edexcel
advancing learning, changing lives

Mark Scheme Summer 2009

GCE

GCE Applied Information and Communication Technology (8751 - 9752)

Edexcel Limited. Registered in England and Wales No. 4496750
Registered Office: One90 High Holborn, London WC1V 7BH

A PEARSON COMPANY

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Mark Scheme that require the help of a subject specialist, you may find our Ask The Expert email service helpful.

Ask The Expert can be accessed online at the following link:

http://www.edexcel.com/Aboutus/contact-us/

Summer 2009

Publications Code UA021101

Contents

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

Applied GCE ICT Unit 3 – Mark Scheme – June 2009				
Activity		**ANSWER**	**POSS. MARK**	**MAX**
Activity 1		Understanding the problem		
		Any 7 of		
	A1	**Deer Valley Railway**	**1**	
	A2	**Daffodil Line (working with)**	**1**	
	A3	**Heavy Traffic during peak periods (accept commuter traffic)**	**1**	
	A4	**Overcrowded trains during morning peak (6am – 9am)**	**1**	
	A5	**7 trains on daffodil line (accept 7 trains or names)**	**1**	
	A6	**Each train can run once during period**	1	
	A7	**Start at Southwick**	**1**	
	A8	**End at Broughton Park**	**1**	
	A9	**Three other stations (accept names) or 5 in all**	**1**	
				7
	B1	**Train Times morning peak(B1 and B2 can be awarded for an expression such as "Devise the new morning peak period timetable")**	**1**	
	B2	**Between 6 and 9**	**1**	
	B3	**For 7 Trains**	**1**	
				3
	C1	**Even out number of passengers**	**1**	
	C2	**Maximum 1500 people**	**1**	
	C3	**On any train**	**1**	
				3
		Marks can be awarded anywhere in the answer		
		Total Marks for Activity 1		**13**

Activity 2		Sources of Information		
		Method of collecting data		
	A1	**Journey Times Measured**	**1**	
	A2	**Last 3 Months**	**1**	
	A3	**Mean taken (accept Average)**	**1**	
		Factors affecting accuracy of data		**3**
		Any 4 of		
	B1	**Average means some longer some shorter**	**1**	
	B2	**Length of stop at station**	**1**	
	B3	**Leaves on line or other weather or season related excuse (accept adverse weather)**	**1**	
	B4	**Mechanical failure (eg signal, points or engine)**	**1**	
	B5	**Any other sensible type**	**1**	
				4
		Method of collecting data		
	C1	**Survey**	1	
	C2	**All customers**	1	
	C3	**For a week**	1	
	C4	**Analysed by independent market research team**	1	
		Analysis of survey		**4**
		Any 4 of:		
	D1	**Right people surveyed (?) (passengers)**	1	
	D2	**Right time (morning)**	1	
	D3	**Right places (stations on line)**	1	
	D4	**Large sample (all passengers)**	1	
	D5	**Primary data (question designed specifically for purpose)**	1	
	D6	**Right questions asked**	1	
	D7	**Bias reduced by asking several times**	1	
				4
		Total Marks for Activity 2		**15**

Activity 3		Computer Modelling		
		Import Data		
	A1	**Worksheet created**	**1**	
	A2	**Contains Correct Data (145, 112, 146)**	**1**	
	A3	**Gridlines/Row Column Headings/1 Sheet A4/rows 1-20**	**1**	
				3
		Survey Data (Formulae)		
	B1	**Data in worksheet correct (or formula correct)**	**1**	
	B2	**Data Transferred using formula**	**1**	
	B3	**Correct name used for 'Survey Text'**	**1**	
				3
		Survey Data (Data)		
	C1	**Arrival Time correct format (hh:mm:ss)**	**1**	
	C2	Must be before **and** train time **correct format (in case they have imported too much)**	**1**	
	C3	**No other time format**	**1**	
	C4	**Colour of cell unchanged (if not correct shading the either copy/paste used or pasted into wrong place) then**	**1**	
	C5	**Correct Rows and Columns printed 7-12 C-H(Must have gridlines and row and column headers)**	**1**	
				5
		Passengers (Formulae)		
	D1	**Working formula in cell B16 (=SUM(B9:B15))**	**1**	
	D2	**Formula correctly replicated**	**1**	
	D3	**Working formula in F17 (=SUM(B16:F16))**	**1**	
	D4	**Sum used in both cases (must both be correct)**	**1**	
	D5	**Correct Rows and Columns printed A-F 15-17(must have gridlines and row and column headers)**	**1**	
				5
		Timetable (Formulae)		
	E1	**Working formula in cell C10 (=B10+C$7)**	**1**	
	E2	**Working formulae in cells C10-F16**	**1**	
	E3	**In Cell C10 No Absolute addressing on B10**	**1**	
	E4	**In Cell C10 Absolute addressing on C7**	**1**	
	E5	**In Cell C10 $ only on row**	**1**	
	E6	**Formula replicated correctly**	**1**	
	E7	**Correct Rows and Columns Printed C-F 8-16(must have gridlines and row and column headers)**	**1**	
				7
		Timetable (Data)		
	F1	**Correct Times in Cells C7-F7 (10,20,10,20)**	**1**	
	F2	**C7-F7 formatted mm:ss**	**1**	
	F3	**C10-F16 Some cells formatted hh:mm:ss**	**1**	
	F4	**if all cells formatted hh:mm:ss**	**1**	

	F5	**Solution Displayed**	**1**	
	F6	**Trains ordered correctly (no red cells)**	**1**	
	F7	**Trains in all three hours (6,7 and 8)**	**1**	
				7
		Passengers Data (Give marks only if all formulae correct) No trains may leave at the same time or before the previous train – If so no marks in this section can be awarded)		
	G1	**Less than 5 occurrences of over 1500**	**1**	
	G2	**Less than 3 occurrences of over 1500**	**1**	
	G3	**No occurrences of over 1500**	**1**	
	G4	**Over 15,000 passengers**	**1**	
	G5	**Over 16,800 passengers**	**1**	
				5
		Total Marks for Activity 3		**35**

Activity 4		Recommendations			
	A1	**Chosen Times Stated**	**Table or chart**	**1,1**	
	A2	**Passenger Levels shown**	**Table or Chart**	**1,1**	
	A3	**Justified by even passengers**		**1**	
	A4	**Justified by no overcrowded trains (<u>1500</u> mentioned)**		**1**	
	A5	**Justified by even times**		**1**	
					7
		Any 4 of			
	B1	**Seasonal difference in passengers**		**1**	
	B2	**Mechanical failure**		**1**	
	B3	**Weather**		**1**	
	B4	**Maintenance of Trains**		**1**	
	B5	**Maintenance of Lines**		**1**	
	B6	**Other Lines**		**1**	
	B7	**Staff costs**		**1**	
	B8	**Any other relevant factor**		**1**	
	B9	**Timings row 9 of Timetable set at hours difference**		**1**	
	B10	**Rottlesfield M7- points to wrong cell**		**1**	
	B11	**Vlookup in column H gets Southwick only**		**1**	
	B12	**Rounding Errors in Station Timetables**		**1**	
					4
		Graphical Representation of Data			
	C1	**Graph included**		**1**	
	C2	**Graph fit for purpose**		**1**	
	C3	**Graph show information relevant to report**		**1**	
	C4	**Graph suitably titled &labelled**		**1**	
					4
		Suitability for Audience			
	D1	**Spelling & Grammar Correct**		**1**	
	D2	**Language suitable for audience**		**1**	
	D3	**Professional report layout (Title,Intro, Conc, at least 2 other sections, suit font colour & size, suitable use of tools)**		**1**	
					3
		Total Marks for Activity 4			**18**

Activity 5		Evaluation		
	A1	**Lack of confidence in model**	**1**	
		any two of the below		
	A2	**Timings row 9 of Timetable set at hours difference**	**1**	
	A3	**Rottlesfield M7- points to wrong cell**	**1**	
	A4	**Vlookup in column H gets Southwick only**	**1**	
	A5	**Rounding Errors in Station Timetables**	**1**	
				3
		Max 4 marks (Any combination of)		
	B1	**Recommendations for improvement**	**1**	
	B2	**Recommendations for improvement with any explanation**	**2**	
	B4	**Recommendations for improvement with any explanation with data and source**	**4**	
				4
		Total Marks for Activity 5		**7**
SWW				
	S1	**Authenticating Work (All WP pages have task number, Name, centre number).**	**1**	
	S2	**Appropriate Structure (Pages in correct order & Folder assembled correctly)**	**1**	
		Total for SWW		**2**
		Total for Paper		**90**

Applied GCE Unit 7 – Mark Scheme				
Activity		**ANSWER**	**POSS. MARK**	**MAX**
Activity 1		Understanding the problem – Functional specification		
	a	**Process must have a <u>verb.</u> Max 6 if no diagram (i.e. prose only).**		
A1		<u>Enter/ Input</u> Train (Date and Time)	**1**	
A2		<u>Choose</u> or Enter Forward/Backward & Window Aisle	**1**	
A3		Decision/<u>check</u> if seat(s) available	**1**	
A4		<u>Choose</u> seat	**1**	
A5		Decision (if seat not available) input again, or quit system	**1**	
A6		<u>Input</u> Customer details	**1**	
A7		<u>Check</u> required fields are present	**1**	
A8		Decision Confirm or not	**1**	
A9		<u>Create/ make/ generate</u> customer ID	**1**	
A10		<u>Store</u> Customer details	**1**	
A11		<u>Link</u> Customer to seat booking	**1**	
A12		<u>Print</u> tickets	**1**	
A13		<u>Print</u> cards	**1**	
				max 12
		Total for Activity 1		**12**

Activity 2	**a**	Structure		
A1		**Schedule/ train/ journey (table)**	**1**	
A2		**Seat (table)**	**1**	
A3		**Customer (table)**	**1**	
A4		**Booking (table)**	**1**	
A5		**1:M Schedule/ train/ journey – Booking (relationship)**	**1**	
A6		**1:M Seat to booking (relationship)**	**1**	
A7		**Relationship Customer to Booking**	**1**	
A8		**No referential integrity on Customer to Booking**	**1**	
				8
	b	Data Types		
B1		**Evidence of correct data types** **Ticket Printed - Yes/No** **TrainID - Number**	**1**	
B2		**Evidence of correct primary keys** **Table Schedule – Train ID** **Table Seat – Seat ID** **Table Customer – Customer ID** **Table Booking – Train ID and Seat ID**	**1**	
				2
	C	Validation		
C1		**Validation of Date**	**1**	
C2		**Validation of Time**	**1**	
C3		**Facing (F & B) (Must have limit to list if combo box)**	**1**	
C4		**Position (W & A) (Must have limit to list if combo box)**	**1**	
C5		**Validation picture check / input mask (do** NOT **allow customer ID – this is generated not entered)**	**1**	
C6		**Presence check on Last Name**	**1**	
C7		**Presence check on First Line of Address**	**1**	
C8		**Presence check on Post Code**	**1**	
C9		**Adult/ Child (A or C) (Must have limit to list if combo box)**	**1**	
				Max 8

	D	Must show at least 5 records in each case		
D1		**Schedule/ Train(6)**	**1**	
D2		**Seat (128)**	**1**	
D3		**Booking (768)**	**1**	
D4		**Customer (45)**	**1**	
				4
		Total marks for Activity 2		**22**

Activity 3	**a**	Introductory Form		
A1		**Logo**	**1**	
A2		**Company name**	**1**	
A3		Purpose **of form - Introductory/ Welcome**	**1**	
A4		**Means of entering Date**	**1**	
A5		**Means of entering time**	**1**	
A6		**Facing (Forwards or Backward Seat)**	**1**	
A7		**Position (Window or Aisle)**	**1**	
A8		**HCI aid for any field (Drop down etc)**	**1**	
A9		**All fields are clearly and correctly labelled**	**1**	
A10		**Unbound form/ no navigation buttons**	**1**	
A11		**Button to move to Booking/customer form**	**1**	
A12		**Quit button or equivalent (not cross at top)**	**1**	
A13		**Description of how the form works**	**1**	
			max	**13**
	b	Customer Screen		
B1		**Name**	**1**	
B2		**Address**	**1**	
B3		**Last name shown as must be entered (*or Error message)**	**1**	
B4		**First Line of address shown as must be entered (*or Error message)**	**1**	
B5		**Post Code shown as must be entered (*or Error message)**	**1**	
B6		**Button to confirm**	**1**	
B7		**Button to cancel**	**1**	
B8		**Drop down to select seat**	**1**	
B9		**Method of generating customer ID**	**1**	
B10		**Bonus if ID one more than highest number**	**1**	
B11		**Method of selecting adult or child ticket required**	**1**	
B12		**Query to find appropriate free seats**	**1**	
B13		**Update Booking query**	**1**	
B14		**Append new customer**	**1**	
B15		**Description of how the form works**	**1**	

			max	**12**
	C	Moving to Customer Screen		
C1		**Macro or open form linked to button**	**1**	
C2		**Move to next form only if seat available**	**1**	
				2
		Total marks for Activity 3		**27**

Activity 4		Testing		
A1		**Wilson showing on form**	**1**	
A2		**Doberman showing on form**	**1**	
A3		**Dorking showing on form**	**1**	
A4		**Masters showing on form**	**1**	
				4
	b	**Test Data 1 (Wilson)**		
B1		**Booking stored in the booking table**	**1**	
B2		**Customer ID number stored in the customer table**	**1**	
		Test Data 2 (Doberman)		
B3		**Booking stored in the booking table**	**1**	
B4		**Customer ID number stored in the customer table**	**1**	
		Test data 3 (Dorking)		
B5		**Booking stored in the booking table**	**1**	
B6		**Customer ID number stored in the customer table**	**1**	
		Test Data 4 (Masters)		
B7		**Customer rejected/ not stored**	**1**	
C1		**Correct Seat in Booking table** **Seat C28 - Wilson** **Seat C22 - Doberman** **Seat D04 - Dorking**	**1**	
				8
		Total marks for Activity 4		**12**

Activity 5		Producing Tickets		
		NO SCREENSHOTS		
A1		Tickets printed (must be more than one ticket)	**1**	
A2		4 to a page	**1**	
A3		Correct Number of tickets produced (12) must be three Pages	**1**	
A4		Logo on Tickets	**1**	
A5		**Deer Valley Experience on all tickets**	**1**	
A6		Train Number/ID (accept either)	**1**	
A7		Carriage on ticket	**1**	
A8		Seat number on ticket	**1**	
A9		Separate labels for Carriage and seat number	**1**	
A10		Date of trip printed	**1**	
A11		Time of trip printed	**1**	
A12		Date and Time in large letters	**1**	
A13		Child on correct tickets (C22 and C28)	**1**	
A14		Child not on other tickets (need all tickets to check)	**1**	
A15		Child in larger text accept uppercase as well) Do **not** accept C instead of Child	**1**	
		Total marks for Activity 5		**15**
		Must have all tasks present and in correct order.		
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**

Question Number	Answer	Mark
Activity 1	**Benefits of Networks.** **Examples of benefits**. (terms from the specification), accept similar meanings. 1 mark for each benefit **with** a description relevant to the scenario. **To a maximum of 6** **(6)** **(Efficient use of hardware and software resources)** Sharing hardware resources e.g. Newsletters, etc. Could be printed on shared colour laser printer. Stations could share a single Internet connection. **(Efficient use of hardware and software resources)** Sharing software resources. All of the software can be loaded on one computer (the file server). This eliminates the need to spend time and energy installing updates and tracking files on independent computers throughout the company. **(Information sharing)** Sharing common data. Rapid method for sharing and transferring files. **(Effective communications)** The presence of a network provides the hardware necessary to install an e-mail system. **(Support for group, collaborative and flexible working)** Supports group or collaborative working. Allows many users to work on a document or project concurrently. **(Productivity gains)** A network increases the volunteers' productivity by providing quick and more convenient access to the information they need. They can work at different stations and still have access to all they need. **(Centrally managed backup)** Centralised back-up services. Networks enable you to easily backup and protect the important information you rely on every day. **(Centrally managed security)** Logon times and other restrictions can be set centrally. User password policies can be set for e.g. strength, length, lifetime. **(Control and monitoring of access and activity)** Passwords can be established for specific directories to restrict access to authorized users. Logs can be kept to show events such as: logon / logoff, software use, printing. **(Cost savings)** Network versions of many popular software programs are available at considerable savings when compared to buying individually licensed copies. Besides monetary savings, sharing a program on a network allows for easier upgrading of the program. The changes have to be done only once, on the file server, instead of on all the individual workstations.	

	(Centrally managed administration) System administration tasks are carried out on a server / domain controller, instead of on individual workstations. Many routine tasks such as defragmentation / antivirus updates can be performed automatically / remotely. Domain rules / policies are set up and enforced centrally. Error detection and reporting via server apps and logs. **(Centrally managed user support)** The network users should all be running the same OS and software packages. The machines will probably be the same. A central helpdesk should be able to deal with common problems. It should also be able to use e.g. remote desktop, to take over workstations. **1 mark for each plausible cost saving. To a maximum of 4 (4)** *Italics show the sort of detail that candidate's may have put on the first page.* They do not have to repeat this detail to get marks here. Figures do **not** need to be given for the cost saving mark. **1 mark for a calculation showing a total saving of >=£5,000.** **Figures must be sensible. (1)** **1 mark for showing payback in a realistic time scale (<= 5 years)** **Using the candidate's figures. (1)** **NOTES.** The cost savings shown are **examples** only**.** The savings and payback marks are independent. Accept any sensible / explained figures for the total saving. Accept the candidate's figures for the payback calculation even if they are not sensible. Candidates may identify the required savings and payback period without using all four of their network benefits. Savings may be made on the Tulip and/or Hyacinth lines. Accept e.c.f. for items identified in part (a) network benefits. **(Efficient use of hardware and software resources)** *Sharing hardware resources e.g. Newsletters, etc. could be printed on shared colour laser printer.* Savings of a few pence per sheet on current method, i.e. probably inkjet. e.g. 500 pages per month x 3p x 12 months = £180 per annum. shared Internet / telephone, assuming a fairly cheap monthly charge of £15 per station. A shared connection saves 10 stations x 12 months x £15 per annum = £1800 **(Efficient use of hardware and software resources)** *Sharing software resources.* *All of the software can be loaded on one computer (the file server). This eliminates the need to spend time and energy installing updates and tracking files on independent computers throughout the company.* More a time saver than money saver, since volunteers are free, but could argue that time saved will be spent making money elsewhere. Could also save on travel costs / expenses. Accept sensible mileage figures. e.g. 25p per mile for 200 miles per annum = £50 **(Information sharing)** *Sharing common data* *Rapid method for sharing and transferring files.* Saves cost of physical transfer. CDs, transport / postage costs. e.g. sending weekly returns / backups from each station to HQ. 10 x Ist class stamp + stationary + media per week = £600 per annum

	(Effective communications) *The presence of a network provides the hardware necessary to install an e-mail system.* Saves postage costs. e.g. sending rosters to each station from HQ. 10 x Ist class stamp + stationary = £300 per annum May save printing costs if e.g. newsletters sent as PDFs via e-mail. e.g. 100 newsletters per week at 10p = £52 per annum. **(Support for group, collaborative and flexible working)** *Supports group or collaborative working* *Allows many users to work on a document or project concurrently.* Probably not relevant to the scenario. Allow reasonable examples. **(Productivity gains)** *A network increases the volunteers' productivity by providing quick and more convenient access to the information they need. They can work at different stations and still have access to all they need.* More a time saver than money saver, since volunteers are free, but could argue that time saved will be spent making money elsewhere. Could also save on travel costs. Accept sensible mileage figures. e.g. 25p per mile for 200 miles per annum = £50 **(Centrally managed backup)** Centralised back-up services *Networks enable you to easily backup and protect the important information you rely on every day.* More a time saver than money saver, since volunteers are free, but could argue that time saved will be spent making money elsewhere. Could also save costs of CDs or other local backup systems. e.g. 1 CD per day for 6 stations. 10p x 10 x 300 working days = £300 per **(Centrally managed security)** *Logon times and other restrictions can be set centrally. User password policies can be set for e.g. strength, length, lifetime.* Probably not relevant to the scenario. Allow reasonable examples. **(Control and monitoring of access and activity)** *Passwords can be established for specific directories to restrict access to authorized users. Logs can be kept to show events such as: logon / logoff, software use, printing.* Probably not relevant to the scenario. Allow reasonable examples. **(Cost savings)** *Network versions of many popular software programs are available at considerable savings when compared to buying individually licensed copies. Besides monetary savings, sharing a program on a network allows for easier upgrading of the program. The changes have to be done only once, on the file server, instead of on all the individual workstations.* Allow a specific example for the money saving mark. Duplicates of other identified savings are not allowed.

	(Centrally managed administration) *System administration tasks are carried out on a server / domain controller, instead of on individual workstations. Many routine tasks such as defragmentation / antivirus updates can be performed automatically / remotely. Domain rules / policies are set up and enforced centrally.* More a time saver than money saver, since volunteers are free, but could argue that time saved will be spent making money elsewhere. Could also save on travel costs. Accept sensible mileage figures. e.g. 25p per mile for 200 miles per annum = £50 **(Centrally managed user support)** *The network users should all be running the same OS and software packages. The machines will probably be the same. A central helpdesk should be able to deal with common problems. It should also be able to use e.g. remote desktop, to take over workstations.* More a time saver than money saver, since volunteers are free, but could argue that time saved will be spent making money elsewhere. Could also save on travel costs. Accept sensible mileage figures. e.g. 25p per mile for 200 miles per annum = £50 Could also save on premium rate phone calls to outside company helplines. Accept sensible telephone costs. e.g. £1 per minute for 10 minutes per month = £120 per annum **(12)**
	Total marks for Activity 1: 12 marks

Question Number	Answer	Mark
Activity 2	**Network design and connectivity.** • **Explains the differences between DSL and ISDN** **NOTE, differences should be applicable to the scenario, an internal system, not to do with connecting externally.** **(6)** Answers may include: Price. ISDN more expensive than DSL (equipment, not connection costs) DSL data plus voice ISDN data or voice ISDN faster connection times than DSL ISDN does not need to negotiate a connection ISDN 128kb/s, use of voice cuts this to 64kb/s ISDN 2Mb/s possible (but very expensive equipment) DSL much higher rate over short distance DSL transfer rate is distance dependant. Drops to about 1Mb/s at 6km ISDN transfer rate constant *Distance limits, both a few Km without a repeater but allow any reasonable comparison,* e.g. ISDN can have more repeaters ISDN uses regenerator DSL uses repeater DSL reaches further without a repeater. **1 mark per item to a maximum of 6** **(6)** • **States the hardware required for using each option on the Daffodil line telecoms system.** **(4)** DSL, Digital Subscriber Line Access Multiplexer(DSLAM), repeaters, modems / routers, line filter. **1 mark for 2 items, 1 mark for 3rd item** ISDN, terminal adapters, ISDN router, regenerators / repeaters **1 mark for 2 items, 1 mark for 3rd item** • **States, with a justification, which one he should use** **(1)** DSL, ISDN has max of 128kb/s /slower than DSL speed, old technology, more expensive equipment, can use phone or data not both. **or** reverse examples, e.g. DSL is newer technology, faster than ISDN, can use phone plus data, cheaper equipment.	
		Total marks for Activity 2: 11 marks

Question Number	Answer	Mark
Activity 3 (part a)	**Components of a network**	

1 mark per component to a maximum of 9 **(9)**

1 mark for a sensible cost for each component. Costs shown are **examples only.** They are taken from commercial web sites in Sept 08 with no effort made to 'shop around' or haggle for discounts. **(1)**

1 mark for a calculation showing a total cost of <=£12000. **(1)**

Total (11)

Component	Quantity and justification	Reason for component	Cost £
PC (plus screen, keyboard etc)	1 per station (5) + min 10 at Broughton Park. Given in scenario. Total 15 Allow min of 13. Allow use of existing screens (5) to reduce costs	Needed for office tasks, look for reasons for extra PCs, e.g. in telephone exchange	5000
Printer. Black and white	1 per station(5) + 6 at Broughton Total 11. Allow min of 10	Needed for office tasks, look for reasons for extra printers. e.g. 1 per secretary	550
Printer, colour laser, networked	1 at Broughton Park	Needed for publicity material, newsletters, etc. as in scenario.	400
NICs, for anything sensible	As required. PCs should be built in but may be needed for printers	Look for requirement for item to be networked / shared. e.g. 1 printer in office for 2 people.	< 10 each
Modem	1 per station with single PC (4)	Needed for the link to the WAN	80
Router	2 at Broughton Park + 1 for any station with 2+ PCs (2)	1 for link to private system 1 for external link to Internet	60
Cable, Cat 5 / 6	1 reel / 300m /enough for cabling within the stations, or sufficient made leads.	Needed to connect anything not wired directly to the WAN	50
RJ45 connectors	sufficient for Cat 5 / 6 cables given above. Pack of 50	Needed to connect cable to devices or sockets.	18
Switch / hub	1 possible at Broughton Park	Used for the Broughton Park LAN	200
Server	1 Broughton Park	1 needed to manage the network, 2nd. to give required reliability.	2000
Second server	at Broughton park with good reason	Back-up / reliability etc	
Repeater	As required. Probably 2, for Prestwell and Southwick	Needed if DSL used to reach most distant stations at a reasonable Mb/sec rate	800
DSLAM	1 at the telecoms centre	needed to link / route telecoms cables to ethernet / Internet at Broughton Park	750
Telephone socket adapters	1 per modem / router (6)	Needed to connect PCs to the internal telecoms cables	30
WiFi router / switch / access point	Possible at Broughton Park	If Broughton park is WiFi or WiFi / cable mix	100

small switches / hubs	1 for each office / station /as described	for networking printers etc.	25 each
micro filters	1 for each station	to connect phone line for DSL	10 each
patch panel	1 for main switch	connect cables to switch	100

Question Number	Answer	Mark
Activity 3 (part b)	For each of **two** items, look for explanations in terms of: allow e.c.f. from (a) • robustness. e.g. items being designed for a harsh environment, redundancy, duplication of components • reliability. e.g. long warranties • easy maintenance. e.g. remote access, simple part replacement, easy access to replace consumables • 'user friendly' (for items accessed by ordinary users). e.g. settings retained after power failure, critical access passworded / locked • value for money. e.g. special offers, manufacturer's cashback, extended warranty. **1 mark per explanation to a maximum of 3 for each item**	**(6)**
		Total marks for Activity 3: 17 marks

Question Number	Answer	Mark
Activity 4 (part a)	**Network design** Design for Daffodil line network 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 and a minimum of how each room or set of computers is connected. The diagram should show how switches/hubs, routers, repeaters, and different cable types are used together to create the network. There are many possible configurations for the network and thus any sensible layout is acceptable. The diagram should show all of the stations and separate rooms/areas at Broughton Park. Cabling to all rooms a (understandable, even if otherwise incorrect) **(1)** b shows all the four stations connected **(1)** c telecoms cable identified between stations **(1)** d shows repeaters between stations or shows use of ISDN **(1)** e DSLAM at telephone exchange **(1)** f PC, with printer and credit card terminal at each station **(1)** g PC with / connected to modem then telecoms at each station **a.** or ISDN adaptor **(1)** h Cat 5 / 6 cable identified inside stations and Broughton Park **(1)** Broughton Park i shows rooms for; • General Manager, PC and printer • Accountant and Personnel Officer, 2 PCs and printer • Secretaries, 2 PCs and printer • reception area, PC and printer • station master and assistant, 2 PCs and printer **(1)** j shows engineer's office (in engine shed), PC and printer **(1)** k shows telephone exchange **(1)** l colour laser printer in a sensible position **(1)** m colour laser printer networked **(1)** n server in sensible position **(1)** o switch / hub in sensible position **(1)** p sensible connection from server to router(s) **(1)** q router connecting to telecom centre / telephone exchange **(1)** r connection to external / Internet **(1)** **Maximum 15 marks**	**(15)**

Question Number	Answer	Mark
Activity 4 (part b)	Notes justifying each major decision made about the network design 1 mark for each sensible explanation which does not simply describe what is on the diagram. e.g. Put colour laser printer in the secretaries' office **= 0** Put colour laser printer in the secretaries' office because they are the ones most likely to need high quality / bulk / colour printing **= 1** Have a DSL repeater between Prestwell and Southwick **= 0** Have a DSL repeater between Prestwell and Southwick because Southwick is about 6Km from Broughton Park / the telephone exchange / the DSLAM and therefore the signal might fade / data transfer rate would be too low **= 1** **Maximum 6 marks**	**(6)**
		Total marks for Activity 4: 21 marks

Question Number	Answer	Mark
Activity 5 (Part a)	**Network addressing and protocols** Technical notes for the signals and telecoms specialists to include an explanation of: • the network class to be used in the scheme Class / class(s) used. **NO MARKS** Explanation of a class C address / other class(s) used. e.g. 192.168.0.0 to 192.168.255.255 **(1)** Reason for using that class(s) , e.g. size. **(1)** • DHCP and how it might be used in this scenario Simple description of DHCP, dynamic address allocated by DHCP server Reason for DHCP, saves setting up each PC with IP, gateway address, etc. Could be applicable at Broughton Park / for office PCs / a LAN Could be used for the private telecoms WAN (if candidate is using DSL) **1 mark per point to a maximum of 3 marks** **(3)** • what identification methods are used other than IP addresses **(1)** MAC address if using DSL **or** network user address if using ISDN **or** phone number if using ISDN • why another identification method is needed **(1)** DSL uses DHCP, with MAC address authentication **or** WANs use network user addresses on telecoms systems **or** DSL uses a version of PPP where MAC address are needed to establish the link **or** ISDN is a circuit switching system and dials a phone number rather than look for IP addresses • how the Daffodil line WAN fits into the standard OSI model and the protocols used uses lowest three layers, physical, datalink and network Uses X25 / X25bis or other suitable OSI protocol in the Physical layer. **Not** TCP/IP uses Link Access Procedure Balanced (LAPB) or other suitable OSI protocol in the Datalink layer. High Data Link Control, SDLC. uses X25 packet layer protocol (X25PLP) in the network layer **1 mark per point to a maximum of 3 marks** **(3)** **(10)**	

Question Number	Answer	Mark
Activity 5 (Part b)	An identification scheme, with an indication of IP addresses and other identification. **At Broughton Park** server address e.g. 192.168.1.3 **(1)** two router addresses e.g. 192.168.1.1 / 2 **(1)** Network printer address e.g. 192.168.1.* **(1)** addresses for PCs stated as DHCP or static **1)** **At stations** modem addresses at stations for DSL class C **or** telephone numbers for IDSN any reasonable **(1)** addresses for PCs at stations **(1)** **Other** DSLAM address treat as router for WAN **(1)** WAN on private telecoms class C e.g. 192.168.**10**.* **(1)** different to Broughton park and stations **1 mark per point to a maximum of 6.** **(6)**	
		Total marks for Activity 5: 16 marks

Question Number	Answer	Mark
Activity 6 (Parts a & b)	For each task there should be a clear explanation as to what needs to be undertaken. The tasks **must** be different for a) and b) and applicable to the commercial and volunteer lines respectively. 1 mark for each task **maximum 6 marks part a) - max 5 marks part b)** **(11)**	
The table outlines possible tasks and probable applicability to volunteer lines. All of the tasks are applicable to the commercial line. These are examples only and any reasonable suggestions should be given credit.		
NOTE. Candidates do not need to repeat the statement that the network manager would train the volunteer managers to do a task.		
NOTE. Candidates do not need to repeat the statement that the network manager would train the volunteer managers to do a task.		

Key task	*V*	*Network manager would:*
system configuration		a. Setting up a scope on the DHCP server
		b. Allocate computer names
user support and management		a. Set access privileges and user groups
		b. Allocate user names and passwords / simple help desk tasks
usage monitoring		a. Check (server logs) to identify peak loads / times
		b. Check for users filling hard drive space
fault detection		a. Monitoring / testing of hardware / switch / router
		b. Remote monitoring of printer web pages to pick up errors
backup and security procedures		a. Set up a 'described' backup system for 'described' data
		b. Set passwords / access rights on 'described item' used by volunteers
contingency planning	no	a. Establish a set of spares for vital / likely to break items
		b. Probably dealt with by the Daffodil line but accept sensible ideas
strategic long-term planning	no	a. Write documents detailing possible developments for the networks
		b. Probably dealt with by the Daffodil line but accept sensible ideas
software licensing	no	a. Keep a database of all software and licences used on the network
		b. Probably dealt with by the Daffodil line but accept sensible ideas
formulating a network code of practice	no	a. Write a document explaining Do's and Don'ts to new employees
		b. Probably dealt with by the Daffodil line but accept sensible ideas
user training		a. establish an intranet web site with guides to common tasks
		b. Produce a booklet for new volunteers explaining how to use the network
dealing with legislation.	no	a. Ensure compliance with 'stated legislation' by 'stated action'
		b. Probably dealt with by the Daffodil line but accept sensible ideas

Standard ways of working.
All printouts must have a header and a footer. The header must contain the activity number. The footer must contain your name, candidate number and centre number.

Minimum font size of 10 should be used for all word processed documents.

Total 2 marks

Total for paper: 90 marks.

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481

Email publications@linneydirect.com

Order Code UA021101 Summer 2009

For more information on Edexcel qualifications, please visit www.edexcel.com/quals

Edexcel Limited. Registered in England and Wales no.4496750
Registered Office: One90 High Holborn, London, WC1V 7BH