



GCE

Applied ICT

Unit **G055**: Networking Solutions

Advanced GCE

Mark Scheme for June 2018

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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Annotations

Annotation	Meaning
^	Something vital to the mark point has been omitted.
BOD	Benefit of the doubt given.
NBOD	Benefit of the doubt not given.
CON	Candidate contradicts him/herself.
NAQ	Candidate has not answered the question as set.
MTP	Candidate has missed the point of the question.
W	Candidate is working towards a mark but has not given enough to receive credit at this point.
NE	Not enough for the candidate to receive credit.
TV	Answer is too vague to receive credit.
FTC	Follow-through credit. When an earlier wrong answer has been penalised, this may be used to show that credit can now be given to a part of the script which depends on that earlier wrong answer. This avoids penalising a candidate twice for the same error, but should only be used where specified by the PE (for this paper no questions identify FTC).
MAX	Shows that the maximum number of marks for a part-question or question has been awarded (even though the answer may contain further correct points).
R	The point repeats one already awarded credit.
JE	Candidate has <i>just</i> given enough to be awarded a mark.

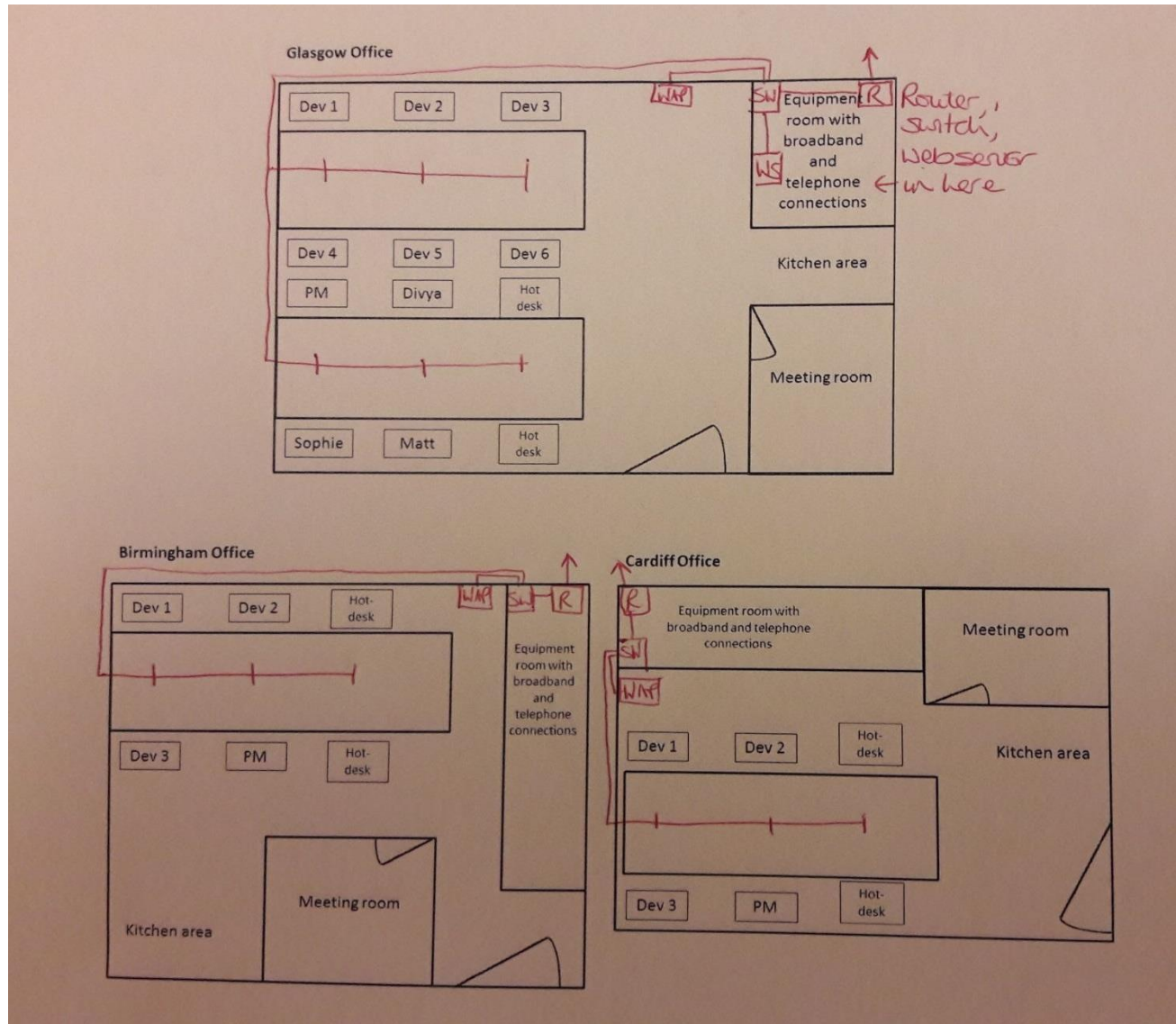
Subject Specific Marking Instructions

There are 100 marks available for this test. They are allocated as follows:

Tasks 2 and 3	30
Section A of the test paper	50
Section B of the test paper	20

Question		Answer	Mark	Guidance
Task 2	(a)	a	6	See Appendix.1 for example diagrams Diagram must be clearly labelled.
		b		
		c		
		d		
		e		
		f		

Appendix 1



Key:

- R (DSL) router
- SW (16 port Gigabit Ethernet) switch
- WAP wireless access point
- Dev – developer seat
- Cat6 cabling

Question		Answer	Mark	Guidance
Task 2	(b)	<p>16 port Gigabit Ethernet Switch – connects all components within an office together (1) to allow all to have access to router and web server (1)</p> <p>DSL Router (with modem function) – connects each office to the internet (1) so that all three offices can communicate with each other quickly(1)</p> <p>CAT 6 UTP cabling – connects all devices except laptops to switch (1) to be able to transfer quickly and reliably (1)</p> <p>Wireless access point – allows PMs' laptops to connect to the network wirelessly (1) so that they can easily move between offices (1)</p> <p>Web server – to host an intranet (1) so that all can share version control system and document storage (1)</p> <p>Network operating system – to manage the local area network within each of the three offices (1) to allow file sharing/access to web server (1)</p>	12	Explanations required.
Task 2	(c)	<p>Some comment is made on method(s) used (1)</p> <p>A strength or a weakness of the method(s) used is identified (1)</p> <p>A strength and a weakness of the method(s) used is identified (1)</p>	3	

Question		Answer	Mark	Guidance
Task 3		<p>Answer may include:</p> <p>NetBIOS/NetBEUI:</p> <ul style="list-style-type: none"> ● manage a device's access to the network so that each user device can communicate ● manage users on the network so that there can be some element of security ● allows users to access shared devices, such as router and web server, to communicate ● manages users access to router so that all Nine Lives employees have equal access even when high levels of traffic <p>FTP:</p> <ul style="list-style-type: none"> ● allows the transfer of files across the internet to the web server ● software code files can be transferred for storage on web server <p>HTTP:</p> <ul style="list-style-type: none"> ● allows access to web server software ● allows all users to be able to use external web services 	9	<p>H 7-9 marks Candidates will show a clear understanding of the task and include a detailed explanation of the three types of network protocol. All examples will relate to Nine Lives.</p> <p>The information will be presented in a structured and coherent format. There will be few, if any, errors in spelling, grammar and punctuation. Technical terms will be used appropriately and correctly.</p> <p>M 4-6 marks Candidates will show an understanding of the task and include some explanation of the three types of network protocol. Some examples given will relate to Nine Lives.</p> <p>The information will be presented in a structure format. There may be occasional errors in spelling, grammar and punctuation. Technical terms will be mainly correct.</p> <p>L1-3 marks Candidates will demonstrate a limited understanding of the task. Information may be a list of points, with little or no explanations. Examples, if given, may not relate to Nine Lives.</p> <p>Information will be poorly expressed and there will be limited, if any, use of technical terms. Errors of grammar, punctuation and spelling may be intrusive.</p> <p>0 marks Answer not worthy of credit.</p>

Question Paper – Section A

Answers in this section must be contextualised in line with the Nine Lives case study.

Question		Answer	Mark	Guidance
1	(a)	Two of: e.g.: <ul style="list-style-type: none"> • web-based, centralised, storage at Glasgow office (1) of code files improved version control, communication (1) • communication between the 3 offices and staff (1) such as email, forums (1) • extranet allows access by password from outside the network (1) to allow project managers and software developers to work remotely (1) 	4	
1	(b)	e.g.: <ul style="list-style-type: none"> • No longer a need for the project managers to connect their laptops via network cable as offices now have WIFI (1) Project Managers can therefore work anywhere in the office (1) and are not restricted to the Hot-desks (1) 	3	Up to 3 marks for one explanation
1	(c)	Two of: e.g.: <ul style="list-style-type: none"> • potential loss of speed (1) as files are transferred to and from central storage (1) as dependent on broadband speed(1) • needs careful attention to security (1) all code stored in one place (1) and so can be accessed all together (1) OR needs careful attention to security (1) all code data is being transferred (1) and could potentially be intercepted (1) 	6	

Question		Answer	Mark	Guidance
2	(a)	<p>e.g.:</p> <ul style="list-style-type: none"> • <u>DSL</u> both download and upload same speed (1) download important to Nine Lives staff when browsing and downloading files from the internet(1) upload speed important to Nine Lives staff when transferring files from local offices to the Glasgow head office.(1) 	3	
2	(b)	<p>Answer: 4 seconds (1)</p> <p>Plus any TWO of:</p> <ul style="list-style-type: none"> • Valid type of file size calculation used: e.g. 16MB = 16,000,000 bytes = 128,000,000 bits • Valid type of line speed calculation used: e.g. 32Mbps = 32,000,000 bits per second • Valid calculation for transfer time used: e.g. Transfer time = File size / Line speed, 128,000,000 / 32,000,000 = 4 seconds 	3	
2	(c)	<p>2 advantages of fibre transmission are explained e.g. very high speed (1) so quick transfer for code files (1) all offices situated in cities (1) should be easier access to public fibre broadband (1)</p> <p>A disadvantage of fibre transmission is explained (e.g. high cost (1) which can be prohibitive for a company with a low budget (1)</p>	6	

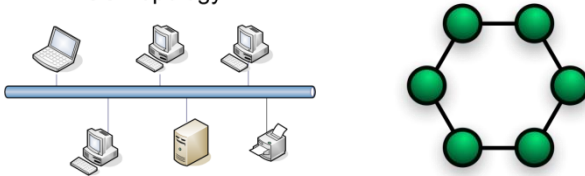
Question		Answer	Mark	Guidance				
3	(a)	e.g.: <ul style="list-style-type: none"> • Ethernet wired (1) 802.3 / for desktop computers, servers and connection devices (1) • WiFi (1) 802.11 / for laptops (1) 	4					
3	(b)	E.g.: <table border="1"> <tbody> <tr> <td>Hardware</td> <td> <ul style="list-style-type: none"> • Network interface adapter </td> </tr> <tr> <td>Software</td> <td> <ul style="list-style-type: none"> • Network adapter software </td> </tr> </tbody> </table>	Hardware	<ul style="list-style-type: none"> • Network interface adapter 	Software	<ul style="list-style-type: none"> • Network adapter software 	2	
Hardware	<ul style="list-style-type: none"> • Network interface adapter 							
Software	<ul style="list-style-type: none"> • Network adapter software 							

Question		Answer	Mark	Guidance
4	(a)	e.g.: <ul style="list-style-type: none"> • Cables routed round walls (1) to avoid tripping (1) • Workspace sufficiently sized (1) to avoid stress (1) • Ergonomic furniture (1) to avoid health problems (1) 	2	
4	(b)	e.g.: <ul style="list-style-type: none"> • Intranet allows data to be backed up easily (1) as all stored on web server (1) to ensure data is not lost in case of equipment failure (1) • Password protection (1) used for access to intranet and extranet (1) this can restrict access to employees only (1) • Virus checking (1) can be run regularly and managed centrally (1) to keep whole network free of malicious software (1) • Equipment stored in storage room (1) which can be locked (1) to protect from theft (1) • A firewall could be installed (1) to block unwanted access from the internet (1) and so protect from hacking (1) 	6	
4	(c)	e.g.: <ul style="list-style-type: none"> • Code should be copyrighted (1) so that it is illegal for unauthorised people to use it (1) 	2	

Question	Answer	Mark	Guidance
5	<p>Answer may include:</p> <p>Intranet/extranet can host email</p> <ul style="list-style-type: none"> ● Email can be more easily monitored and controlled BUT needs managing <p>Video-conferencing will reduce travel costs</p> <ul style="list-style-type: none"> ● Will reduce travel costs BUT will take up some of the bandwidth and slow down some transfers <p>Access to WWW could be controlled with a proxy server</p> <ul style="list-style-type: none"> ● More control over what network is used for BUT needs managing <p>Access to internet allows access to public domain software.</p> <ul style="list-style-type: none"> ● Network allows control so that all using same versions BUT needs managing <p>Intranet can host discussion forums for staff internally (needs managing)</p> <ul style="list-style-type: none"> ● Access to WWW means that staff can access forums for help with coding problems BUT can lead to problems with security. <p>General</p> <ul style="list-style-type: none"> ● To provide the above would require more equipment and configuration ● Data file exchange will be used extensively through intranet/extranet services and will need managing. 	9	<p>H 7-9 marks Candidates will show a clear understanding of the question and include a detailed evaluation of a range of potential WAN services. The evaluation will be fully relevant to Nine Lives.</p> <p>The information will be presented in a structured and coherent format. There will be few, if any, errors in spelling, grammar and punctuation. Technical terms will be used appropriately and correctly.</p> <p>M 4-6 marks Candidates will show an understanding of the question and include some evaluation of a limited range of WAN services, some of which will be relevant to Nine Lives.</p> <p>The information will be presented in a structure format. There may be occasional errors in spelling, grammar and punctuation. Technical terms will be mainly correct.</p> <p>L1-3 marks Candidates will demonstrate a limited understanding of the question. Information may be a list of points, with little or no explanation. Examples, if given, may not be relevant to Nine Lives.</p> <p>Information will be poorly expressed and there will be limited, if any, use of technical terms. Errors of grammar, punctuation and spelling may be intrusive.</p> <p>0 marks Answer not worthy of credit.</p>

Section B

Answers in this section do not relate to the case study.

Question		Answer	Mark	Guidance
6	(a)	e.g.: Logical network within a wider, local network (1) separated from the rest of the network through a managed switch (1)	2	
6	(b)	Bus topology diagram and Ring topology diagrams similar to those on right.	2	<p style="text-align: center;">Ring Topology BUS Topology</p> 
6	(c)	e.g.: VLAN requires a switching device (1) to be able to separate messages between networks (1) a bus network broadcasts messages/a ring network passes messages through all devices (1) and so separation would be difficult (1)	4	

Question		Answer	Mark	Guidance
7	(a)	Any of: <ul style="list-style-type: none"> • Passwords • IP addresses 	1	
7	(b)	e.g.: So that the connection can be reinstated (1) using the same settings (1)	2	

8	Question	Answer	Mark	Guidance
		<p>Answer may include:</p> <p>e.g.:</p> <ul style="list-style-type: none"> • Within a client-server network all requests for data or services comes via a central server where the stock database could be stored • Stock database would be more secure within a client server model as it would be held on a server • Suitable for larger networks with lots of traffic, as supermarket grows model will handle more terminals • Central administration of security, data sharing, resources, applications, backups • New employees can have accounts set up • Dependant on server - if server breaks whole network goes down • More expensive to set up than a peer-to-peer network and requires more expertise • An image of the tills can be stored on the server and deployed quickly if a software fault occurs • Software updates for the tills can be controlled and deployed from the server 	9	<p>H 7-9 marks Candidates will show a clear understanding of the question and include a detailed, balanced and contextualised discussion of the suitability of a client-server network for the given situation.</p> <p>The information will be presented in a structured and coherent format. There will be few, if any, errors in spelling, grammar and punctuation. Technical terms will be used appropriately and correctly.</p> <p>M 4-6 marks Candidates will show an understanding of the question and include a discussion of the suitability of a client-server network for the given situation. The discussion may not be balanced.</p> <p>The information will be presented in a structure format. There may be occasional errors in spelling, grammar and punctuation. Technical terms will be mainly correct.</p> <p>L1-3 marks Candidates will demonstrate a limited understanding of the question. Information may be a list of generic advantages and disadvantages of a client-server network with little or no application to the given situation.</p> <p>Information will be poorly expressed and there will be a limited, if any, use of technical terms. Errors of grammar, punctuation and spelling may be intrusive.</p> <p>0 marks Answer not worthy of credit.</p>

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