



GCE

Applied ICT

Unit **G055**: Networking Solutions

Advanced GCE

Mark Scheme for June 2015

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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.
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.

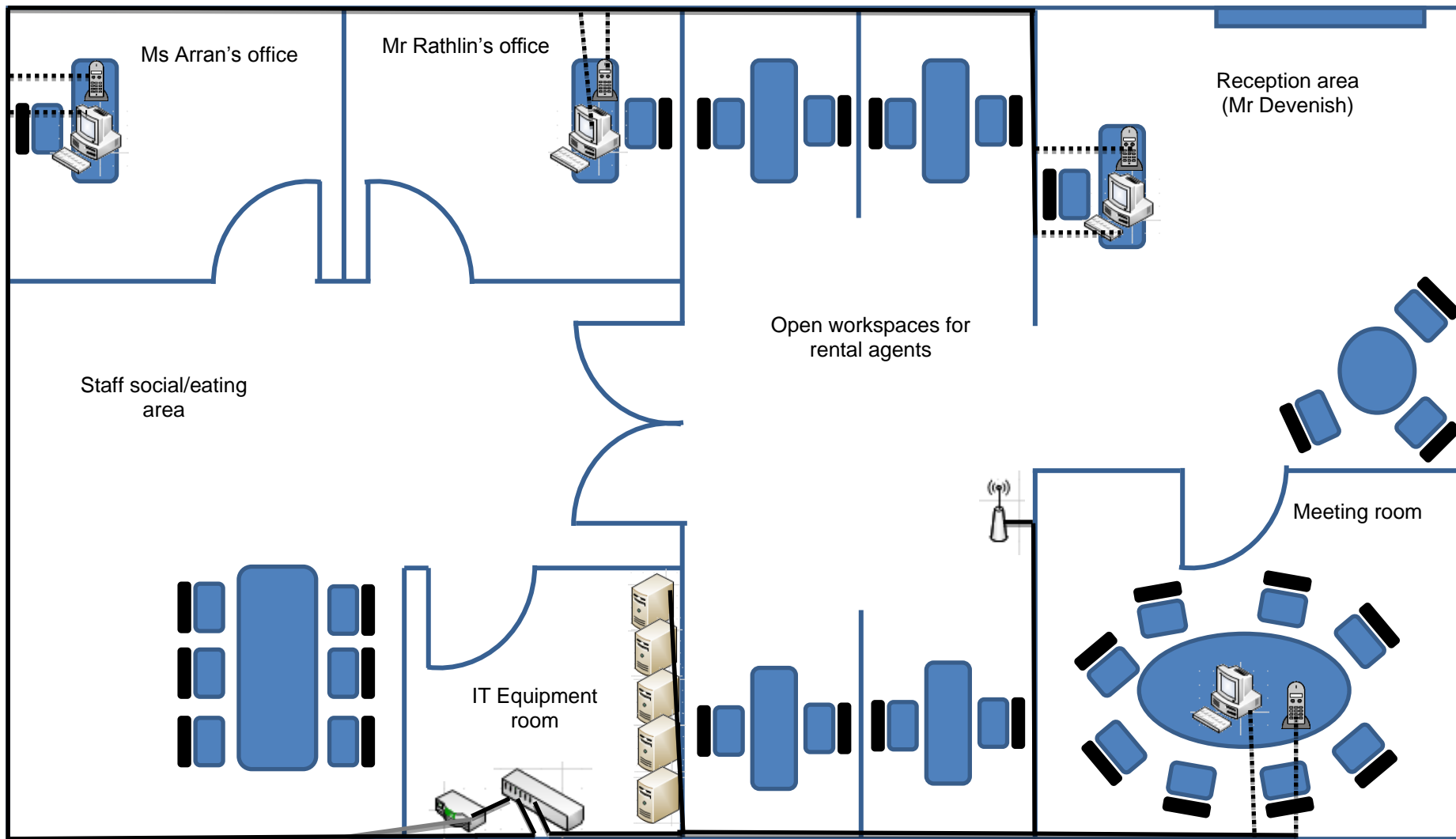
Subject-specific Marking Instructions

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

Task	Answer	Marks	Guidance
2	<p>1 mark for an implied star topology for cabled network(one connecting device, e.g. switch/hub)</p> <p>1 mark for an appropriate central connecting device (e.g.switch)</p> <p>1 mark for a wireless access point on one connection (must be connected by cable to the network)</p> <p>1 mark for all cabled connecting devices shown in IT equipment room (wireless access point may be outside)</p> <p>1 mark for all devices connected to central connecting device</p>	5	
	<p>1 mark for servers shown in IT equipment room</p> <p>1 mark each for database/file server, proxy server, VPN server, mail server (up to 4 marks. NOTE: maybe shown as one server rather than individual)</p> <p>1 mark for including VoIP connections/VoIP server</p>	6	
	<p>1 mark for showing a connection to ISP</p> <p>1 mark for including a routing device for connecting to ISP (e.g. router, do not accept modem on its own)</p>	2	
	<p>1 mark for cabling between servers and central connecting device</p> <p>1 mark for identification of appropriate cabling type (e.g. Ethernet)</p> <p>1 mark for identification of appropriate connectors for cabling (e.g. RJ45 may be indicated by labelling only)</p> <p>1 mark for sensible placing of cables (around walls or other situations labelled)</p> <p>1 mark for showing cabled network points/connections in offices, reception or meeting room.</p>	5	
EVALUATION	<p>Some comment is made on method(s) used (1)</p> <p>A strength <u>or</u> a weakness of the method(s) used is identified (1)</p> <p>A strength <u>and</u> a weakness of the method(s) used is identified (1)</p>	3	

Task 2 Diagram Example



Key:			Router		Servers, mail, VPN, database/file, proxy, (VoIP)		Wireless access point		Ethernet cabling with RJ45 connectors		VoIP phone
	Broadband connection		Switch		Workstations or connection point		ISP		Cabling under floor		



Task	Answer	Marks	Levels of Response
3	<p>Answer may include:</p> <p>Tasks</p> <ul style="list-style-type: none"> • obtain an IP address and connection details • install connection software • install browser software on all computers • install FTP software on server and agents' mobile computers • configure protocols for internet use • document all settings • produce an installation report <p>Reasons:</p> <ul style="list-style-type: none"> • ORA will need a host address on the ISP network • software is needed to establish and maintain a connection between network and ISP • browser software needed to enable web browsing • FTP software needed to enable file transfer between agent's computer and FTP server in office over internet • DNS, HTTP and FTP are needed to be able to browse and transfer files • documentation is needed in case there is a need to reinstate in the future • a report will give details of what has been set up, testing and known issues 	H 7-9	<p>The candidate will show a comprehensive understanding of the task by giving a clear and detailed explanation of a range of tasks, explaining fully why each task is necessary. The discussion will be wholly relevant to ORA.</p> <p>The information will be presented in a structured and coherent form. There will be few, if any, errors in spelling, grammar and punctuation. Technical terms will be used appropriately and correctly.</p>
		M 4-6	<p>The candidate will show a good understanding of the task by giving a clear explanation of a range of tasks with some explanation of the need for each. The discussion will have some relevance to ORA.</p> <p>The information will be presented in a structured format. There may be occasional errors in spelling, grammar and punctuation. Technical terms will be mainly correct.</p>
		L 1-3	<p>The candidate will demonstrate a limited understanding of the task by listing some relevant tasks. Little or no reference will be made to ORA.</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>
		0	No response worthy of credit

Question		Answer	Marks	Guidance
1	a	<p>Any of:</p> <p>Email (1st) quick communication between agent and client (1) non-simultaneous – saves time waiting / automatic record for security (1)</p> <p>Conferencing (tele/video) (1st) can discuss issues face to face (1) which is more personal than email / with clients even if not in country (1)</p> <p>VPN(1st) able to complete paperwork with client in their home (1) secure connection to office for electronic signatures (1)</p>	6	
	b	<p>Centralised management/centralised security (1st) can update all software/configurations at the same time / when mobile devices are in the office (1) this increases security/ensures all updates are installed together/saves time (1)</p>	3	The wording of the answer may imply the 1 st point but points must not be awarded twice

Question		Answer	Marks	Guidance
2	a	<p>Potential loss of security (1st) data could be intercepted/data on agents' mobile devices may not be secure (1) confidential data must be handled securely/data protection issues (1)</p>	3	
	b	<p>VPN provides a secure tunnel (1) on an internet connection (1) uses encryption, authentication/aims to make data as secure as a cabled connection (1)</p>	3	Look for a reasonably technical answer here

Question		Answer	Marks	Guidance
3	a	e.g.: ORA network would be very fast (1) for transfers between individual devices (1) as there would be a dedicated connection(1)	3	Full marks for each advantage/disadvantage only if at least one mark awarded for a point relevant to case study
	b	Any two of e.g.: ORA may want to add fixed computers as they expand (1) so need ease of adding new devices without too much configuration(1) this is not the case for a mesh topology (1) A mesh topology would be complicated/expensive to set up (1) ORA has too few devices to see improvements in performance (1) and could not justify the cost (1)	6	

Question	Answer	Marks	Guidance
	<p>Any two of e.g.:</p> <p>Client data confidentiality must be protected (1) wherever it is stored (1) including transfer between mobile device and network (1)</p> <p>Client data must be kept safe from loss (1) including corruption (1) which might damage the integrity (1)</p> <p>Client data must not be kept longer than necessary (1) including not keeping more copies than necessary (1) on mobile devices as well as office network (1)</p>	6	Up to 3 marks for each issue. For full marks at least one mark must be awarded for a point relevant to ORA.
4	<p>Any two of:</p> <p>Regular back up (1st) kept off site / including of agents' mobile devices (1) to ensure that data is not lost (1)</p> <p>Encryption techniques used (1st) for all data transferred over Internet/VPN (1) to ensure that data accessed by interception is less easy to decipher (1)</p> <p>All parts of the system must be password protected (1st) especially all systems that agents will use on mobile devices (1) to ensure that unauthorised access to documents is less likely if device stolen (1)</p> <p>Security software is run regularly (1st) to check for viruses / check for unauthorised access (1) on all devices / including agents' mobile devices (1)</p> <p>Policies for staff give responsibility for protection of devices/software from theft (1st) including of mobile devices at viewings / away from office (1) but also of equipment/software within office space (1)</p>	6	Up to 3 marks for each issue. Only mark if 1 st mark awarded. For full marks at least one mark must be awarded for a point relevant to ORA.

Question		Answer	Marks	Guidance
5	i	Either of: Wireless access point / wireless hub wireless router	1	
	ii	Wireless access point: Simple to set up (1) for ad-hoc connection for mobile/laptop devices (1) Keeps agents' devices on same subnet (1) which is more convenient for access to shared resources (1) Wireless router: Can keep agents' devices on different subnet (1) which is more secure (1) Better use of traffic management (1) agents will be synchronising data with main network while connected (1)	4	

Question		Answer	Marks	Levels of Response
6		<p>Answer may include:</p> <p>DSL</p> <ul style="list-style-type: none"> • high speeds in both directions • ORA need to be able to download and upload quickly in order to keep their online information up to date • this method is very suitable for the connection at the office <p>ADSL</p> <ul style="list-style-type: none"> • high speed downloads / low speed for uploading • lower cost than DSL • ORA need to be able to download and upload quickly / in order to keep their online information up to date / to be able to receive information from agents on viewings • this method is less suitable for the connection at the office <p>Mobile broadband</p> <ul style="list-style-type: none"> • uses mobile phone data network • reasonable speeds for transfer of data • available wherever the agent is viewing • some areas have poor coverage • less secure than landline • may be the only option 	<p>H 7-9</p>	<p>The candidate will show a comprehensive understanding of the question by giving a clear and detailed discussion, with full reference to the requirements of ORA. The candidate will describe a range of broadband types, will discuss suitability of these types, and will make suitable recommendations for ORA and will refer to the needs of agents at remote sites.</p> <p>The information will be presented in a structured and coherent form. 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</p>
			<p>L 1-3</p>	

Section B

Question		Answer	Marks	Guidance
		<p>Up to 2 marks e.g.</p> <p>set of standards (1) defining how things are done (1)</p> <p>defines the methods used for communication (1) a suitable example is given (1)</p>	2	Both marks must relate to the same mark point
	7	<p>Up to 3 marks for one of e.g.:</p> <p>HTTP (1st) defines how web browsers request and receive pages (1) from web servers(1)</p> <p>FTP(1st) defines how files are transferred between hosts on a TCP network/Internet (1) using a FTP server and FTP client (1)</p> <p>SMTP (1st) defines how emails are transferred between mail servers (1) and uploaded to mail servers from mail clients (1)</p> <p>TCP (1st) defines how data is transferred between individual hosts (1) guaranteed delivery / packet sequencing (1)</p>	3	

Question		Answer	Marks	Guidance
	8	<p>Up to 3 marks for any of e.g.:</p> <p>Sits between network and Internet (1) converts protocols (1) so that data is in correct format for each network(1)</p> <p>Acts as a host on network and Internet (1) so that data can be sent through it (1) from one network to the other (1)</p>	3	

Question		Answer	Marks	Guidance
	9	<p>Up to 3 marks for any of e.g.:</p> <p>to record all transactions (1) for network monitoring (1) including source / destination / size / protocols (1)</p> <p>identify recurring problems (1) identifying the transactions taking place when problems occurred (1) with reference to problem logs (1)</p>	3	

Question		Answer	Marks	Levels of Response
10		<p>Answer may include:</p> <p>Issues</p> <ul style="list-style-type: none"> • Ergonomic workstation design • Sufficient working space • Cables out of sight • Isolate power supply when connecting equipment <p>Reasons for consideration</p> <p>Health</p> <ul style="list-style-type: none"> • to reduce risk of RSI • to reduce risk of back problems • to reduce stress • to reduce risk of eye strain <p>Safety</p> <ul style="list-style-type: none"> • to reduce tripping hazards • to reduce risk of electrocution <p>Consequences of not considering the issue</p> <ul style="list-style-type: none"> • lack of productivity due to sickness or injury • legal issues resulting from injury to staff • cost of damage to equipment 	<p>H 7-9</p> <p>The candidate will show a comprehensive understanding of the question by giving a clear and detailed discussion of a range of issues, reasons for consideration and the consequences of not considering the issues. The candidate will have considered both health and safety issues.</p> <p>The information will be presented in a structured and coherent form. 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</p> <p>The candidate will show a good understanding of the question by discussing a range of issues with reasons for consideration. The candidate will have considered health and safety issues but the discussion may be one-sided.</p> <p>The information will be presented in a structured format. There may be occasional errors in spelling, grammar and punctuation. Technical terms will be mainly correct.</p>	
			<p>L 1-3</p> <p>The candidate will demonstrate a limited understanding of the question by describing a limited range of issues</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</p> <p>No response worthy of credit</p>	

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

Education and Learning

Telephone: 01223 553998

Facsimile: 01223 552627

Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

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Head office
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Facsimile: 01223 552553

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