

Information & Communication Technology

Advanced GCE A2 H517

Advanced Subsidiary GCE AS H117

Mark Scheme for the Units

January 2010

H117/H517/MS/10J

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MARK SCHEME ON THE UNITS

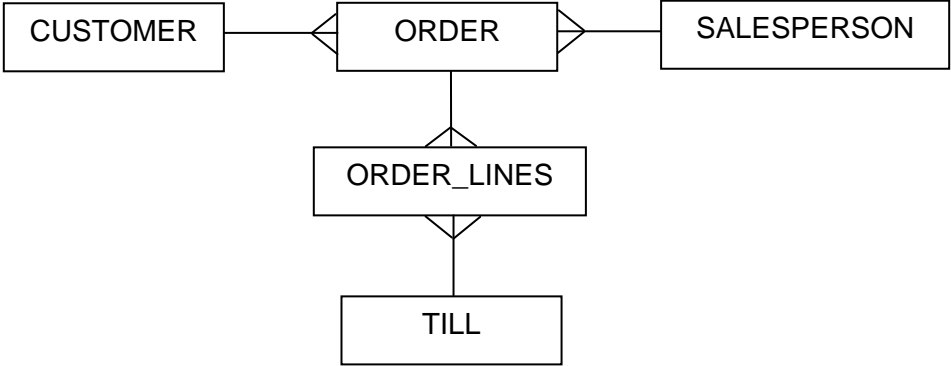
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G061 Information, Systems and Applications

Question	Expected Answer	Mks
1	<p>(a) Describe two advantages of using direct sources to gather information to be included in the user guide.</p> <p>2 from. 2 marks each:</p> <ul style="list-style-type: none"> • Accuracy (1) the information can be trusted to be correct (1) • Availability (1) only the material collected can be used (1) • Time (1) the material is immediately available/no delay in collection (1) • Relevant (1) only information needed can be collected (1) • Can change / expand questions (1) ask new questions not planned based on responses (1) 	[4]
	<p>(b) Define what is meant by the term knowledge.</p> <p>2 from:</p> <p>Application of information (1)</p> <p>Based on probabilities/rules (1)</p> <p>Knowledge changes with increased information (1)</p>	[2]
	<p>(c) Describe, using examples related to the user guide, how the following can affect the quality of information.</p> <p>2 marks each, 1 mark for how it affects it, 1 mark for example:</p> <p>Level of detail: too much/too little information cannot find out what you want (1) eg including details on all screenshots/not including every single option you need to click (1)</p> <p>Presentation: difficult to identify the information you want (1) eg table of contents of the user guide not in order (1)</p> <p>Relevance: additional information that has nothing to do with tills (1) eg information on selling techniques (1)</p>	[6]
	<p>(d) Identify one personnel, one software and one consumable cost that the company would incur when producing the user guide.</p> <p>1 mark each, examples:</p> <p>Personnel: training costs/staff wages/employing designer/creator (1)</p> <p>Software: purchase of DTP/WP (1)</p> <p>Consumable: electricity/ink/paper (1)</p>	[3]

Question	Expected Answer	Mks
2	(a) What is a backup? A copy (1)	[1]
	(b) Give one situation where the company might need to use the backup. One from, examples: Hard drive failure/fire/theft/corrupt (1)	[1]
	(c) The company has chosen to use a USB memory stick for storing the backup. Explain why this is an appropriate storage device to use. 1 from, two marks: <ul style="list-style-type: none"> • Capacity (1) the capacity of a memory stick is enough to back up the user guides (1) • Portability (1) it is small enough to remove it off site (1) • No additional hardware/software (1) only the memory stick is required reducing costs (1) 	[2]
3	(a) Describe one role of the operating system. 1 from, 2 marks each, eg: <ul style="list-style-type: none"> • To act as the interface (1) between hardware/application/user (1) • Controls allocation of usage/hardware/resources (1) eg memory/central processing unit (CPU) time/hard disk space/ peripheral devices (1) • Performs basic data management tasks (1) eg recognising input from the keyboard/ sending output to the display screen/keeping track of files and directories on the disk (1) 	[2]
	(b) Identify two other utility programs that could be installed on the computers. 2 marks, for example: File compression (1) Firewall (1)	[2]
	(c) Identify two specialist software applications that could be used by physically disabled users. 2 from examples: Sticky keys (1) Predictive text (1) Voice recognition software / speech to text (1) Reading text from screen / text to speech (1) Screen magnifier (1)	[2]

Question	Expected Answer	Mks
(d)	Identify two output devices that could be used with an electronic till. 2 from: Speaker (1) LED (1) Printer (1) Monitor/display (1)	[2]
(e)	Describe two reasons why the computers should be networked. 2 from, 2 marks each, for example: <ul style="list-style-type: none">• Sharing of files (1) more than one person can use the same file at the same time (1)• Monitoring (1) use of the network can be monitored to make sure users are not doing anything illegal (1)• Backup (1) can be centralised and scheduled to ensure nothing is lost (1)• Communication (1) sending emails/files to other users (1)• Centralised updates of virus/application (1) run on a single machine to affect all connected machines (1)• Sharing peripherals (1) allows higher quality printers to be purchased and all machines to use them (1)	[4]

Question	Expected Answer	Mks
<p>4</p> <p>(a)</p>	<p>Draw the entity relationship diagram making sure that the degree of each relationship is identified.</p>  <p>CUSTOMER – ORDER – SALESPERSON (1)</p> <p>TILL – ORDER_LINES - ORDER (1)</p> <p>CUSTOMER – ORDER 1:M (1)</p> <p>SALESPERSON – ORDER 1:M (1)</p> <p>ORDER – ORDER_LINES 1:M (1)</p> <p>TILL – ORDER_LINES 1:M (1)</p>	<p>[6]</p>
<p>(b)</p>	<p>Identify two characteristics of data in second normal form.</p> <p>2 from:</p> <p>Data is in 1st normal form (1)</p> <p>all its non-key attributes are dependent on the entire primary key /there are no partial key dependencies/all non-key fields can be found using the entire primary key(1)</p>	<p>[2]</p>

Question	Expected Answer	Mks
	<p>(c) Explain why text has been chosen as the data type for the telephone number. 1 from: So that the leading 0 can be stored (1) and the number stored correctly (1) So that spaces/brackets can be stored (1) so that the dialling code can be differentiated from the number (1) So that textual telephone numbers can be stored (1) e.g. 0800 REVERSE (1) There is no need for mathematical calculations to be performed (1) so a numerical field is not required (1)</p>	[2]
	<p>(d) Identify and describe two different validation routines that could be used for the telephone number field. 2 from, 2 marks each. 1 for identification, 2nd for description.</p> <ul style="list-style-type: none"> • Length check (1) ensure it cannot exceed maximum number of digits (1) • Format/picture check/input mask (1) make sure that only numbers are entered (1) • Presence check (1) to make sure something has been entered (1) 	[4]
5	<p>Explain three advantages of tailoring the form. 3 from, 2 marks each eg:</p> <ul style="list-style-type: none"> • Options that staff use present on form (1) users do not have to remember where they are (1) • House style (1) reinforced through form (1) • Validation checks (1) can be built in to reduce errors (1) • Layout/structure (1) can be same as paper form (1) 	[6]

Question	Expected Answer	Mks
6	<p>(a) Describe two other characteristics of spreadsheet software that the company could use to model future sales. 2 from, 2 marks each:</p> <ul style="list-style-type: none"> • (auto)Recalculation (1) when a value is changed all related functions/formulae automatically update (1) • Cell references (1) referencing other formulae/functions/cells for use in calculations (1) • Graphs (1) to show trends/predictions / give pictorial representation (1) • Variables (1) hold values to be changed by end user (1) • Relative/absolute referencing (1) referencing cells for use on formulae/functions (1) • Sequencing (1) creating single formulae/functions and copying them (1) • Conditional formatting (1) highlighting cells based on rules (1) 	[4]
	<p>(b) Explain three advantages to the company of using spreadsheet software to answer what-if questions. 3 from, 2 marks each:</p> <ul style="list-style-type: none"> • Make changes/alter the model (1) to try different scenarios (1) • See the effect of changes (1) without having to build a new model (1) • No additional cost (1) likely to already have the software (1) • Staff expertise (1) likely to be able to use spreadsheet software without additional training (1) 	[6]

Question	Expected Answer	Mks
7	<p>Describe the characteristics of a stock control system.</p> <p>Max 3 pairs from, allow mix and match eg:</p> <p>To have a list of all stock items (1) e.g name/ID number/bar code (1)</p> <p>To have a list of all components for the till (1) and a list of suppliers for the items (1)</p> <p>To know the minimum stock level required (1) and the maximum stock level required (1)</p> <p>To calculate how much to order (1) and automatically place and order (1)</p> <p>To know the delivery times for stock items that have been ordered (1) and those that are outstanding (1)</p> <p>To have links to the orders database (1) and know when stock is required (1)</p> <p>To update the stock records when deliveries are received (1) and reset ordering information (1)</p> <p>To link with the budgeting system (1) and allow them to pay invoices (1)</p> <p>To store previous sales figures (1) and predict stock requirements based on previous sales (1)</p> <p>To automatically place orders for stock (1) have manual override on items being ordered (1)</p> <p>To produce reports (1) eg stock on order/arrival dates/items in stock (1)</p>	[6]
8	<p>(a) Identify tasks that the following could be used for:</p> <p>1 mark for each e.g:</p> <p>Desktop Publishing Software: producing a calendar/business cards (1)</p> <p>Graphics Software: creating a logo/ editing a picture (1)</p>	[2]
	<p>(b) Describe two advantages to the company of being able to use macros in web page authoring software.</p> <p>2 from, 2 marks each:</p> <ul style="list-style-type: none"> • Complex elements can be created (1) eg hotspots (1) • Standard tasks can be recorded and repeated (1) the same result each time/consistency (1) • House style can be applied (1) no elements missed out (1) • Novice users can create web pages (1) no specific training required (1) 	[4]

Question	Expected Answer	Mks
9	<p>(a) Identify three elements that could be included in the style sheet. 3 from, eg Font size (1) Font style (1) Font colour (1) Page colour (1) Paragraph spacing (1) Margin spacing (1) Alignment (1)</p>	[3]
	<p>(b) Describe the difference between a style sheet and a template. 2 from: Style sheet is a written document (1) Template is a base document/pre made to be completed (1) Template is implemented style sheet (1)</p>	[2]
	<p>(c) Describe the characteristics of sections and footnotes and give an example of how the company could make use of them. 3 from, 2 for description, 1 for example: Sections: <ul style="list-style-type: none"> • Area of the document (1) grouped as a single unit (1) • Can have different orientation (1) landscape /portrait (1) • Can be on a new page (1) or within the same page (1) • eg Different footer descriptions for each section in user guide (1) Footnotes: <ul style="list-style-type: none"> • Number/letter in main document (1) referenced at the bottom of the page/end of chapter/section/document (1) • Additional information references to main text (1) where same identifier is found (1) • Sequential for each section/chapter (1) can restart at each chapter (1) • eg Reference from a book/additional information on a till (1) </p>	[6]

Question	Expected Answer	Mks
10	<p>The company has created a presentation that can be used at a trade fair. They could deliver the presentation using a computer and projector or printed acetate.</p>	
(a)	<p>Compare these two methods for delivering a presentation. 3 from, 1 mark each pair of statements e.g:</p> <ul style="list-style-type: none"> • Acetate allows you to skip slides without the audience knowing whereas with computer you can see the presenter changing slides (1) • The equipment required is a lot more for computer and therefore more chance of going wrong, computer and projector against a OHP (1) • Changes can be made straightaway to the acetate as it can be written on whereas although it is possible to make changes to the computer it is public (1) • Both can be created using a computer, the projector is displayed using the computer the acetate needs to be printed out (1) • The computer presentation can have additional features such as sound, movies whereas the acetate is limited to text and pictures (1) 	[3]
(b)	<p>Describe three advantages to the managing director of using manual transition to give the presentation. 3 from, 2 marks each:</p> <ul style="list-style-type: none"> • The pace can be controlled (1) the speaker can take as long as they want on each slide (1) • An action from the speaker/the presenter has to interact with the presentation (1) to move onto next/previous slide or skip slide (1) • Can allow audience participation (1) presentation does not progress until presenter advances (1) enables questions/discussions with audience (1) • Takes less time to set up (1) no timings or rehearsal required (1) 	[6]
(c)	<p>Give an example where the use of automatic transition would be suitable. 1 from, any valid example: Presentation at a trade fair above the stalls (1) Running on a computer in a window (1)</p>	[1]

Question		Expected Answer	Mks
	(d) (i)	<p>Describe what is meant by a non-linear presentation.</p> <p>2 from: A presentation which allows branches from a slide (1) A presentation where the order cannot be predicted (1) An order which is different for each user based on their choices (1)</p>	[2]
	(ii)	<p>Give one advantage of a non-linear presentation.</p> <p>1 from: Allows lots of presentations to be combined (1) Gives the user choice (1) Areas of interest can be focused on by user (1)</p>	[1]
	(iii)	<p>Give an example where the use of a non-linear presentation would be suitable.</p> <p>1 from e.g: Taking customers through different types of tills to find the one that suits them (1)</p>	[1]

Question	Expected Answer		Mks
11	<p>Discuss the impacts and consequences of the Regulation of Investigatory Powers Act (2000) on the employees of the company.</p> <p>It is a banded response, with 1,2,3 and 4.</p>		
9-11	4	<p>The candidate is able to discuss clearly the impact and consequences. Candidates will show a detailed level of understanding and be able to explain in detail both the effects and consequences of more than one position. Logical arguments are produced to demonstrate a clear understanding of the question. Ideas will be expressed clearly and fluently using specific knowledge to support and inform the discussion. There may be a reasoned conclusion. Subject specific terminology will be used accurately. There will be a few if any errors in spelling, punctuation and grammar.</p>	
6-8	3	<p>The candidate is able to discuss the impact(s) and consequences(s) Candidates will show a limited understanding and be able to explain, at least one impact and associated consequence of a given position, however explanations may lack specific detail and/or concentrate on either an impact or consequence with a limited explanation of the other. Subject specific terminology will be used accurately and appropriately. There may be errors in spelling, punctuation and grammar.</p>	
3-5	2	<p>The candidate is able to explain the impact(s) or consequences(s). Candidates will show a limited understanding and be able to explain, at least one impact or consequence of a given position, however explanations may lack specific detail. The explanation, though informed, may stray from the point but specific knowledge will be evident. Some subject specific terminology will be used. There may be errors in spelling, punctuation and grammar.</p>	
0-2	1	<p>The candidate is able to describe superficially the impact or consequences. The information may be poorly expressed and may be in the form of a list of points. Subject specific terminology may be limited or missing. Errors in spelling and grammar may be intrusive.</p>	

Question	Expected Answer	Mks
11	<p>Impacts and consequences may include: Loss of privacy for the individual, they have no legal recourse to being monitored and this brings about an environment of distrust between the management and employees. More care taken by the employee over emails and telephone calls as they know they might be monitored. More work gained from the employees as they will be monitored and cannot use the system for personal use without being caught. Greater satisfaction from the company that its industrial secrets are safe and not being passed on. Increased work from the employees as always on task. Increase in storage capacity and manpower to implement monitoring.</p> <p>1 mark in any band for a reasoned conclusion.</p>	<p>[11]</p>

Question	Expected Answer		Mks
12	<p>Discuss how possible future developments in communications technology could impact on how the company communicates with its customers.</p> <p>It is a banded response, with 1,2,3 and 4.</p>		
9-11	4	<p>The candidate is able to discuss clearly the impact and consequences. Candidates will show a detailed level of understanding and be able to explain in detail both the impacts and consequences of more than one position.</p> <p>Logical arguments are produced to demonstrate a clear understanding of the question.</p> <p>Ideas will be expressed clearly and fluently using specific knowledge to support and inform the discussion.</p> <p>There may be a reasoned conclusion.</p> <p>Subject specific terminology will be used accurately and appropriately.</p> <p>There will be a few if any errors in spelling, punctuation and grammar.</p>	
6-8	3	<p>The candidate is able to discuss the impact(s) and consequences(s)</p> <p>Candidates will show a limited understanding and be able to explain, at least one impact and associated consequence of a given position, however explanations may lack specific detail and/or concentrate on either an impact or consequence with a limited explanation of the other.</p> <p>Subject specific terminology will be used accurately and appropriately.</p> <p>There may be errors in spelling, punctuation and grammar.</p>	
3-5	2	<p>The candidate is able to explain the impact(s) or consequences(s)</p> <p>Candidates will show a limited understanding and be able to explain, at least one impact or consequence of a given position, however explanations may lack specific detail.</p> <p>The explanation, though informed, may stray from the point but specific knowledge will be evident.</p> <p>Some subject specific terminology will be used.</p> <p>There may be errors in spelling, punctuation and grammar.</p>	

Question	Expected Answer		Mks
	0-2	<p data-bbox="349 244 1319 411">1 The candidate is able to describe superficially the impact or consequences. The information may be poorly expressed and may be in the form of a list of points. Subject specific terminology may be limited or missing. Errors in spelling and grammar may be intrusive.</p>	
	<p data-bbox="237 515 770 547">Impacts and consequences may include:</p> <p data-bbox="237 585 1308 715">Use of websites to deliver updates to customers – need to secure website from threats/hackers/competition how to ensure customers know about the website and access it. Use of twitter/web 2.0 technology and associated impacts and consequences.</p> <p data-bbox="237 753 1308 919">Use of email – read receipts, attachments can be given – email on mobiles and appropriate formatting/links. Video conferencing with customers, can demonstrate products, reduction in emphasis on physical meeting including 3D/virtual imaging, traditional sales techniques not as relevant – need to develop new techniques that embrace the technology.</p> <p data-bbox="237 957 1249 1021">Use for mobile phones – not necessarily a good time to call, might be seen as harassment – use of company specific applications.</p> <p data-bbox="237 1059 842 1091">1 mark in any band for a reasoned conclusion.</p>		[11]

G063 Systems, Applications and Implications

Question			Gd	Expected Answer	Marks
1	(a)			Describe the following stages of the systems life cycle.	
1	(a)	(i)		Investigation and analysis Max two from: <ul style="list-style-type: none"> • establishes the nature of the problem (1) by collecting evidence for analysis (1) • reviews current solution/studies existing model (1) so that user requirements can be established (1) • analyses data from questionnaires/interviews/surveys/observations (1) to agree a requirements specification (1) • identification of position in systems life cycle (Max 1). 	[2]
1	(a)	(ii)		Design Max two from: <ul style="list-style-type: none"> • follows a set of objectives (1) to produce a solution that matches the user's requirements (1) • considers methods of data capture (1) and how data will be input, processed and stored (1) • describes data structures to be used (1) and how these relate to the processing required/queries required/reports required/required output (1) • user interface/planning of screens is considered (1) detailing how validation will be used (1) • describes error messages (1) and required feedback to/from the user (1) • test plan designed (1) for use in the testing of the entire system (1) • provides a detailed description (1) showing how the new system will be constructed (1) • identification of position in systems life cycle (Max 1). 	[2]

Question		Gd	Expected Answer	Marks
1	(b)		<p>Describe rapid application development (RAD).</p> <p>Any two from:</p> <ul style="list-style-type: none"> • a programming system used by programmers (1) • used to build working programmes (1) • a number of tools to help build GUIs (1) • a software development methodology (1) • involves iterative development (1) • involves the construction of prototypes (1). 	[2]
1	(c)		<p>State <u>two</u> methods used for installing a new computer-based information system.</p> <p>Max 1 from:</p> <ul style="list-style-type: none"> • parallel • direct • phased • pilot. 	[2]

Question		Gd	Expected Answer	Marks
2	(a)		<p>Identify three characteristics of a wide area network (WAN). Three from:</p> <ul style="list-style-type: none"> • geographically remote (1) • external telecommunications/external hardware (1) • connected by third party cables (1). 	[3]
2	(b)		<p>Describe a single-user operating system. Two from:</p> <ul style="list-style-type: none"> • can only be used by one person at any given time (1) different folders for different users (1) • likely to be multi-tasking (1) but for a single user (1) 	[4]
2	(c)		<p>Describe two disadvantages of using a peer-to-peer network in a school. One mark for point, one for expansion eg:</p> <ul style="list-style-type: none"> • installation has to happen on each machine (1) time consuming in terms of human resources (1) • back up is not centralised (1) greater responsibility on the individual user (1) • data can be stored on any computer (1) makes data difficult to find (1) • each computer may fulfil more than one role such as printing or file sharing (1) increasing the load on processing (1). 	[4]

Question		Gd	Expected Answer	Marks
3	(a)		<p>State <u>two</u> purposes for each of the following network components:</p> <p>Two from:</p> <p>Switch</p> <ul style="list-style-type: none"> • connects network devices/a number of ports used to facilitate connectivity (1) • stores addresses of each network item (1) • limits data traffic/controls access to devices (1) • directs traffic intelligently to destination (1). 	[2]
3	(b)		<p>Two from:</p> <p>Network interface card</p> <ul style="list-style-type: none"> • connects device to network (1) • converts digital signals on the network to correct format for computer (1) • MAC address uniquely identifies a computer on a network (1). 	[2]
3	(c)		<p>Two from:</p> <p>Repeater</p> <ul style="list-style-type: none"> • a device used to link two cable segments (1) • amplifies/retimes the signals (1) • extends the distance of a cable run/extends maximum cable length (1) • extends the range of the network (1) • retransmits the signal/passes signal on along cable (1). 	[2]

Question	Gd	Expected Answer	Marks
4		<p>Describe three disadvantages of using fibre optic cable to connect two buildings for a small business.</p> <p>One mark for point, one for expansion eg:</p> <ul style="list-style-type: none"> • cost of cable is more expensive (1) compared to wire media (1) • network portion needs to be down (1) if new nodes are to be spliced in (1) • breakage/damage to cable (1) entire cable needs re-laying (1) • initial set up cost (1) electronic signals require conversion (1) by a source and a receiver (1) at both ends of transmission (1) • optical regenerators/laser amplifiers needed (1) impurities in the glass and the wavelength used cause the signal to degrade over large distances (1) • physical disruption (1) if cable needs to be housed underground (1). <p>Max two points per disadvantage</p>	[6]
5		<p>Compare the use of email <i>and</i> fax for a car dealership sending clients' details to a finance company.</p> <p>Must be a comparison.</p> <p>Three from eg:</p> <ul style="list-style-type: none"> • <i>both</i> email and fax can be encrypted as the fax can be sent from and received by a computer (1) • email can be picked up anywhere <i>whereas</i> fax is usually sent to a location (1) • <i>both</i> email and fax can be picked up anywhere if the fax is scanned and forwarded to an email account (1) • <i>both</i> email and fax can be sent from anywhere in the world (1) • email requires username and password for access <i>whereas</i> fax can be picked up from anyone in the location (1) 	

Question		Gd	Expected Answer	Marks
5 cont.			<ul style="list-style-type: none"> email attachments can be edited <i>whereas</i> a fax can only be edited if it is re-typed (1) email can give a read receipt <i>whereas</i> fax can give a delivery receipt (1). 	[3]
6			<p>Describe <u>two</u> advantages for a network manager of joining a professional body such as the British Computer Society (BCS).</p> <p>One mark for point, one for expansion eg:</p> <ul style="list-style-type: none"> up to date information about ICT stops the network manager being out of date (1) enabling informed opinions on new developments (1) help with legal aspects (1) understanding application of the law (1) books on specific issues (1) produced by knowledgeable people/trusted sources (1) training courses/regular briefings (1) enabling the network manager to keep skills up to date (1) meetings with colleagues (1) lack of isolation/improves job related networking (1) listing members directory (1) local contacts/local help available from other members (1) recognised qualifications (1) qualifications trusted industry wide/standard known (1). 	[4]

Question		Gd	Expected Answer	Marks
			<p>Questions 7-12 concern an airline company which specialises in journeys to Europe.</p> <p>The management of the airline needs to update the check-in system to deal with passengers more efficiently. They have employed a consultancy firm to investigate the current system and design the updates.</p>	
7	(a)		<p>Describe the role and responsibilities of a project manager.</p> <p>One mark for point, one for expansion eg:</p> <ul style="list-style-type: none"> • project manager assembles their team (1) individuals with the skills base they require (1) • plans and controls the whole project (1) identifying and rectifying potential problems (1) • responsible for setting deadlines (1) so that the project is delivered on time (1) • responsible for ensuring budgets are adhered to (1) to prevent exceeding the cost agreed with the client (1) • ensure that project reports and documentation are written up (1) by co-ordinating the work of different teams (1) • determines when to move to the next step (1) providing progress reports as the project develops (1). 	[4]

Question		Gd	Expected Answer	Marks
7	(b)		<p>Describe three different methods a systems analyst might use when investigating the current system. One mark for method, one for expansion eg:</p> <ul style="list-style-type: none"> • questionnaires (1) set of questions on a page sent anonymously/used when only a small amount of information is required from large numbers of people/gathers factual information/uses exactly the same questions for each person (1) • interviews (1) information is gathered directly from the person(s) concerned with the current system/can be steered according to responses/provides individual responses (1) • meetings (1) addresses individuals or groups of people/body language can be seen/used to gather or impart information (1) • document analysis (1) builds a picture of information flow from input to output/identifies inertia within a system/provides opportunities for re-design (1) • observation (1) watching/noting check-in procedure (1) <p>Three different methods must be described for full marks</p>	[6]

Question		Gd	Expected Answer	Marks
7	(c)		<p>Explain why the check-in system will have to use real-time processing.</p> <p>Four from;</p> <ul style="list-style-type: none"> • the data is processed at the time required (1) • response time by the system is critical (1) • delays in processing would prove unacceptable, resulting in long queues (1) • large numbers of passengers have to go through check-in within a given time slot (1) • real-time processing will allow several employee transactions to take place simultaneously (1) • a real-time system will respond immediately to the data entered by the employee (1). <p>Allow examples</p>	[4]
7	(d)		<p>Explain why the check-in system is networked.</p> <p>Any four from:</p> <ul style="list-style-type: none"> • reduces the need for data duplication (1) so the integrity of the data increases (1) • different users can have access to the same information (1) data can be exchanged (1) • changes in seating allocation/special requirements can be communicated immediately (1) aids communication flow from check-in to embarkation (1) • peripherals can be shared (1) output can be directed to a specific location/individual (1) • shared processing activity (1) ensures efficiency within the system (1) 	

Question		Gd	Expected Answer
7	(d) cont.		<ul style="list-style-type: none"> centralised back-up/storage (1) data can be accessed from any node (1) centralised security/virus checking (1) software updates can be rolled out easily (1). <p>Allow examples related to the context</p>
8			<p>Describe the internal resources of the airline company.</p> <p>Personnel</p> <ul style="list-style-type: none"> the airline company's staff (1) promoted to tasks that benefit ability through training (1) the airline company's managers (1) part of a hierarchical structure responsible for planning and decision making (1) the employees of the airline company (1) operational staff producing goods or supplying services (1) <p>Technology</p> <ul style="list-style-type: none"> communications infrastructure (1) enabling the airline's staff to carry out their role (1) <p>Equipment</p> <ul style="list-style-type: none"> the check-in system/bar code readers/scales (1) used to run the airline (1) <p>Accommodation</p> <ul style="list-style-type: none"> check-in counters/staff room (1) can be owned or leased for a fixed period (1) airport accommodation large enough (1) to house human/technological/operational resources (1). <p>Max 4 marks for any one description.</p>

Question			Gd	Expected Answer	Marks
9				At check-in, passengers are asked for details which are entered on screen by an airline employee.	
9	(a)	(i)		Describe a mental model. One mark for point, one for expansion eg: <ul style="list-style-type: none"> • a model the end user creates in their mind / preconceived ideas(1) of how the system should work (1) • translates human intention (1) into appropriate system activity (1). 	[2]
9	(a)	(ii)		Describe how a mental model can be applied to the design of a user interface. <ul style="list-style-type: none"> • mental models vary between users (1) therefore the interface must reflect the perception of the majority of users/maintain an appropriate/natural way of completing an action (1) • auditory indicators (1) provide prompts for the user (1) • visual indicators (1) such as red for bad, green for good can be applied by the designer into error messages (1) • the order in which a form is accessed is matched by the tab key presses (1) • icons on toolbars (1) graphics that give a preconception of use (1) 	[4]

Question		Gd	Expected Answer	Marks
9	(b)		<p>Describe and give examples of <u>two</u> different methods of validation which may be used in the check-in system.</p> <p>One mark for method, one for expansion, one for example:</p> <ul style="list-style-type: none"> • range check (1) used to validate a data value that lies between two fixed values (1) for example, number of passengers (1) • type check (1) used to ensure the data being entered is the correct data type for the field (1) for example, number of suitcases being checked-in (1) • presence check (1) insists that a value is entered into the field (1) for example, asking if the passenger has pre-booked seats (1) • length check (1) ensures that data can not be more than a set number of characters (1) for example, passport number (1) • lookup check (1) compares the value entered with a list of values in a separate table (1) for example, destination airport (1) • picture check (1) ensures the location of letters and numbers are correct in a set pattern (1) for example, flight number (1) • check digit (1) calculated from other digits and their position in a sequence (1) a change in the numbers or their position prevents the check digit matching and produces an error (1) for example, booking reference number (1). <p>Max 3 per method</p>	[6]

Question			Gd	Expected Answer	Marks
9	(c)	(i)		<p>Compare the use of command line and forms as methods of dialogue that the employees might use to interact with the check-in system.</p> <p>Must be a comparison. Three from eg:</p> <ul style="list-style-type: none"> • command line interfaces use a prompt which expects the user to input an appropriate command <i>whereas</i> forms present the user with dialogue boxes which require the input of text before proceeding (1) • a command line interface allows the user to decide the nature of the next input <i>whereas</i> forms decide the nature of the next response via a pre-determined sequence of inputs (1) • forms can utilise a keyboard and a mouse (1) <i>whereas</i> command line interfaces only require a keyboard (1) • the input on a command line interface is a complete task request in itself <i>whereas</i> only when the user considers the form to be a complete set of requests is it submitted to the system (1) • command line interfaces do not allow a user to proceed unless the appropriate commands or syntax are used <i>similarly</i> inputs on a form can be validated before a user progresses any further (1). 	[3]
9	(c)	(ii)		<p>Describe <u>one</u> disadvantage of using speech as a method of input for the check-in system.</p> <p>One mark for point, one for expansion eg:</p> <ul style="list-style-type: none"> • audibility (1) the user would have to ensure they spoke loud enough for their instructions to be recognised (1) • accents (1) the check-in system may not discern between different pronunciations of words (1) 	

Question			Gd	Expected Answer	Marks
9	(c)	(ii) cont.		<ul style="list-style-type: none"> • speed of input (1) the need for faster input using speech may be at the expense of accuracy (1) • interference (1) in a public place such as an airport, background noise could affect the accuracy of input to the system (1). 	[2]
9	(c)	(iii)		<p>Give one other method of dialogue that could be used to interact with the check-in system.</p> <p>One from eg:</p> <ul style="list-style-type: none"> • menus (1) • text based natural language (1) • biometric (1) • GUI 	[1]
9	(d)			<p>Describe how data entered onto the system can be kept confidential.</p> <p>eg:</p> <ul style="list-style-type: none"> • access controls (1) login groups/usernames/access rights used to control access to parts of the system (1) • restrict program usage (1) impose levels of access within programs (1) • firewalls (1) to protect the system from hacking and viruses (1) ensures users can only access the parts of the system they are authorised to (1) • audit logs (1) provide evidence of system activity (1) can be used to restrict users to particular hours (1) used to track misuse (1) • data encryption (1) translates data/scrambles data into an unintelligible form (1) secures data by making it unreadable without a key (1) • passwords (1) to prevent unauthorised access to a workstation (1) 	[4]

Question	Gd	Expected Answer	Marks
9 (e)		<p>Describe the role of reviews during the life of this system.</p> <ul style="list-style-type: none"> • system is compared against requirements specification (1) to ensure nothing has been omitted from the original set of requirements (1) • budget (1) the system needs to remain within the financial boundaries set for its introduction and continued working (1) • time scale (1) the system's development and introduction needs to adhere to specific timings in order to avoid financial loss (1) • continued satisfactory performance needs to be ensured (1) problems can be reported early on(1) • reviews are scheduled as the needs of the airline changes (1) external legislation may require the system to change (1) • the airline will be able to identify out-dated parts of the system (1) as new hardware and software developments become available (1) • the mode of operation may change (1) new functions may need factoring in (1) • the staff can be consulted (1) fosters ownership by the users (1). 	[6]
9 (f)		<p>Describe perfective maintenance.</p> <p>One mark for stating what perfective maintenance is, one for exemplification eg:</p> <ul style="list-style-type: none"> • altering the system to make it easier to use and to improve performance (1) • procedures may be re-written to reduce system response time (1) • user interface may be adapted to make a task easier to perform (1) • data may be restructured to reduce storage requirements/search times (1). 	[2]

Question	Gd	Expected Answer	Marks
10		<p>The management of the airline wants to introduce new working practices and has asked the consultancy to create custom-written software-based training for employees.</p> <p>Explain the advantages of selecting a custom-written solution.</p> <p>Max 4 for any one explanation:</p> <ul style="list-style-type: none"> • the company gets exactly what it wants (1) the solution performs only the functions the airline needs it to (1) • the final system exactly matches the user's requirements (1) no redundant features taking up memory (1) • the system can be modified over time to stay compatible with the needs of the airline (1) internal and external changes can be reflected in the training package with updates being written specifically to suit (1) • the software is likely to be compatible with existing systems (1) installing and running the training package should not prove problematic and give immediate use (1) • it can be sold to other similar companies once it is produced (1) the development costs can be recouped as the airline will own the copyright (1) • the footprint is likely to be smaller than an off-the-shelf solution (1) saving costs on memory/storage solutions for multiple users (1) • levels of specialist support will involve direct contact with the supplier (1) specific problems can be answered by the developers who will provide an immediate fix for bugs (1). 	[6]

11		Discuss how the software-based training system will help the employees adapt to new ways of working.		
		It is a 4 band response mark scheme with a mark possible for a conclusion giving a total of 11.		
9-11	4	<p>The candidate is able to discuss clearly the impact and consequences. Candidates will show a detailed level of understanding and be able to explain in detail both the impacts and consequences of more than one position.</p> <p>Logical arguments are produced to demonstrate a clear understanding of the question.</p> <p>Ideas will be expressed clearly and fluently using specific knowledge to support and inform the discussion.</p> <p>There may be a reasoned conclusion.</p> <p>Subject specific terminology will be used accurately and appropriately.</p>		
6-8	3	<p>The candidate is able to discuss the impact(s) and consequences(s) Candidates will show a limited understanding and be able to explain, at least one impact and associated consequence of a given position, however explanations may lack specific detail and/or concentrate on either an impact or consequence with a limited explanation of the other.</p> <p>Subject specific terminology will be used accurately and appropriately.</p>		
3-5	2	<p>The candidate is able to explain the impact(s) or consequences(s) Candidates will show a limited understanding and be able to explain, at least one impact or consequence of a given position, however explanations may lack specific detail.</p> <p>The explanation, though informed, may stray from the point but specific knowledge will be evident.</p> <p>Some subject specific terminology will be used.</p>		
0-2	1	<p>The candidate is able to describe superficially the impact or consequences. The information may be poorly expressed and may be in the form of a list of points.</p> <p>Subject specific terminology may be limited or missing.</p>		[11]

11 cont.	<p>Impacts may include;</p> <ul style="list-style-type: none">• standardisation of training• ability to self pace through materials• accessibility of materials• ability to repeat sections• could be used as part of a wider training programme• lack of consultation with trainer• changes in working practice. <p>Consequences for discussion may include;</p> <ul style="list-style-type: none">• methods of task completion by individuals• motivation of workers undergoing training• individuals learning styles and interactivity• further training requirements• cost of implementation• human-computer interaction• updating information.	
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12	Discuss the importance of consultation when managing change.			
	It is a 4 band response mark scheme with a mark possible for a conclusion giving a total of 11.			
9-11	4	<p>The candidate is able to discuss clearly the impact and consequences. Candidates will show a detailed level of understanding and be able to explain in detail both the impacts and consequences of more than one position.</p> <p>Logical arguments are produced to demonstrate a clear understanding of the question.</p> <p>Ideas will be expressed clearly and fluently using specific knowledge to support and inform the discussion.</p> <p>There may be a reasoned conclusion.</p> <p>Subject specific terminology will be used accurately and appropriately.</p> <p>There will be a few if any errors in spelling, punctuation and grammar.</p>		
6-8	3	<p>The candidate is able to discuss the impact(s) and consequences(s) Candidates will show a limited understanding and be able to explain, at least one impact and associated consequence of a given position, however explanations may lack specific detail and/or concentrate on either an impact or consequence with a limited explanation of the other.</p> <p>Subject specific terminology will be used accurately and appropriately.</p> <p>There may be errors in spelling, punctuation and grammar.</p>		
3-5	2	<p>The candidate is able to explain the impact(s) or consequences(s) Candidates will show a limited understanding and be able to explain, at least one impact or consequence of a given position, however explanations may lack specific detail.</p> <p>The explanation, though informed, may stray from the point but specific knowledge will be evident.</p> <p>Some subject specific terminology will be used.</p> <p>There may be errors in spelling, punctuation and grammar.</p>		
0-2	1	<p>The candidate is able to describe superficially the impact or consequences. The information may be poorly expressed and may be in the form of a list of points.</p> <p>Subject specific terminology may be limited or missing.</p> <p>Errors in spelling and grammar may be intrusive.</p>		[11]

12 cont.	<p>Impacts may include:</p> <ul style="list-style-type: none">• methods of consultation• timing of changeover• method of changeover. <p>Consequences for discussion may include:</p> <ul style="list-style-type: none">• staff supporting management• which staff are affected• workload for staff.	
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Grade Thresholds

Advanced GCE ICT (H117)
January 2010 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	A	B	C	D	E	U
G061	Raw	120	73	63	53	43	33	0
	UMS	120	96	84	72	60	48	0
G063	Raw	120	68	60	52	45	38	0
	UMS	120	96	84	72	60	48	0
G064	Raw	80	64	56	48	40	32	0
	UMS	80	64	56	48	40	32	0

Specification Aggregation Results

Overall threshold marks in UMS (i.e. after conversion of raw marks to uniform marks)

	Maximum Mark	A	B	C	D	E	U
H117	200	160	140	120	100	80	0

The cumulative percentage of candidates awarded each grade was as follows:

	A	B	C	D	E	U	Total Number of Candidates
H117	3.9	16.5	51.9	84.3	97.2	100	412

412 candidates aggregated this series.

For a description of how UMS marks are calculated see:

http://www.ocr.org.uk/learners/ums_results.html

Statistics are correct at the time of publication.

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