

BCS Level 4 Certificate in Network Services
Answer Key and Rationale – QAN 603/3256/6

Question	Answer	Explanation / Rationale	Syllabus Sections
1	B	IEEE 802.11n is the only wireless choice to cover 100 m+.	1.10
2	A	DNS stands for Domain Name System and is a directory that enables computers to look up a domain or host name and acquire a corresponding IP address.	2.1
3	D	Dynamic routing is related to routing protocols so both RIP and OSPF perform best path determination and enter the path data into the route table as soon as they have worked it out. You would expect the default route would be the best path and, if it fails, then the routers will reconverge on the best alternative route; therefore, it always does it.	1.3
4	D	In a Windows environment, Active Directory is the central repository for users, computers and groups and all policies relating to these objects.	3.5
5	B	The SIP registrar network element registers each mobile device with its IP address against an AOR record, so multiple devices can be called on the same number at the same time.	2.4
6	B	This is the only fibre technology and hence can reach up to distances of 300 m based on the mode used. Copper distance for Ethernet are 100 m or less depending on the bandwidth (generally, the higher the bandwidth, the lower the distance when using copper for Ethernet).	1.9
7	C	The forest, tree, and domain are the logical divisions in an Active Directory network. Hence a domain is made up of network objects such as users and computers.	3.1
8	D	A Group Policy Object is applied to a profile so that a standard set of views, configurations and rules will apply to a group of users or devices.	3.7

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9	D	<p>To have 4 subnets it is required to have 2 extra bits. Calculated by 2^2 or 2×2 this gives 4 subnets:</p> <p>00 subnet 1 01 subnet 2 10 subnet 3 11 subnet 4</p> <p>Because 24 bits have already been used for the subnet mask, 2 more need to be borrowed from the hosts, giving 26 network bits. The first 24 bits therefore give a netmask of 255.255.255.</p> <p>The final part is calculated by setting 2 binary bits to 1:</p> <table border="1"> <tr> <td>128</td> <td>64</td> <td>32</td> <td>16</td> <td>8</td> <td>4</td> <td>2</td> <td>1</td> <td>(Decimal)</td> </tr> <tr> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>(Binary)</td> </tr> </table> <p>$128+64= 192$</p> <p>Therefore, the netmask must be 255.255.255.192</p>	128	64	32	16	8	4	2	1	(Decimal)	1	1	0	0	0	0	0	0	(Binary)	1.7
128	64	32	16	8	4	2	1	(Decimal)													
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10	B	<p>Radio waves are the media over which wireless communications are transmitted. Infrared is used for very short-range communication but is line of sight only. Visible light is not used for wireless communication but can be used in fibre optic networks. Copper cabling is wired communication.</p>	1.1																		
11	A	<p>PCAP is the standard file type for both commercial and open source packet capture tools like Wireshark and tcpdump.</p>	2.6																		
12	C	<p>Software as a service (SaaS) allows users to connect to and use cloud-based apps over the Internet. Common examples are email, calendaring and office tools. SaaS provides a complete software solution that is purchased on a pay-as-you-go basis from a cloud service provider. Apps are rented by an organisation and users connect to it over the Internet, usually with a web browser. All the underlying infrastructure, middleware, application software and application data are located in the service provider's data centre (such as Microsoft Office 365).</p>	2.2																		
13	B	<p>SSH stands for Secure Shell and enables administrators to connect securely to network components such as routers, switches and servers: all communications are encrypted.</p>	3.3																		
14	A	<p>In signal-to-noise ratio, when calculating power ratios, the relationship is:</p> <p>$20 \log_{10} (\text{Signal Power}/\text{Noise Power}).$</p>	1.8																		

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15	D	<p>The number of bits in an IP address are 32 therefore:</p> <p>Number of host bits = 32-Network Bits (22)</p> <p>10 network bits available for hosts</p> <p>Number of hosts= $(2^{\text{host bits}}) - 2 = (2^{10})-2$</p> <p>= 1022</p>	1.6																		
16	B	If packets are lost in video or voice communication, it is impossible to reinsert the lost data into the communication flow as the transmission has moved on and it would slow down the delivery if attempted.	2.3																		
17	C	This is the only valid DNS entry. Others could include SRV, MX or PTR.	3.2																		
18	C	<p>If eight bits all set to 1 would be the maximum number:</p> <table border="1" data-bbox="411 913 1299 990"> <tr> <td>128</td> <td>64</td> <td>32</td> <td>16</td> <td>8</td> <td>4</td> <td>2</td> <td>1</td> <td>(Decimal)</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>(Binary)</td> </tr> </table> <p>Therefore, the largest number that can be represented is:</p> <p>$128+64+32+16+8+4+2+1 = 255$</p>	128	64	32	16	8	4	2	1	(Decimal)	1	1	1	1	1	1	1	1	(Binary)	1.4
128	64	32	16	8	4	2	1	(Decimal)													
1	1	1	1	1	1	1	1	(Binary)													
19	C	Both SRTP and TLS provide encryption of the packet payload for incoming / outgoing voice calls.	2.5																		
20	C	The 7 layers are Physical, Data link, Network, Transport, Session, Presentation, Application.	1.2																		