

# Mark Scheme Summer 2008

GCE

GCE Applied ICT (8751/8752/9751/9752)

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Summer 2008

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

## Unit 3 - The Knowledge Worker

Activity	ANSWER	POSS. MARK	MAX
<b>Activity 1</b>	Understanding the problem		
	Any 7 of		
A1	Working as <u>IT Specialist</u> for <u>GBBC</u>	1	
A2	Build Houses	1	
A3	Fuel Saving devices/Energy saving feature/green feature	1	
A4	Tewkesbury Development	1	
A5	Carbon Footprint max 1000 tonnes per year	1	
A6	Maximum 200 each type	1	
A7	5 types of houses(named OK)	1	
A8	Max Cost of development £95,000,000	1	
A9	Area of development 100000m <sup>2</sup>	1	
A10	Survey of other developments for sales data	1	
A11	Survey from three other developments	1	
A12	200 house owners surveyed for EACH development	1	
A13	Max 5 solar panels	1	
A14	Need to make a profit	1	
			<b>7</b>
B1	Number of each house type	1	
B2	Profit <u>margins</u> (not amount of profit)	1	
B3	Allocation of <u>fuel saving</u> features (energy saving, eco friendly)	1	
			<b>3</b>
	<i>Any 3 of:</i>		
C1	Costs of raw materials same	1	
C2	Carbon footprint data accurate	1	
C3	Costs of fuel saving aspects accurate	1	
C4	Housing needed in Tewkesbury area.	1	
C5	Demography (Demand for this housing)	1	
C6	Style of housing appropriate for Tewkesbury	1	
C7	Competition in the area	1	
C8	Estate Agents/Hips/Stamp duty/solicitors/search fees	1	
C9	Flood barriers etc (Tewkesbury)	1	
C10	People may avoid Tewkesbury because of flood	1	
C11	Clearance costs/ Is it fit to build on	1	
C12	Noise/visual pollution (Wind turbines)	1	
C13	House price trends remain same (prices remain constant	1	
C14	Workforce cost included	1	

## Unit 3 - The Knowledge Worker

Activity		ANSWER	POSS. MARK	MAX
	C15	Anything sensible (just 1)	1	
				<b>3</b>
		Total Marks for Activity 1		<b>13</b>

## Applied GCE ICT Unit 3 - Mark Scheme - June 2007

Activity	ANSWER	POSS. MARK	MAX
<b>Activity 2</b>	Sources of Information Comment on accuracy or inaccuracy must be qualified		
	Any 8 of:		
A1	Survey of other sites (not Tewkesbury)	1	
A2	Three different areas (names allowed)	1	
A3	Live in Similar or identical housing	1	
A4	And therefore have the same requirements of the house as the target market.	1	
A5	Average is not reliable/ range	1	
A6	Sales patterns can change	1	
A7	Size of sample same as maximum	1	
A8	How long after house purchase	1	
A9	Age distribution	1	
A10	People may not answer truthfully (exaggerate because they are selling)	1	
A11	May not take survey seriously (say any old rubbish)	1	
A12	Knowledge of local housing market (how informed is the respondent)	1	
			<b>8</b>
	Any 7 of		
	Factors related to		
B1	Different House prices/demand in different areas	1	
B2	May be slight changes in design which make more or less popular	1	
B3	Not as nice an area as others (or vice versa)	1	
B4	Proportion of each house type may be different making estate more or less desirable	1	
B5	Employment in the area/Demography similar	1	
B6	Public Transport similar	1	
B7	Roads similar	1	
B8	Public facilities (Parks) similar	1	
B9	Fuel requirements of occupants similar	1	
B10	Nearness to shops similar	1	
B11	Commute to big city (makes some areas more popular) similar	1	
B12	Current awareness of global issues (time)	1	
B13	Any other valid question	1	
			<b>7</b>
	Total Marks for Activity 2		<b>15</b>

<b>Activity 3</b>		Computer Modelling For formula marks all of formula must be visible		
		Importing Data		
	<b>A1</b>	New worksheet created	<b>1</b>	
	<b>A2</b>	Data imported correctly (0,200,176000,0), (A-F) (1-42)	<b>1</b>	
	<b>A3</b>	All shown, 1 sheet of A4, readable (A-F) (1-42)	<b>1</b>	
	<b>A4</b>	Printout exists and complies with Standard ways of working (Row, column headers, Gridlines, Header and/or Footer - Do not award for screenshots)	<b>1</b>	
				<b>4</b>
		Sales Data		
	<b>B1</b>	A3 contains formula which transfers data from new worksheet (=Sheetname!A1)	<b>1</b>	
	<b>B2</b>	Formula replicated correctly across (A-F)	<b>1</b>	
	<b>B3</b>	Formula replicated correctly down (Row 43)	<b>1</b>	
	<b>B4</b>	Correct columns printed (A-F) Must have column headers	<b>1</b>	
	<b>B5</b>	Printout conforms to Standard ways of working (Row, column headers, Gridlines, Header and/or Footer - Do not award for screenshots)	<b>1</b>	
				<b>5</b>
		Costs		
	<b>C1</b>	Value for Solar panel £500	<b>1</b>	
	<b>C2</b>	Value for others £6000	<b>1</b>	
	<b>C3</b>	Correct rows and columns printed (A-B) (2-6) Need Headings	<b>1</b>	
	<b>C4</b>	Printout Conforms to standard ways of working. (Row, column headers, Gridlines, Header and/or Footer - Do not award for screenshots)	<b>1</b>	
				<b>4</b>
		House Costs		
	<b>D1</b>	Working Formula in I8 (=Sum(I3:I7))	<b>1</b>	
	<b>D2</b>	Working Formula in J8 (=Sum(J3:J7))	<b>1</b>	
	<b>D3</b>	Sum function used	<b>1</b>	
	<b>D4</b>	Correct row and columns printed (F-J) (8)	<b>1</b>	
	<b>D5</b>	Printout conforms to standard ways of working (Row, column headers, Gridlines, Header and/or Footer - Do not award for screenshots)	<b>1</b>	
				<b>5</b>
		House Types		
		Calculation Page (Formulae)		
	<b>E1</b>	Correct formula in B11 (=House Costs!J8)	<b>1</b>	
	<b>E2</b>	Correct formula in B12 (=House Costs!I8)	<b>1</b>	
	<b>E3</b>	Correct rows and columns printed (A-B) (9-13)	<b>1</b>	
	<b>E4</b>	Printout conforms to standard ways of working (Row, column headers, Gridlines, Header and/or Footer - Do not award for screenshots)	<b>1</b>	
				<b>4</b>



		Calculation Page (Data)		
<b>F1</b>		Development Area (B9) < 100000 m <sup>2</sup>	<b>1</b>	
<b>F2</b>		Development area between 99000 and 100000	<b>1</b>	
<b>F3</b>		Carbon Footprint (B10) < 1000	<b>1</b>	
<b>F4</b>		Carbon footprint < 900	<b>1</b>	
<b>F5</b>		Profit made	<b>1</b>	
<b>F6</b>		Profit > £1000000	<b>1</b>	
<b>F7</b>		Profit > £3000000	<b>1</b>	
<b>F8</b>		Profit > £6000000	<b>1</b>	
<b>F9</b>		All aspects used at least once	<b>1</b>	
<b>F10</b>		All Houses used	<b>1</b>	
<b>F11</b>		All houses have at least 1 green device	<b>1</b>	
<b>F12</b>		All houses have at least 3 green devices	<b>1</b>	
<b>F13</b>		Conforms to standard ways of working (Row, column headers, Gridlines, Header and/or Footer - Do not award for screenshots)	<b>1</b>	
				<b>13</b>
		Total Marks for Activity 3		<b>35</b>

<b>Activity 4</b>		Recommendations		
	<b>A1</b>	Chosen number for each house stated	<b>1</b>	
	<b>A2</b>	Fuel saving devices stated	<b>1</b>	
	<b>A3</b>	Margin for each type stated	<b>1</b>	
	<b>A4</b>	Reasons for choice given (reasonable <u>profit</u> or reasonable fuel savings)	<b>1</b>	
	<b>A5</b>	Profit & Carbon footprint linked	<b>1</b>	
				<b>5</b>
		Other Factors		
		Any 3 of		
			<b>1</b>	
	<b>B1</b>	Low fuel bills may mean more would be sold	<b>1</b>	
	<b>B2</b>	Green promotion may effect how much someone would pay	<b>1</b>	
	<b>B3</b>	Materials (e.g. might be cheaper elsewhere)	<b>1</b>	
	<b>B4</b>	Build amenities	<b>1</b>	
	<b>B5</b>	Play areas for kids	<b>1</b>	
	<b>B6</b>	Local competition	<b>1</b>	
	<b>B7</b>	Labour Costs	<b>1</b>	
	<b>B8</b>	Difficult getting mortgage (Credit Crunch)	<b>1</b>	
	<b>B9</b>	Fear factor (Tewkesbury Flood)	<b>1</b>	
	<b>B10</b>	House prices are falling	<b>1</b>	
	<b>B11</b>	Government stipulation of affordable house	<b>1</b>	
	<b>B</b>	Any other relevant factor	<b>1</b>	
				<b>3</b>
		Graphical Representation of Data		
	<b>C1</b>	Graph included	<b>1</b>	
	<b>C2</b>	Graph fit for purpose	<b>1</b>	
	<b>C3</b>	Graph show information relevant to report	<b>1</b>	
	<b>C4</b>	Either Accompanying text partially explains Graph	<b>1</b>	
	<b>C5</b>	Or Accompanying text fully explains graph	<b>2</b>	
				<b>5</b>
		Suitability for Audience		
	<b>D1</b>	Spelling & Grammar Correct Min 12 lines	<b>1</b>	
	<b>D2</b>	Language suitable for audience Min 12 lines	<b>1</b>	
	<b>D3</b>	Choice of font suitable	<b>1</b>	
	<b>D4</b>	Professional report layout (Intro, Conc, date, at least 2 other sections, suit font colour & size, suitable use of tools)	<b>1</b>	
		Plus any 1 of		
	<b>D5</b>	Concluding Statement	<b>1</b>	
	<b>D6</b>	Headings consistent must have three	<b>1</b>	
	<b>D7</b>	Suitable report title (Who it is to, what it is about and the report)	<b>1</b>	
	<b>D8</b>	Charts labelled (Title, Both axes, units both axes)	<b>1</b>	

				<b>5</b>
			Total Marks for Activity 4	<b>18</b>

<b>Activity 5</b>		Evaluation		
	<b>A1</b>	Comment on ease of use of model with qualification	<b>1</b>	
	<b>A2</b>	Statement to the effect that it has helped provide a solution	<b>1</b>	
	<b>A3</b>	Comment on accuracy of any data	<b>1</b>	
				<b>3</b>
		Max 4 marks		
	<b>B1</b>	Recommendations for improvement of the model	<b>1</b>	
	<b>B2</b>	Recommendations for improvement of the model with any explanation	<b>2</b>	
	<b>B3</b>	Recommendations for improvement of the model with any explanation with data and source	<b>4</b>	
				<b>4</b>
		Total Marks for Activity 5		<b>7</b>
<b>SWW</b>				
		Authenticating Work (All WP pages have task number, Name, centre number).	<b>1</b>	
		Appropriate Structure (Pages in correct order & Folder assembled correctly)	<b>1</b>	
		Total for SWW		<b>2</b>
		Total for Paper		<b>90</b>

Applied Unit 7 - Using Database Software				
Activity		ANSWER	POSS. MARK	MAX
Activity 1		Understanding the problem - Functional specification		
	a	Processes:		
A1		Check UserID and password	1	
A2		Make a bid	1	
A3		Allocate Plots	1	
				3
	b	Inputs		
B1		Signon - UserID - Password	1	
B2		Make Bid UserID, House type, Bid value	1	
B3		Allocate Plots House type UserID	1	
				3
	c	Outputs		
		Any 2 of		
C1		Make a bid - New and old list of successful bids <u>UserID &amp; bid value</u>	1	
C2		Allocate plots - Plot number Name & contact method (address, email or telephone) of successful bidders.	1	
C3		Bid unsuccessful Message	1	
				2
		Total marks Activity 1		8

Activity 2	a	Structure		
A1		Bidder Customer Table	1	
A2		Plot	1	
A3		Bid	1	
A4		House/Design Type	1	
A5		1:M Relationship Customer-Bid	1	
A6		1:M Relationship House type-plot	1	
A7		1:M Relationship House type-Bid	1	
				7
	b	Data Types		
B1		Evidence of correct data types	1	
B2		Evidence of correct primary keys	1	
B3		Viable relationships (Check for relationship Customer to plot - either none or no referential integrity)	1	
				3
	C	Validation		
C1		Any range check	1	
C2		List check (Table Lookup)	1	
C3		Presence check	1	
C4		Picture/format check	1	
				4
	d			
D1		Data Successfully Loaded (Customer - 250)	1	
D2		Data Successfully Loaded (Bid - 809/808)	1	
D3		Data Successfully Loaded (Plot 57)	1	
D4		Data Successfully Loaded (House type - 8)	1	
				4
		Total marks for Activity 2		18

Activity 3	a	Sign On Screen		
		Any 5 of		
A1		Logo	1	
A2		System Intro (Name of System or Company)	1	
A3		User ID & Password only	1	
A4		No other Details	1	
A5		No navigation or close buttons (other than confirm or cancel) or VB and Access doesn't open if wrong	1	
A6		Message if incorrect UserID or Password		
				5
	b	Bid Screen		
		Any 15 of		
B1		Evidence that this is opened from previous screen	1	
B2		Title	1	
B3		Customer Details Displayed (Name or ID at least)	1	
B4		Method of choosing House Type	1	
B5		Successful bids displayed	1	
B6		Only Successful Bids Displayed	1	
B7		Evidence that successful bids cannot be changed	1	
B8		Button (equivalent) for Make bid	1	
B9		Bid value displayed	1	
B10		Method of entering a bid		
B11		Method of checking bid above min or reserve	1	
B12		Method of storing new bid	1	
B13		Method of reproducing list (requery)	1	
B14		List sorted descending	1	
B15		Method of producing error message.	1	
B16		Method of counting number of successful bids	1	
B17		Method of checking how many plots for design code	1	
B18		Method of using reserve price if not enough suitable bids for a particular house type	1	
B19		Method of dropping lowest bid	1	
B20		Equal bids taken into account	1	
B21		Oldest bid dropped	1	
B22		Min successful bid updated	1	

B23		New successful bids marked as successful	1	
				15
	c	Petra Irons		
C1		Bid Successful	1	
C2		Evidence of bid Stored	1	
C3		Evidence that bid displayed as successful (form)	1	
C4		Bonus for explanation	1	
				4
	d	Peter Jenkins		
D1		Bid Unsuccessful	1	
D2		Error Message produced	1	
D3		Reason given (accept error message if clear)	1	
D4		Evidence of list not updated	1	
				4
	e	Roger Kelly		
E1		Bid Successful	1	
E2		Evidence of bid Stored	1	
E3		Evidence that bid displayed as successful	1	
E4		Bonus for clear explanation	1	
				4
	f	Kirk Bears		
F1		Bid not Processed	1	
F2		Invalid username or password	1	
				2
	g	Rachel Kearns		
G1		Bid Unsuccessful	1	
G2		No such UserID or Invalid House Type	1	
				2
	h	Yvonne Card		
H1		Bid Successful	1	



H2		Evidence of bid Stored	1	
H3		Evidence that bid displayed as successful	1	
H4		Bid last in List (Must be sorted)	1	
				4
	i	Alex Bears		
I1		Bid Unsuccessful	1	
I2		Bid too low	1	
I3		Explanation that it is equal to lowest bid	1	
I4		System takes oldest bid	1	
				4
		Total marks for Activity 3		44
Activity 4		Assignment form		
A1		Form Label	1	
A2		Selection of House Type (Drop Down or Similar)	1	
A3		Successful bidders listed on form	1	
A4		Form Tabular	1	
A5		Evidence of assignment	1	
A6		Evidence of automatic allocation of successful bidders	1	
A7		Correct number of plots assigned	1	
			7	
		Total marks for Activity 4		7
Activity 5		Report		
A1		report produced for a house type	1	
A2		Report produced for all house types	1	
A3		Reports on separate page	1	
A4		plots with customer and bids listed	1	
A5		Right number of plots listed	1	
A6		Total for house type included	1	
A7		Totals for all house types included	1	
A8		Totals correct	1	
A9		Footer produced	1	
A10		Footer on separate page	1	

A11		Footer has relevant correct totals	1	
			11	
		Total marks for Activity 5		11
SWW1		Administration details on each page	1	
SWW2		Required printouts only assembled correctly	1	
		Total Marks for Standard ways of working		2
		Total marks for Paper		90

## Unit 9 - Communications and Networks

### Activity 1

Required evidence:

Diagrams illustrating what a peer-to-peer network and a client-server architecture might logically look like

The scenario describes three accountants and a secretary.

Minimum network size is therefore 4 computers.

Diagram showing peer-to-peer network should show a distribution structure with connection to each computer. The diagram should make it clear its a distributed system with no central server. Possible architectures: ring, star (using a mini-hub), WiFi. (Must be at least 4 computers.)

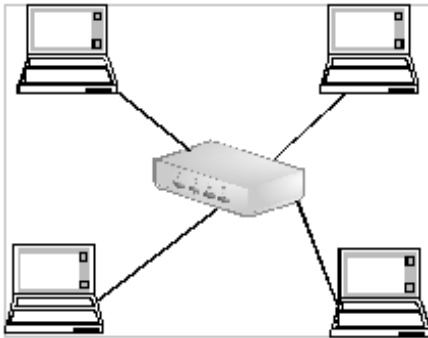


Diagram shows star, connected by mini hub / switch.

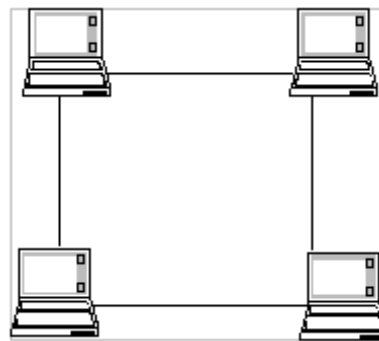


Diagram shows ring.

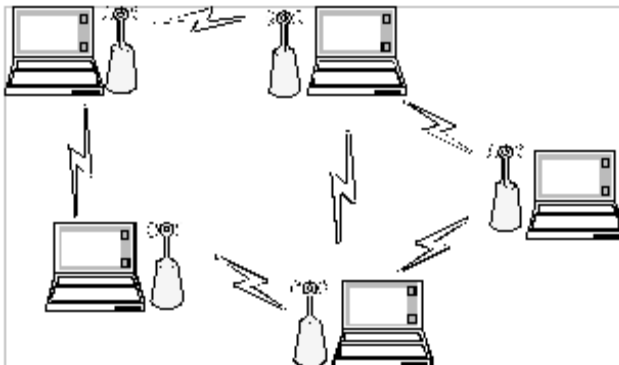


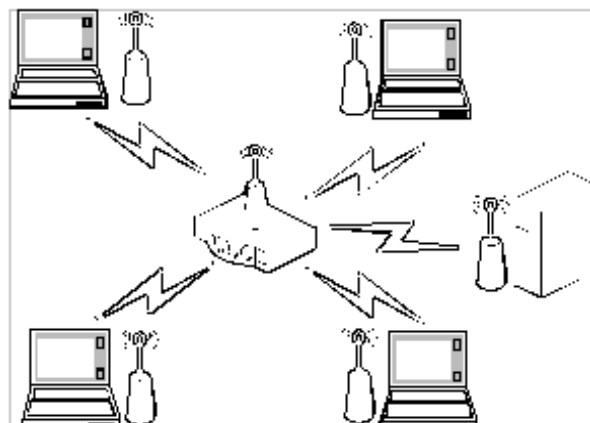
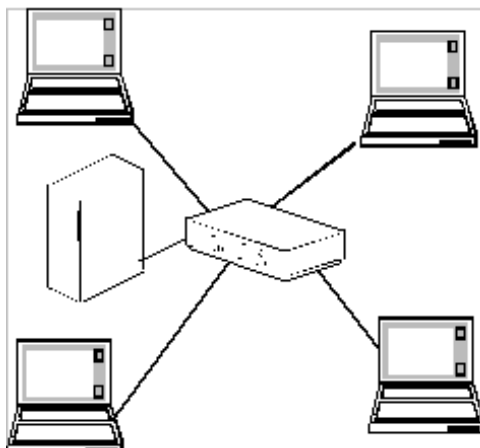
Diagram shows WiFi mesh

1 mark

Diagram showing client server centralised system, each computer accessing a central server through a hub, switch, or WAP. Ring topology also possible.

Examples of diagram (Must be at least 4 computers plus server.)

1 mark



Document explaining the advantages and disadvantages of setting up several independent peer-to-peer networks rather than connecting to a central network.

**Advantages, must be expanded to get a mark**

Any three of:

Simple procedures to use and set up

Accountants will have ownership of their own mini network

Only accessible by Finance Department personnel

Secure from external problems, viruses, worms, security, etc.

There will be a faster start up and log on if decentralised rather than centralised

Not reliant on main network.

No server, therefore cheaper.

No network manager, therefore cheaper.

**Maximum 3 marks**

**Disadvantages, must be expanded to get a mark**

Any three of:

No network manager - will have to manage the network themselves including upgrading, adding users.

Maintenance more difficult as not part of a central network

Lack of access to centralised services such as email, access to Internet, file sharing, etc.

More difficult to share real time data with other users / slower performance when sharing data.

Security on actual computers may be low.

Limitation on number of nodes, dependent on OS. accept double figures

Software installation has to be done on separate computers.

**Maximum 3 marks**

**Total marks for Activity 1: 8**

## Activity 2

Evidence required

Notes explaining the function of each component.

These are the BCS definitions

For each device, one mark for an explanation similar to the one given. One mark for a more detailed explanation / expansion. Needs first mark to access the second.

7 definition marks

Only 4 extension marks possible.

**Bridge not recommended 1 mark**

Provides a link between two local area networks / parts of network. It may also convert the data into the appropriate form for the other system.

It is simply a link. There is no concept of it providing an entrance to a computer network.

**Gateway recommended 1 mark**

Is a computer system that links two dissimilar networks. Gateways usually provide a single point of entry to a secure computer network.

The gateway converts data passing through it into the appropriate form for the second network.

the gateway can monitor usage and also limit access between the networks to authorised users.

**Hub not recommended 1 mark.**

Allows any two computers connected to the hub, or through other hubs, to send data to each other.

A simple hub can only deal with one link at a time and can be slow if many computers are using the same hub.

**Repeater not recommended 1 mark.**

Are used to link two cable segments. Because of the loss of signal strength in network cables, a repeater amplifies the signals it receives before passing them on.

**Router recommended 1 mark not recommended 1 mark.**

Are sophisticated switched hubs. They hold information about the addresses of computers attached to the network and can forward data efficiently via an appropriate route.

They are generally used as Gateways where a LAN is connected to a larger network such as the Internet.

**Switch recommended 1 mark not recommended 1 mark.**

Also called a switched hub. They act like hubs but have switching circuitry which allows them to deal with many connections simultaneously.

**Server recommended 1 mark**

Is a computer on a network that provides a resource that can be used by any authorised client station.

Servers include e.g. file server, print server, database server, web server.

**Maximum 11 marks**

**Your recommendation as to which components will be required for your network together with reasons why the others would not be of any use.**

The recommendations must be justified.

Recommendations should take into consideration performance and be related to the scenario.

Server recommended 1 mark

Gateway recommended 1 mark

Router or Switch recommended 1 mark

Router or Switch not recommended 1 mark

Hub not recommended 1 mark

Bridge not recommended 1 mark

Repeater not recommended 1 mark

**Max 6 marks**

**Total marks for activity 2 : 17 marks**

### Activity 3

#### Evidence required

##### A one page design for the total network

A diagram showing how you propose to network the equipment at the Head Office Site

A network layout diagram in an appropriate format showing the logical layout of the network. The diagram should be comprehensive, showing how each building is connected back to the centre and a minimum of how each room or set of computers is connected (showing hundreds of individual PCs would probably not be the most effective method of presentation). The diagram should show how switches/hubs, access points, and routers are used together to create the network. There are many possible configurations for the network and thus any sensible layout is acceptable

The network diagram must be understandable.

A device must be labelled to gain marks specific to that device.

1 mark each for.

1. Server in server room
2. Cables shown
3. Types of cables
4. Links to external computers
5. Switch / hub to router
6. Sensible position of switches / hubs
7. Sensible, short Server to router connection
8. Sensible number of PCs and non-networked printers
9. Correct connections for architects shared plotter, networked.
10. Photocopier and fax in finance and admin.
11. Shared printers, 1 in finance, 3 in admin.
12. Sensible position of access points / cable in David's office.
13. Sensible network nodes. Probably:
  - David, architect, finance, statistician
  - Admin, IT, Server room

**Maximum 12 marks**

**Notes justifying each (major) decision made with regard to the network design**

Notes justifying selection of components, selection of cable types and location of components. 1 mark for each valid point.

There are no marks for descriptions of what is in the diagram.

**Maximum 10 marks**

A scheme for IP addresses with some indication of the actual IP addresses to be used.

Any logical grouping of IP addresses within the network range specified is acceptable assuming a Class B / C private network:

The more fully specified the ranges of addresses are the more marks that should be allocated up to a maximum of 7. e.g.

Address range	1 mark
Addresses for devices e.g. printers	1 mark
Address for (DNS)server	1 mark
Addresses for router / gateway	1 mark
Indicating which addresses are dynamic and which are static / explain the use of DHCP	1 mark
Addresses for remote computers	1 mark
Explanation of subnet mask / category B / C	1 mark
Justify category	1 mark
Explain structure of chosen category.	1 mark

Maximum 7 marks

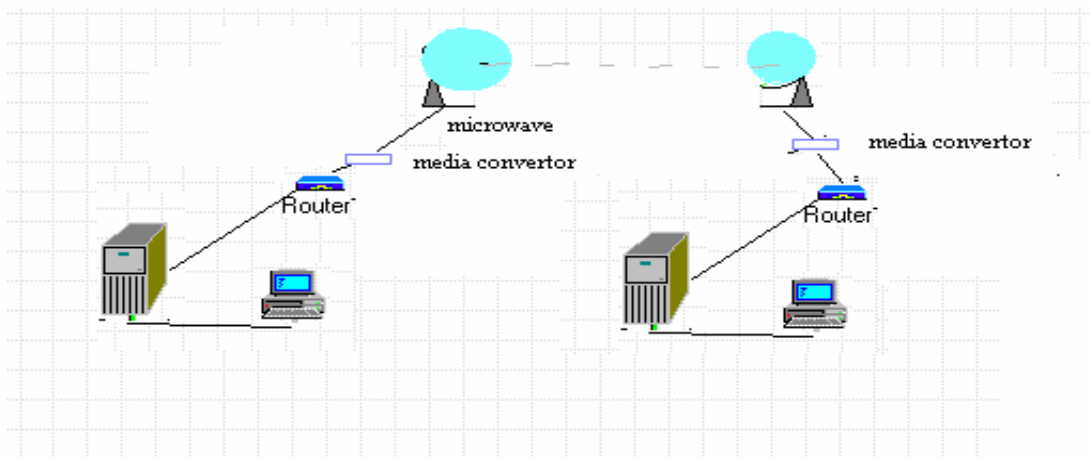
Notes describing the different methods of connecting the developments to the Head Office.

1 mark for diagram points

OR 2 marks for 3 explanation points

1 mark for 2 explanation points

### Microwave

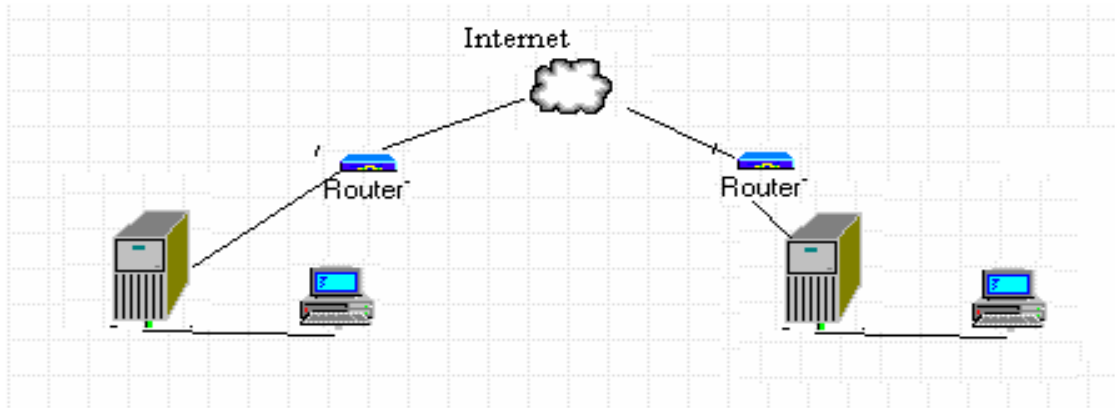


Connection from PC to router could be WiFi

- Microwave dishes used to transmit data over long distances.-4 miles an easy distance
- Uses high frequency microwave to carry data
- Relatively easy to set up for a contractor
- Speed typically 1-10 mbps



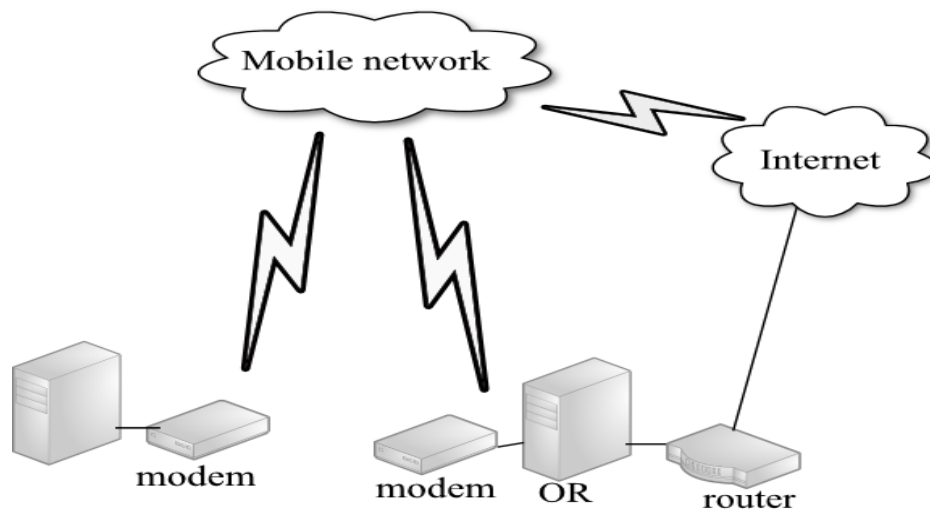
### Connection via the Internet



Connection from PC to router could be WiFi

- Connect at both ends to Internet using normal Internet routing
- No special contracting required.
- Speed depends on ISP

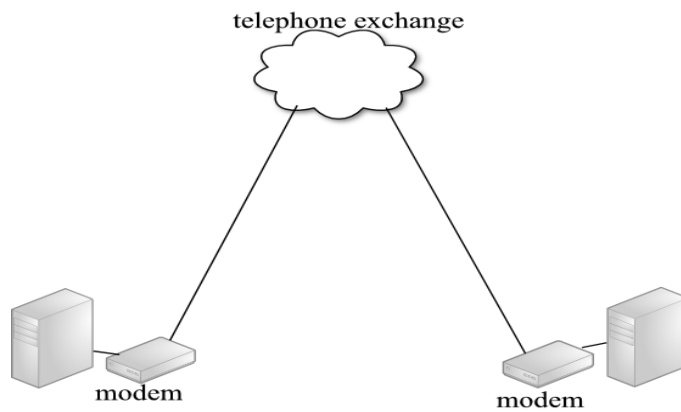
### Connection via mobile telephone system



- Connect at development end by radio / 3G modem
- Connect at head office via modem or Internet
- No special contracting required.



## Connection via leased line



- Permanent / automatic phone connection
- No special contracting required.
- guaranteed service level

**Maximum 4 marks**

The recommendation must be justified. The quality of the justification is the most important element of this rather than the particular recommendation as all three solutions are viable. The justifications should be related to the scenario. They could involve:

- security
- cost
- performance

**Maximum 3 marks**

**Total marks for activity 3 : 36 marks**

#### Activity 4

Required evidence:

The six slide presentation, with speaker's notes, printed out with one slide per A4 page.

- The purpose of each of the four layers of the TCP/IP model.
- The functions of each layer of the TCP/IP model, the protocols and their roles.
- Compare the OSI model and the TCP/IP model.

The purpose of each layer of the TCP/IP model, the protocols and their roles.

#### Application

Handles issues of representation, encoding, and dialog control.

Protocols - DHCP, gopher, IMAP4, IRC, NNTP, POP3, FTP, HTTP, SMTP, DNS, TFTP, SMB, AFP, ASP, and many others

#### Transport

Deals with the quality of service issues of reliability, flow control, and error correction.

Protocols - TCP, UDP, ATP, DCCP, SCTP, RTP, and more

#### Internet

Divide TCP segments into packets and send them from any network. The packets arrive at the destination network independent of the path they took to get there.

Protocols - IP, AARP, RARP, ICMP, RIP, and many more

#### Network

Known as the host-to-network layer. This layer is concerned with all of the components, both physical and logical, that are required to make a physical link.

Protocols - Ethernet, 802.11, WiFi, PPTP, PPP, and many more

For each layer, 1 mark for Purpose, 1 mark for Function identifying at least one correct protocol with explanation.

**Maximum 8 marks**

Compare the OSI model and the TCP/IP model

1 mark for either a table or text that shows how the TCP/IP model compares with the 7 layers of the OSI model.

OSI Model	TCP/IP
7) Application	Application
6) Presentation	
5) Session	
4) Transport	Transport
3) Network	Internet
2) Data Link	Network access
1) Physical	

1 mark for describing **three** similarities.

1 mark for describing **two** differences

1 mark for describing a **further** similarity **and** difference

Similarities include:

- Both have layers.
- Both have application layers, though they include very different services.
- Both have comparable transport layers.
- Both have comparable network layers.
- Both models need to be known by networking professionals.
- Both assume packets are switched. This means that individual packets may take different paths to reach the same destination. This is contrasted with circuit-switched networks where all the packets take the same path.

Differences include:

- TCP/IP combines the application, presentation and session layer into its application layer.
- TCP/IP combines the OSI data link and physical layers into the network access layer.
- TCP/IP appears simpler because it has fewer layers.
- TCP/IP protocols are the standards around which the Internet developed, so the TCP/IP model gains credibility just because of its protocols. In contrast, networks are not usually built on the OSI protocol, even though the OSI model is used as a guide.

**Maximum 3 marks**

**Total marks for activity 4 : 11 marks**

## Activity 5

Required evidence

A contingency plan for the network to include:

**Prevention of network problems occurring as a result of natural disasters**

**Disaster recovery**

Examples

Prevention of problems occurring:

1. Routine, documented backup procedures
2. Back up for hardware, back up server, store of spare parts
3. Isolation of parts of network
4. UPS
5. File server on first floor
6. Other sensible and relevant
7. network monitoring software / policy / code of conduct
8. sensible example of preventative maintenance
9. hot swappable components / mirroring / RAID

Recovery of Data

1. Off site storage of data
2. Have a documented recovery procedure
3. Maintain accurate documentation of hardware and software configurations.  
Copies of software securely stored
4. Temporary hardware loan arrangements
5. standby replacements, machines or other essential items
6. alternative site
7. Other sensible and relevant

Up to 2 marks for each strategy with an explanation of why needed or how to set up.  
Maximum of 16 marks

**Maximum 16 marks**

**Total marks for activity 5 : 16 marks**

**Standard ways of working**

**2 marks**

headers & footers with candidate name, centre number & activity number  
presented as required: treasury tag, number of pages, font size etc

**Total marks for paper 90**







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