Ethernet" with IPoE?

Answers:

1	○	The configuration requires a fixed IP address and the gateway.
2	○	No settings are required for the configuration as the provider distributes all settings via BootP.
3	○	A static IP address is required; however, the gateway results automatically from the IP address and the subnet mask.
4	○	According to ISO 9001, since 01/01/2008 no IP addresses may be given to commercially operated devices. For this reason there is DHCPoE instead.

Question 16: Which of these statements on PPP (point-to-point protocol) are correct?

Answers (2 correct answers):

1	☐	PPP enables the transmission of various network protocols such as TCP/IP, IPX and AppleTalk.
2	☐	PPP is an obsolete protocol that is only used on old network environments where TCP/IP cannot be used.
3	☐	PPP also supports point-to-multipoint connections, although the name would not suggest this.
4	☐	PPP is mainly used in the dial-in procedure where it is used in combination with, for example, PPPoE or PPTP.

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Question 17: You receive the following information to configure three different subnets. Which of the following answers are true?

IP network:	10.1.0.0	255.0.0.0
IP network:	10.2.0.0	255.0.0.0
IP network:	10.3.0.0	255.0.0.0

Answers (2 correct answers):

1	❒	For the class A subnet masks shown, all three addresses are in the same network.
2	❒	All three are private addresses; these cannot be occupied by a subnet mask.
3	❒	These are not subnets but individual host addresses.
4	❒	These are class C addresses but a subnet mask from class 1.

Question 18: Which of the following scenarios are feasible in the area of VPN?

Answers (2 correct answers):

1	❒	A field worker dials into the company and uses the CHAP protocol.
2	❒	A teleworker uses a software client to access the company network by using IPsec.
3	❒	A manager receives his e-mails via the mobile telephony network and the Blackberry© Client.
4	❒	An employee of the IT department sets up employee access that uses the PPTP protocol.

Question 19: Which statements on the ISDN S0 bus are true?

Answers (2 correct answers):

1	❒	An S0 bus features two B channels, each with speeds of 128 Kbps.
2	❒	An S0 bus features two B channels, each with speeds of 64 Kbps.
3	❒	An S0 bus features two D channels, each with speeds of 16 Kbps.
4	❒	An S0 bus features one D channel with speeds of 16 Kbps.

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Question 20: In the world of ISDN telephony, what does the term MSN refer to?

Answers:

1	○	Multi Sequence Number
2	○	Multi Serial Number
3	○	Multiple Subscriber Number
4	○	More Signal Negotiation

Question 21: Which devices / programs can be used to establish a VoIP connection <u>without additional media converters</u>?

Answers (2 correct answers):

1	❒	Analog telephones
2	❒	SIP software client
3	❒	ISDN telephone
4	❒	SIP telephone

Question 22: Which of the following statements is correct in relation to SIP telephony with VoIP?

Answers:

1	○	VoIP only works between softphones.
2	○	To use a SIP software client to telephone with a landline, a connection to a GSM gateway is essential.
3	○	VoIP can only be used when an ISDN PBX is operated at a primary multiplex connection.
4	○	VoIP clients can be other VoIP clients, but also landline phones and mobile phones (using a gateway where appropriate).