

# **Mark Scheme for January 2012**

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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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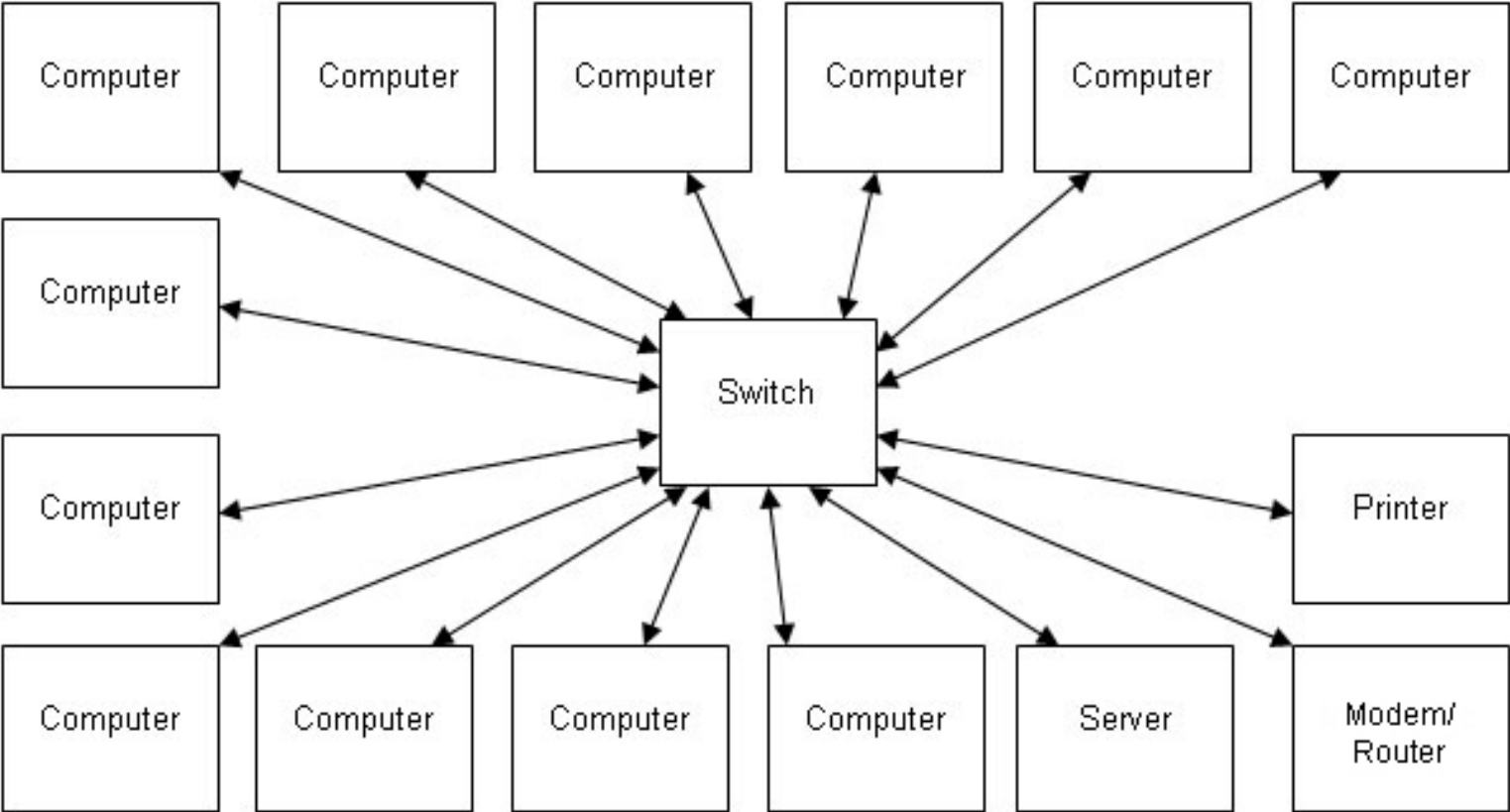


## TASK 2

Task		Answer	Marks	Guidance
2		Any 4 from: 1 mark for correct representation of a logical star 1 mark for connection device correctly labelled (switch/hub/router) 1 mark for correct number of devices (Award mark if candidate has correctly included extra computers due to interpretation of incorrect diagram) 1 mark for including a server 1 mark for including a printer	4	

## TASK 2

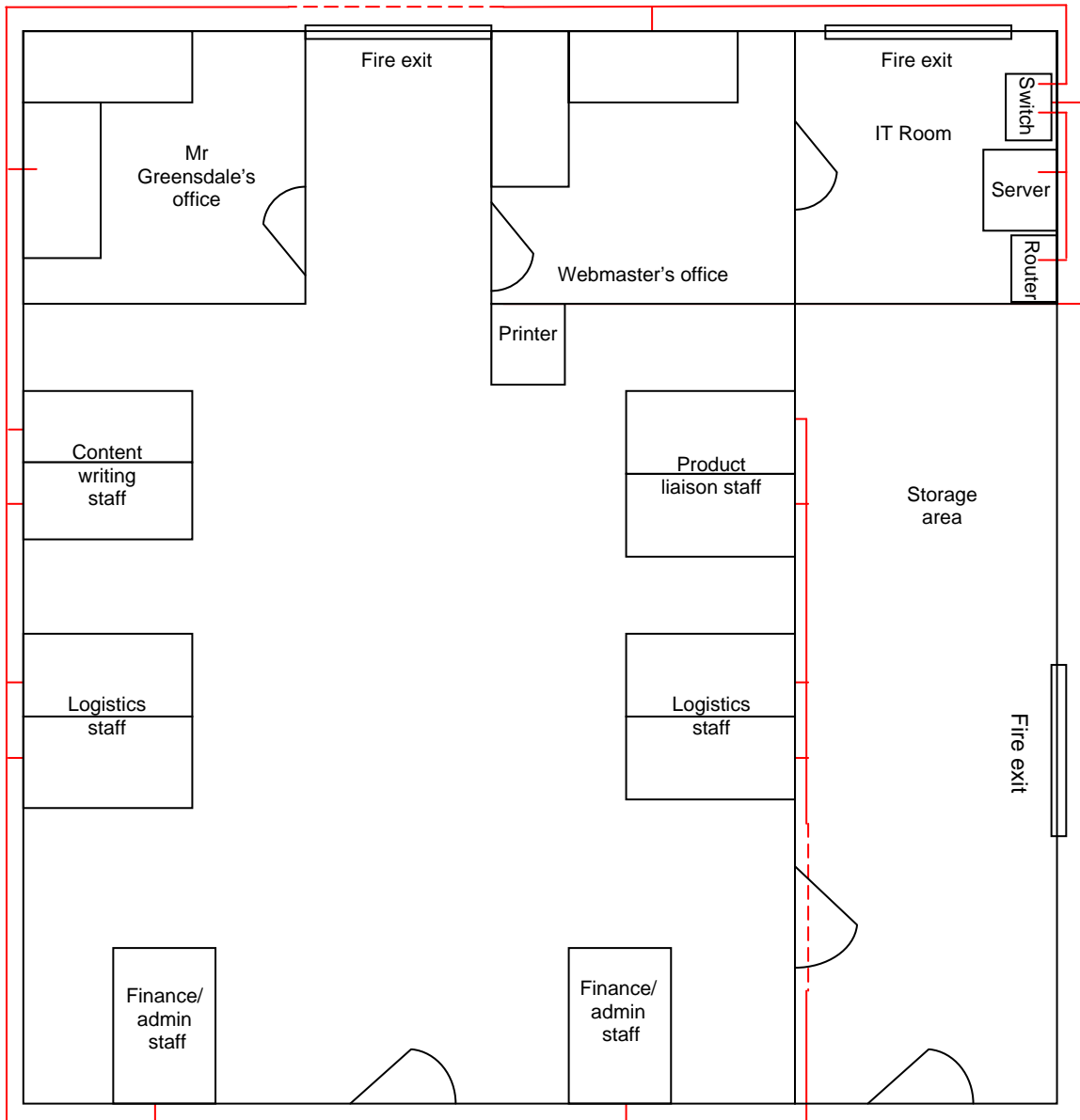
Correct diagram showing a logical star network:



Task		Answer	Marks	Guidance
2		<p>Any 6 from:</p> <ul style="list-style-type: none"><li>1 mark for correct number of connections (Award mark if candidate has correctly included extra connections due to interpretation of incorrect diagram)</li><li>1 mark for correct connection method for a star topology</li><li>1 mark for correct cabling or wireless shown</li><li>1 mark for placement of network equipment in IT room</li><li>1 mark for placement of printer in office space</li><li>1 mark for placement of server in IT room (not in front of fire door)</li><li>1 mark for sensible positioning of cables</li></ul> <p>See following diagram.</p>	6	

TASK 2 EXAMPLE 2

A correct diagram showing a fully connected physical star network



Task	Answer		Marks	Guidance						
2	One mark for a correct component in each category (up to two marks) Up to three marks for a correct explanation for each component (up to a total of eight marks)		8							
	Central connecting device	<table border="1"> <thead> <tr> <th>Type of component used (on diagram)</th> <th>Explanation</th> </tr> </thead> <tbody> <tr> <td>Switch</td> <td>Fast connection point (1) between multiple computers (1) suitable speed for 15 devices in Green Toes network (1) Suitable for internal network (1) <u>and</u> sharing internet (1) Green Toes network must be connected to the internet (1)</td> </tr> <tr> <td>Hub</td> <td>Simple connection point (1) between multiple computers (1) fast enough for 15 devices in Green Toes network (1) Suitable for internal network (1) <u>and</u> sharing internet (1) Green Toes network must be connected to the internet (1)</td> </tr> <tr> <td>Router</td> <td>Provides shared internet (1) for all computers in the network (1) as requested by Mr Greensdale (1) Can provide an internal connection (1) at IP level (1) for consistency between internal and external communication on Green Toes network (1)</td> </tr> </tbody> </table>			Type of component used (on diagram)	Explanation	Switch	Fast connection point (1) between multiple computers (1) suitable speed for 15 devices in Green Toes network (1) Suitable for internal network (1) <u>and</u> sharing internet (1) Green Toes network must be connected to the internet (1)	Hub	Simple connection point (1) between multiple computers (1) fast enough for 15 devices in Green Toes network (1) Suitable for internal network (1) <u>and</u> sharing internet (1) Green Toes network must be connected to the internet (1)
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Cabling/wireless media	<table border="1"> <tbody> <tr> <td>Twisted pair cabling</td> <td>Fast speed (1) for data sharing (1) between office computers and other devices (1) Good reliability (1) which helps efficiency (1) and is a requirement for the Green Toes network (1) Flexible (1) therefore easier to install (1) in the new office (1) Affordable (1) within budget (1) which is limited at Green Toes (1)</td> </tr> <tr> <td>Fibre optic cabling</td> <td>Fast speed (1) for data sharing (1) between users, server and internet connection (1)</td> </tr> <tr> <td>Wi-fi</td> <td>High reliability (1) which helps efficiency (1) and is a requirements for the Green Toes network ( 1) Very flexible (1) computers can communicate from anywhere (1) within the new offices (1) Easy to install (1) no need for trunking (1) can reduce costs to meet Green Toes limited budget (1)</td> </tr> </tbody> </table>	Twisted pair cabling	Fast speed (1) for data sharing (1) between office computers and other devices (1) Good reliability (1) which helps efficiency (1) and is a requirement for the Green Toes network (1) Flexible (1) therefore easier to install (1) in the new office (1) Affordable (1) within budget (1) which is limited at Green Toes (1)	Fibre optic cabling	Fast speed (1) for data sharing (1) between users, server and internet connection (1)	Wi-fi	High reliability (1) which helps efficiency (1) and is a requirements for the Green Toes network ( 1) Very flexible (1) computers can communicate from anywhere (1) within the new offices (1) Easy to install (1) no need for trunking (1) can reduce costs to meet Green Toes limited budget (1)		3	
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Task			Answer	Marks	Guidance
			Evaluation: Some comment is made on method(s) used (1) A strength or a weakness of the method(s) used is identified (1) A strength and a weakness of the method(s) used is identified (1)		

## TASK 3

Task		Answer				Marks	Levels of Response
3						9	<p><b>H 7-9</b> The candidate will show a clear understanding of the task by identifying relevant methods and giving a full and appropriate evaluation. The evaluation is wholly relevant to Green Toes.</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><b>M 4-6</b> The candidate will show an understanding of the task by identifying relevant methods and giving some appropriate evaluation. The evaluation has some relevance to Green Toes.</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><b>L 0-3</b> The candidate will demonstrate a limited understanding of the question and will identify relevant methods with some explanation of purpose. Little or no reference will be made to Green Toes.</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>
		<b>Method</b>	<b>Advantages</b>	<b>Disadvantages</b>	<b>Suitability</b>		
		<b>ADSL</b>	Fast for downloads – all staff can access web pages quickly Widely available through telephone network.	Faster download than upload – upload may be too slow.	Very suitable as uploads are done overnight when local usage should be low.		
		<b>DSL</b>	Equal download and upload speed – slower download speed for all staff. Widely available through telephone network.	Faster upload speed for updating website.	Less suitable as uploads are done overnight when local usage should be low, and fast download speeds are required for staff to access web and email.		
		<b>Cable</b>	Fast transmission speeds possible in both directions.	Only available in cabled areas.	Not likely to be available in the heart of the countryside		
<b>3G</b>	Available where other services aren't.	Signal can be unreliable.	Much too slow and unreliable for Green Toes.				

## SECTION A

Question	Answer	Marks	Guidance
1	<p>One mark for an appropriate cost plus a further mark for an expansion (<i>max 2 marks for each cost to a total max of 6 marks</i>)</p> <p>eg</p> <ul style="list-style-type: none"> <li>• purchase of network equipment (1) such as connection devices/servers/network software (1) cabling costs (1)</li> <li>• installation of equipment (1) need to pay specialist company for cabling/installation of servers (1) need to pay for installation of network software and for configuration and testing of the network (1)</li> <li>• maintenance of network equipment (1) will need a maintenance contract (1) will need to ensure that malfunctioning equipment is fixed/replaced quickly, within 24 hours (1) as network must retain reliability (1)</li> <li>• supervision of network (1) will need to employ extra staff to manage the network (1) to ensure security/reliability is maintained (1)</li> <li>• need to provide training (1) for existing and new staff (1) to ensure that all are able to make full use of the network (1)</li> </ul>	6	
2	<p>(a)</p> <p>Up to a maximum of two marks for a description</p> <p>eg</p> <ul style="list-style-type: none"> <li>• no specialist connection devices such as switches/hubs required (1) can be cheaper for Green Toes with limited budget (1)</li> <li>• minimal cabling (1) easier to install in the new Green Toes office (1)</li> </ul>	2	

Question	Answer	Marks	Guidance
(b)	<p>Up to 3 marks for a suitable explanation</p> <p>eg</p> <ul style="list-style-type: none"> <li>• becomes slow when many devices are using it (1) Green Toes will have many users using it at once (1) may become too slow for their requirements (1)</li> <li>• depends on the integrity of the bus (1) a breakage will affect the whole network (1) Green Toes needs a reliable network (1)</li> <li>• awkward to implement (1) specialist network cards are needed (1) increased cost/installation time (1)</li> </ul>	3	
3	<p>First mark each for identification of up to <b>two</b> types of software. Two further marks for an explanation of each identified type of software (<i>maximum 3 marks for each type of software</i>)</p> <p>Web page authoring software (1<sup>st</sup>)</p> <ul style="list-style-type: none"> <li>• provides graphical representation of HTML code (1) webmaster can see the results when updating (1)</li> <li>• provides functions for adding and editing HTML tags (1) the webmaster can see results and eliminate mistakes before uploading (1)</li> <li>• provides facility for easy uploading/tracking of pages (1) to reduce errors in company website (1)</li> </ul> <p>HTML editing software (1<sup>st</sup>)</p> <ul style="list-style-type: none"> <li>• allows typed entry of HTML tags (1) webmaster can use knowledge to develop custom website (1)</li> <li>• highlights errors in code (1) to help webmaster eliminate mistakes before uploading (1)</li> </ul>	6	

Question	Answer	Marks	Guidance
	<p>FTP software (1<sup>st</sup>)</p> <ul style="list-style-type: none"><li>• sets up a channel for transfer using FTP (1) for uploading web pages from webmaster's computer to ISP (1)</li><li>• transfers webpages from webmaster's computer to ISP's web server (1) using the FTP protocol for file transfer (1)</li></ul> <p>Web browser software (1<sup>st</sup>)</p> <ul style="list-style-type: none"><li>• Displays translated HTML on screen (1) to allow webmaster to check that the code is correct (1)</li><li>• Deals with events such as mouse clicks, selection from menus, mouse movement, etc (1) for webmaster to test they work correctly (1)</li></ul>		

Question	Answer	Marks	Levels of Response
4	<p>Methods: Printer connected to a print server Network printer</p> <p>Explanation eg</p> <ul style="list-style-type: none"> <li>• all printing jobs can be managed from the server as it has print queue software</li> <li>• all computers can be configured to see the server so that they can access the printer</li> <li>• the printer has a network card installed so it can be connected directly to the network</li> <li>• each computer can manage its own printing as it can access the printer directly</li> </ul> <p>Suitability eg</p> <ul style="list-style-type: none"> <li>• with a print server the existing printer could be used, no need to buy a new one</li> <li>• a print server will manage high traffic more efficiently</li> <li>• a print server can assign priorities such as prioritising printing of delivery notes</li> <li>• no need for an extra computer to act as print server, meets Green Toes limited budget</li> <li>• output at Green Toes mainly from two computers, network printer would cope easily</li> </ul>	10	<p><b>H 8-10</b> The candidate will show a clear understanding of the question by providing a detailed explanation of both methods, a valid, justified reason for suitability of each and a fully justified recommendation for one method. The evaluation will be wholly relevant to Green Toes.</p> <p>The information will be presented in a structure 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><b>M 4-7</b> The candidate will show an understanding of the question by providing an explanation of both methods, a statement of suitability and a justified recommendation for one method. The discussion will be mostly relevant to Green Toes.</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><b>L 0-3</b> The candidate will demonstrate a limited understanding of the question by providing a description of the two methods. Little or no reference will be made to Green Toes.</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>

Question		Answer	Marks	Guidance
5	(a)	<p>One mark for each advantage (<i>up to two marks</i>) and one mark for a disadvantage</p> <p>Advantages</p> <ul style="list-style-type: none"> <li>• Up to date information available to all employees</li> <li>• Information accessible through a browser which every employee will have</li> <li>• Can provide services such as forums for Green Toes employees</li> <li>• Can provide shared access to documents controlled by individual employees</li> </ul> <p>Disadvantages</p> <ul style="list-style-type: none"> <li>• Needs special equipment to set up adding extra cost</li> <li>• Someone at Green Toes will need to maintain it</li> <li>• Someone at Green Toes will need to create the content</li> </ul>	3	
	(b)	<p>First mark for identification, a further mark for a description point and a final mark for expansion of the point (<i>maximum 3 marks</i>)</p> <p>web server (1<sup>st</sup>) hosts web pages for intranet (1) allowing HTTP access (1) provides access control (1) runs intranet software (1)</p>	3	

Question	Answer	Marks	Levels of Response
6	<p>First mark for identification and up to a further three marks for a description of any two of (<i>maximum 4 marks for each service</i>) eg.:</p> <p>Email (1<sup>st</sup>)            Sending of messages to customers (1) such as confirmation of orders (1) generated from website (1) can attach documents to email (1) such as invoices/receipt of orders (1)</p> <p>WWW (1<sup>st</sup>)            Access to published information (1) about products (1) research for content writers (1) using websites and forums (1) to discuss information about products with producers (1)</p> <p>Data file exchange (1<sup>st</sup>)            Transfer of whole files of data (1) using FTP (1) for uploading web pages to ISP (1)            File transfer using email (1) for transferring pictures to webmaster (1) from digital camera input (1)</p> <p>Commercial transactions (1<sup>st</sup>)            Receive payments online (1) from customers (1) who buy the products on the website (1)            Make payments online (1) directly to producers' bank accounts (1) when products sold (1)</p> <p>Web-based marketing and advertising (1<sup>st</sup>)            Low cost advertising (1) widely viewed (1) more revenue can go to producers (1)            Easy to update on a regular basis (1) when product information changes (1) can easily add new products (1) or remove discontinued/seasonal products (1)</p> <p>Public domain software (1<sup>st</sup>)            Easy access to new software to download (1) for updating of existing website (1)            automatic detection of updates (1) as soon as available (1) Green Toes need their network to be reliable and secure (1)</p>	8	



Question	Answer	Marks	Guidance
7	<p><b>To include any of (examples):</b></p> <p>Back up regularly  Importance of back up frequency  Need to store back up at separate location  Reference to important data for Green Toes (database and accounts)</p> <p>Protect confidential information  Restrict logical access  Encrypt stored and transmitted data  Restrict physical access to computers systems  Importance of Data Protection Act and trust with customer data</p> <p>Password Policy  Importance and content of policy  How staff might compromise security of passwords</p> <p>Virus checking  Frequency of virus checks  Update of A/V software  Implications of Data Protection Act and external unauthorised access</p> <p>Avoid equipment theft  Locking and placement of equipment  Reference to number of people accessing building (eg deliveries)</p>	9	<p><b>H 7-9</b>  The candidate will show a clear understanding of the question by providing a detailed and balanced discussion of different actions the company should take. The discussion will cover benefits/limitations/physical/logical/reasons for use and will be wholly relevant to Green Toes.</p> <p>The information will be presented in a structure 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><b>M 4-6</b>  The candidate will show an understanding of the question by providing a discussion of different actions the company should take. The discussion will cover benefits/limitations/physical/logical/reasons for use but may be one-sided. The discussion will be mostly relevant to Green Toes.</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><b>L 0-3</b>  The candidate will demonstrate a limited understanding of the question by providing a limited discussion which may be structured as a list of points. Little or no reference will be made to Green Toes,</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>

## SECTION B

Question	Answer	Marks	Guidance
8	One mark each for any <i>two</i> of: <ul style="list-style-type: none"> <li>• uses the network port (usually a socket) to transfer data</li> <li>• manages the connection to ensure that data is sent correctly</li> <li>• transmits data in the form required by the network media</li> <li>• receives data from the processor or memory to be sent on the network</li> <li>• receives data from the network</li> <li>• sends data received from the network to the processor or memory</li> </ul>	2	
9	(a) A part of a physical LAN that is configured to work completely separately from the rest.	1	
	(b) One mark each for any <i>three</i> of: <ul style="list-style-type: none"> <li>• install a VLAN switch</li> <li>• the VLAN switch must have a total of at least 42 ports</li> <li>• all computers in one separate network are connected to the same VLAN switch</li> <li>• configure the switch to group connections into three separate networks</li> <li>• connect 14 computers into each group of connections</li> </ul>	3	
10	Up to two marks each for any <i>two</i> of: <ul style="list-style-type: none"> <li>• uses light rather than electrical signals (1) which is not affected by electrical interference (1)</li> <li>• it can carry light signals over a long distance (1) will cover the distance between the buildings (1)</li> <li>• cable materials do not corrode as easily as metal cables (1) in outside conditions (1)</li> </ul>	4	
11	Up to two marks each for of any <i>two</i> of: <ul style="list-style-type: none"> <li>• UTP cable and RJ45 connectors (1) as transmission media (1)</li> <li>• 100mpbs data speed (1) data sent in datagrams (1)</li> </ul> Describes the speed and type of connection (1) for all devices in the network (1)	4	

Question	Answer	Marks	Guidance
12	<p>Up to three marks for each description (<i>max 6 marks</i>)</p> <p><i>FTP</i></p> <ul style="list-style-type: none"><li>• Protocol for transfer of files over internet</li><li>• Requests channel for transfer</li><li>• Deals with whole files rather than packets</li><li>• Uses TCP for the transfer</li><li>• Compatible with IP addressing</li></ul> <p><i>TCP</i></p> <ul style="list-style-type: none"><li>• Error free connection between two hosts</li><li>• Packages data for transmission</li><li>• Uses acknowledgement to ensure safe delivery</li><li>• Manages the numbering of packets</li><li>• Reassembles all packets at destination</li></ul>	6	

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