2010 Information Systems

Advanced Higher

Finalised Marking Instructions

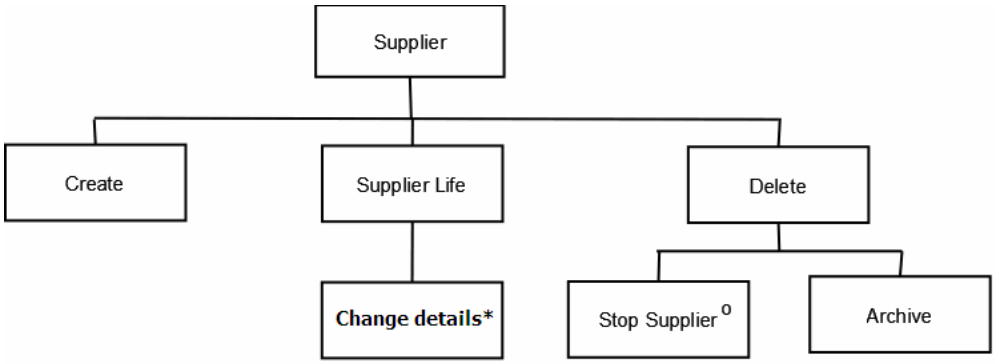
Question 1

<table>
<tr><th>Type & Source</th><th>Part</th><th>Marking Instructions</th></tr>
<tr><td>KU
DBAD</td><td>(a)</td><td>For example:
• Economic: The cost (of the development)/benefit (to the company) ratio must be favourable before development proceeds.
• Time: the timescale proposed by the client must be achievable.
• Legal: any legal issues relating to the development (eg storage of data) must be able to be addressed.
• Technical: technical issues (eg input/output devices exist, programmer skills to deliver) must be identified as achievable prior to the start of development.
Award 1 mark each for accurate description of any two aspects of a feasibility study. Note that no marks should be awarded for simply naming aspects of a feasibility study. Max 2 marks.</td></tr>
<tr><td>KU
DBAD</td><td>(b)</td><td>For example:
• identifies functional requirements: these may be related to inputs, processes, outputs, and state what it is that the system must do
• identifies restrictions on development such as boundaries, eg hardware, software to run on etc, that the final information system development will adhere to.
Award 1 mark each for an accurate description of each aspect of the system specification. Max 2 marks.</td></tr>
<tr><td>KU
DBAB</td><td>(c)</td><td>For example:
• significantly less time is required to understand graphical algorithms that reading through lengthy passages of structured English
• provides a visual representation which is often easier to understand
Award 1 mark for accurate description of any valid advantage.</td></tr>
<tr><td>KU
DBAD</td><td>(d)
(i)</td><td>Conversion technique should be named. Any technique is acceptable:
Pilot, Phased, Parallel or Direct
Award 1 mark</td></tr>
<tr><td>KU
DBAD</td><td>(d)
(ii)</td><td>The implication should be based on the chosen method of implementation. For example:
For direct conversion to be successful, all aspects of the system must be thoroughly tested and documented before conversion can take place.
Award 1 mark each for correct accurate description of a relevant implication for named conversion method.</td></tr>
<tr><td>KU
DBAD</td><td>(e)</td><td>Correct categorising of tasks is provided below:
<table>
<tr><th>Logical Design</th><th>Physical Design</th></tr>
<tr><td>Produce Data Flow Diagrams</td><td>Identifying the database product with which to build the system.</td></tr>
<tr><td>Define keys and constraints</td><td>Security features and levels of user access</td></tr>
<tr><td colspan="2">Award 3 marks for all 4 correct; award 2 marks for any 3 correct; award 1 mark for any 2 correct; award 0 marks otherwise. Max 3 marks.</td></tr>
</table></td></tr>
</table>

Question 1 continued

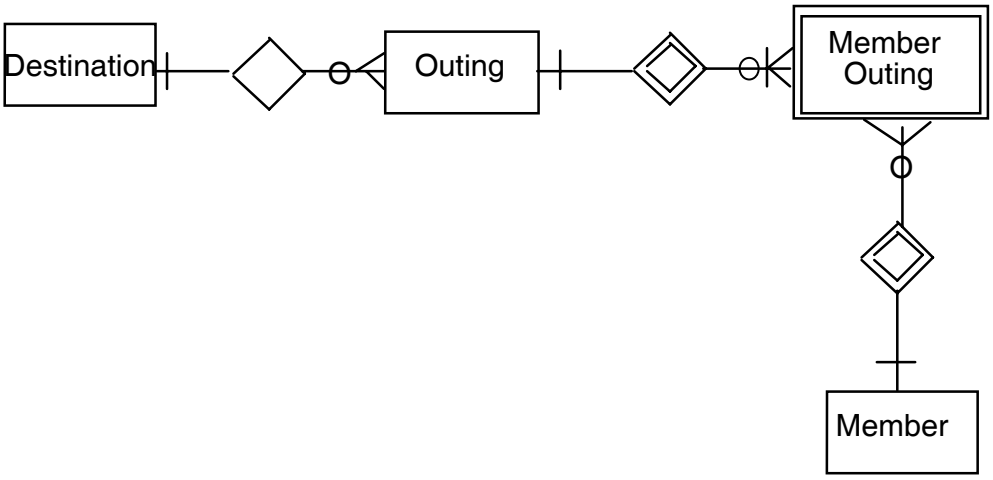
Type & Source	Part	Marking Instructions
KU DBIT	(f) (i)	Answer must relate to use made. For example: The user documentation describes each feature of the program, and helps the user to use the software successfully. **Award 1 mark for accurate description of use made.**
KU DBIT	(f) (ii)	Answer must relate to use made. For example: System Design Documentation is used to record the development of the system from its design through to its evaluation. All models of the system are included in the system design documentation so that future maintenance teams have a record of how the system was developed to enable them to carry out maintenance tasks successfully. **Award 1 mark each for accurate description of use made.**
KU DBIT	(g) (i)	For example: • Use of suitable attribute names so data items may be quickly identified. • Descriptions of all attributes provided in table structures. • Modular approach to scripting/coding. • Commentary provided to explain any scripting or coding. • Quality of documentation. • Any other suitable answer **Award 1 mark for accurate description of any aspect of maintainability.**
KU DBIT	(g) (ii)	For example: Ease of use may be important to the client as: • Training costs for the client are reduced if the information system is straight forward to use • A product that is easy to use will increase efficiency of staff • New staff will not take long to become a productive member of staff • Other possible answers **Award 1 mark for accurate description of any relevant issue.**

Question 2

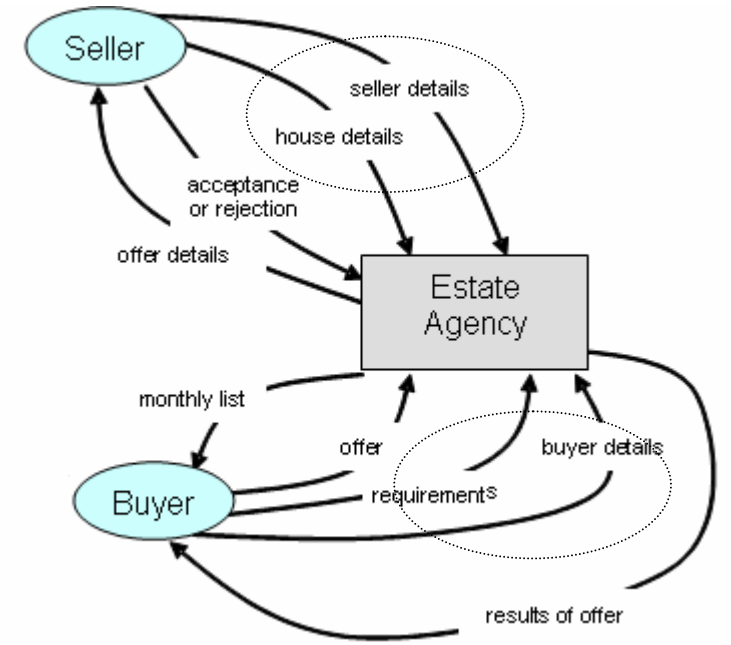
<table>
<tr><th>Type & Source</th><th>Part</th><th>Marking Instructions</th></tr>
<tr><td>KU
DBAD</td><td>(a)
(i)</td><td>For example:
Model that is used to record all external events and how they affect the entities within the system.
Award 1 mark for accurate explanation.</td></tr>
<tr><td>PS
DBAD</td><td>(a)
(ii)</td><td>For example:
New customer: a create within the entity will occur
Existing customer: a read of the customer entity will occur
Edit existing customer details: a modification of customer entity will occur
Award 1 marks each for any two. Max 2 marks.</td></tr>
<tr><td>PS
DBAD</td><td>(b)</td><td>Correct answer shown below:
<table>
<tr><th>Branch</th><th>Staff</th><th>Customer</th><th>Order</th><th>Appointment</th><th>Prescription</th></tr>
<tr><td>R</td><td>R</td><td>R</td><td>C</td><td></td><td>R</td></tr>
</table>
Award 1 mark for create Order <u>and</u> no effect in Appointment; award 1 mark for correct effect (Read as indicated in table above) in Branch, Staff, Customer and Prescription. Max 2 marks.</td></tr>
<tr><td>KU
DBAD</td><td>(c)
(i)</td><td>For example:
Entity/event matrix shows all entities in a system whereas entity life history diagram shows only one entity.
Entity life history diagram indicates optional and mandatory events whereas entity/ event matrix does not.
Entity life history diagram indicates repeated events whereas entity/event matrix does not.
Award 1 mark for any valid difference.</td></tr>
<tr><td>PS
DBAD</td><td>(c)
(ii)</td><td>Correct Entity Life History diagram:
 

Award 1 mark for repetition; award 1 mark for optionality; award 1 mark for archive; award 1 mark for correct structure. Max 4 marks.</td></tr>
<tr><td>PS
DBIT</td><td>(d)</td><td>For example:
Extreme: -12, +12
Normal: eg -7, +3
Exceptional (numeric): eg -14, +21
Exceptional (non-numeric): eg A, +
Award 3 marks for accurate data values for all 4 categories; award 2 marks for any 3 categories correct; award 1 mark for any 2 categories correct; award 0 marks otherwise. Note that both extreme values must be indicated; however, only 1 example from every other category need be indicated. Max 3 marks.</td></tr>
</table>

Question 3

Type & Source	Part	Marking Instructions
PS DBAD	(i) (ii) (iii)	 **Award max 8 marks as follows:** **Award 1 mark for all entities appropriately named and correctly related; award 0 marks otherwise.** **Award 2 marks for cardinality correct; award 1 mark for maximum of one error; award 0 marks otherwise; max 2 marks** **Award 1 mark for correctly identifying weak entity; award 1 mark for both weak relationships correctly indicated; max 2 marks** **Award 1 mark per relationship for correctly indicating mandatory/optional nature of relationship correctly; max 3 marks.** **Note:** the question doesn't state whether or not each outing must have a member going on it – it is possible that an outing is arranged that no-one wants to go on. For this reason, relationship between Outing and MemberOuting may be mandatory or optional. Both should be accepted.

Question 4

Type & Source	Part	Marking Instructions
KU DBAD	(a)	For example: Level 0 DFD has only single process, whereas level 1 DFD has more than one. Level 1 DFD shows internal data stores Level 1 DFD shows internal data flows. **Award 1 mark each for any two valid differences. Max 2 marks.**
PS DBAD	(b)	Correct level 0 DFD:  **Award max 6 marks as follows:** • **Award 2 marks for correct structure (ie 1 single process with no data stores); award 1 mark for maximum of 1 error in structure; award 0 marks otherwise.** • **Award 1 mark for external entities correctly indicated; award 0 marks otherwise.** • **Award 3 marks for all data flows correctly indicated; award 2 marks for max of 1 omission; award 1 mark for max 2 omissions; award 0 marks otherwise.** **Note: inputs 'seller details' and 'house details' from seller source may be indicated as single data flow; similarly with 'requirements' and 'buyer details' from buyer source. In both cases, this is acceptable.**
KU DBAD	(c) (i)	For example: Items that should be indexed are primary and foreign keys and other attributes which will be used frequently in searches. **Award 1 mark**
KU DBAD	(c) (ii)	For example: • Attributes should not be indexed if there are going to be frequent changes to an entity, eg by adding new instances, changing them or deleting them, since updating the indexes takes time. • Attributes do not need indexed if there are only going to be a small number of instances of an entity. **Award 1 mark for any 1 correct answer.**

Question 5

Type & Source	Part	Marking Instructions
PS DBAD		See correct solution on next page **<u>Solution with 3 separate UNFs</u>** **Award max of 15 marks as follows:** UNF: **award 1 mark** for each correct UNF with PK and repeated group correctly indicated in each case. **Max 3 marks.** 1NF: **award 1 mark** for forming new entity to deal with BranchProduct repeating group; **award 1 mark** for correct PK and FK for this entity; **award 1 mark** for forming new entity to deal with BranchSaleProduct repeating group; **award 1 mark** for correct PK and FK for this entity. **Max 4 marks.** 2NF: **award 1 mark** for forming new entity to deal with Product partial dependency; **award 1 mark** for correct PK and FK link for this entity; **award 1 mark** for forming new entity to deal with BranchProduct partial dependency; **award 1 mark** for correct PK and FK link for this entity. **Max 4 marks.** 3NF: **1 mark** for forming new entity to deal with Salary transitive dependency; **award 1 mark** for correct PK and FK link for this entity. **Max 2 marks.** Consolidation: **award 2 marks** for removing duplicate BranchProduct entity, for forming additional Branch ID FK in Employee entity and BranchSale entity and additional Product No. FK in BranchSaleProduct entity; **award 1 mark** for any 2 correct; **award 0 marks** otherwise. **Max 2 marks.** **<u>Solution with single UNF</u>** **Award max of 15 marks as follows:** UNF: **award 1 mark** for correct UNF with PK and Product repeated group correctly indicated; **award 1 mark** for correctly indicating inner Sale repeating group; **award 1 mark** for correctly indicating Employee repeating group. **Max 3 marks.** 1NF: **award 1 mark** for forming new entity to deal with BranchProduct repeating group; **award 1 mark** for correct PK and FK for this entity; **award 1 mark** for forming new entity to deal with BranchSaleProduct repeating group; **award 1 mark** for correct PK and FK for this entity; **award 1 mark** for forming new entity to deal with BranchEmployee repeating group; **award 1 mark** for correct PK and FK for this entity; **Max 6 marks.** 2NF: **award 1 mark** for forming new entity to deal with Product partial dependency; **award 1 mark** for correct PK and FK link for this entity; **award 1 mark** for forming new entity to deal with BranchProduct partial dependency; **award 1 mark** for correct PK and FK link for this entity. **Max 4 marks.** 3NF: **1 mark** for forming new entity to deal with Salary transitive dependency; **award 1 mark** for correct PK and FK link for this entity. **Max 2 marks.**

Question 5 continued

UNF	1NF	2NF	3NF	Consolidation
Branch ID Location Product Num. Description Make Warranty Stock Qty Price	Branch ID Location Branch ID * Product Num. Description Make Warranty Stock Qty Price	Branch ID Location Branch ID * Product Num. * Stock Qty Price Product Num. Description Make Warranty	Branch ID Location Branch ID * Product Num. * Stock Qty Price Product Num. Description Make Warranty	Branch ID Location Branch ID * Product Num. * Stock Qty Price Product Num. Description Make Warranty
Employee ID Name Job Title Salary Branch ID	Employee ID Name Job Title Salary Branch ID	Employee ID Name Job Title Salary Branch ID	Employee ID Name Job Title * Branch ID Job Title Salary	Employee ID Name Job Title * Branch ID * Job Title Salary
Branch ID Sale Num. Date Time Product Num. Sale Qty Price ~~Cost~~ ~~Total Cost~~	Branch ID Sale Num. Date Time Branch ID * Sale Num. * Product Num. Sale Qty Price	Branch ID Sale Num. Date Time Branch ID * Sale Num.* Product Num. Sale Qty Branch ID * Product Num. * Price	Branch ID Sale Num. Date Time Branch ID * Sale Num.* Product Num. Sale Qty ~~Branch ID~~ * ~~Product Num.~~ * Price	Branch ID Sale Num. Date Time Branch ID * Sale Num.* Product Num. * Sale Qty

Question 5 continued

UNF	1NF	2NF	3NF
Branch ID Location Product Num. Description Make Warranty Stock Qty Price Sale Num. Date Time Sale Qty ~~Cost~~ ~~Total Cost~~ Employee ID Name Job Title Salary	Branch ID Location Branch ID * Product Num. Description Make Warranty Stock Qty Price Branch ID * Product Num. Sale Num. Date Time Sale Qty Branch ID * Employee ID Name Job Title Salary	Branch ID Location Branch ID * Product Num. * Stock Qty Price Product Num. Description Make Warranty Branch ID * Product Num. * Sale Num. * Sale Qty Branch ID * Sale Num. Date Time Branch ID * Employee ID Name Job Title Salary	Branch ID Location Branch ID * Product Num. * Stock Qty Price Product Num. Description Make Warranty Branch ID * Product Num. * Sale Num. * Sale Qty Branch ID * Sale Num. Date Time Branch ID * Employee ID Name Job Title * Job Title Salary

Question 6

Type & Source	Part	Marking Instructions
KU DBAD DBIT	(a) (i)	Testing **Award 1 mark**
KU DBAD	(a) (ii)	Corrective maintenance is now needed. **Award 1 mark** This is needed to fix an error that wasn't discovered when initial testing was carried out. **Award 1 mark. Max 2 marks.**
PS ISI	(b) (i)	Multimodal **Award 1 mark** The method of data entry combines a graphical interface with sensory interface. **Award 1 mark for accurate explanation. Max 2 marks.**
PS ISI	(b) (ii)	Agent-based interface **Award 1 mark**
PS DBIT	(c) (i)	Table/entity **Award 1 mark**
PS DBIT	(c) (ii)	Query **Award 1 mark**
PS ISI	(d)	For example: • inconsistent button placement across the 2 screens • inconsistent use of fonts across the 2 screens • inconsistent use of formatting for numbers in screen 1 • inconsistent use of leading lower case letters on command buttons (inconsistent with industry standard) **Accept statements rather than descriptions. Award 1 mark each of any two correct issues. Max 2 marks.**
KU ISI	(e) (i)	For example: • User performance data logging involves having the computer automatically collect statistics about the detailed use of the system. • Surveys are used to obtain information from users (or potential users) at various stages of the development process. Users are asked questions about the system and their responses are recorded. **Award 1 mark for accurate description of each method. Max 2 marks.**
PS ISI	(e) (ii)	User performance data logging For example: When the actual use of the system is logged, this information is particularly useful because it shows how users perform their actual work and because it is relatively easy to automatically collect data from a large number of users working under different circumstances. **Award 1 mark for correct method; award 1 mark for reason given. Max 2 marks.**

Question 7

Type & Source	Part	Marking Instructions
KU ISI	(a)	For example: Paper prototyping involves using a paper mock-up of the look, feel and functionality of the proposed system's interface for example by using sketches and storyboards. **Award 1 mark for accurate explanation.**
KU ISI	(b) (i)	For example: Eye tracking allows testers to identify what participants look at during the course of a usability test. This enables developers to determine which areas of the interface users find confusing and which areas of the interface are ignored by users. As a result, layout of the interface can be adjusted to minimise eye movement, make the interface more efficient and therefore improve the interface. **Award 1 mark for description of eye tracking in usability testing; award 1 mark for description of how technique can be used to improve the interface. Max 2 marks.**
PS ISI	(b) (ii)	One of: • Co-discovery • Question asking • Thinking aloud **Award 1 mark** For example: (thinking aloud) Users would be asked to perform certain tasks and observer would watch the tasks being completed and record comments made by the user regarding ease of use and screen layout. **Award 1 mark for appropriate description of how selected technique could be used to determine extend of user satisfaction with the interface. Max 2 marks. Note: question paper asks for qualitative technique.**
KU ISI	(c) (i)	For example: Rapid Application Development is a method whereby the final interface design is developed using RAD tools. The interface is developed independently of the underlying processes and users are asked to give feedback on the interface as it is being developed. **Award 1 mark for accurate explanation.**
PS ISI	(c) (ii)	For example: As it is a Graphical User Interface, it will be very suitable for the hotel receptionists and managers since it is easy to use and the users will possibly not be computer experts. Alternative answers possible. **Award 1 mark referring to a feature of the interface provided; award 1 mark for referring to the characteristics of the system's users. Max 2 marks.**

Question 7 continued

Type & Source	Part	Marking Instructions
PS ISI	(c) (iii)	For example: Horizontal prototyping will show in detail all the visible aspects of a user interface - all details of colour, fonts, layout, menus and buttons. The forms shown in the example screen will show exactly how the screens will look, but none of the buttons such as main menu or create bill will actually do anything. Vertical prototyping will include some functionality but only for a selected few features. In the example screens, the Guest Bills option may work and then the drop down menu might select another guest and show their details and go onto create a bill. However other options on the main screen may not work at all. **Award 1 mark for accurate description of each type of prototyping that is related to screens provided. Max 2 marks.**

PS
DBAD
	(d)	Set total nightly cost = 0
		Set total cost of stay = 0
		Get nightly room cost from room rate file
		Print customer name and address on bill
		FOR each night
		Get total nightly restaurant spend
		Print nightly restaurant spend on bill
		Total nightly cost = total nightly restaurant spend + nightly room rate
		Total cost of stay = total cost of stay + total nightly cost
		NEXT
		Print total cost of stay on bill
		IF customer is a regular guest THEN
		Discount = 10% of total cost of stay
		Print discount on bill
		Total due = total cost of stay – discount
		ELSE
		Total due = total cost of stay
		END IF
		Print total due on bill
		
		Award max 6 marks as follows:
		Award 1 mark for initial set up
		Award 1 mark for iteration structure
		Award 1 mark for steps within iteration
		Award 1 mark for selection structure
		Award 1 mark for selection process
		Award 1 mark for stand-alone prints

Question 8

Type & Source	Part	Marking Instructions
KU ISI	(a)	Envision The development team members develop/create a clear, shared vision of the product that describes the product, identifies constraints on the product, the target user population and main functionality of the product. **Award 1 mark for correctly naming stage; award 1 mark for accurate description of stage. Max 2 marks.**
PS ISI	(b) (i)	For example: The term syntax refers to the way that the instruction is issued. In this situation, there are 2 forms of syntax: the instruction can be accessed by using the keyboard shortcut ALT+T or by using the Translate option in the Language submenu of the Tools menu. The term semantics refers to the meaning or effect of the instruction. In this case, both sets of syntax achieve the same result – the highlighted text is translated into the destination language. **Award 1 mark for accurate description of syntax that relates to example given; award 1 mark for accurate description of semantics that relates to example given. Max 2 marks.**
PS ISI	(b) (ii)	Speed of task performance **Award 1 mark**
KU ISI	(b) (iii)	Expert/frequent users: are very familiar with the options offered by the software and likely to be very frustrated by the layered menu options. They would benefit from the suggested change since it would give them a faster response than having to use the mouse to active menu options. **Award 1 mark for correct class of user; award 1 mark for accurate description of user characteristics; award 1 mark for accurate description of benefit. Max 3 marks.**
KU ISI	(c) (i)	For example: A feature set can be used to measure the frequency of feature usage during usability testing. Features that have a high 'hit rate' are considered critical whereas those features that few users access can be omitted from the final implementation. **Award 1 mark for accurate description of use made of feature set; award 1 mark for how feature set can be used to identify critical features and those that can be omitted from implementation. Max 2 marks.**
PS ISI	(c) (ii)	For example: Critical features could be optimised by placing them at the top of menus and by providing keyboard shortcuts. **Award 1 mark each for any 2 appropriate methods of optimising critical features of software. Max 2 marks.**
PS ISI	(d)	For example: • The menus should have a consistent layout • The software should prevent errors • The software should provide help and user documentation • The software should provide helpful error messages • Other heuristics possible **Award 1 mark each for any 2 relevant heuristics that could be used to evaluate word processing software. Max 2 marks.**

Question 9

Type & Source	Part	Marking Instructions
KU DBAD	(a)	Information gathering technique should be named. Any technique is acceptable: Document sampling, questionnaires, interviews or observation **Award 1 mark** For example: Interview is a formal meeting between the analyst and the client. The analyst must prepare questions in advance to ensure that all necessary facts are discovered and that nothing is omitted. The analyst asks the questions and the client supplies the answers. Follow-up questions can be asked. **Award 1 mark for accurate description of technique named. Max 2 marks.**
KU ISI	(b)	Any **two** components from: Layout, text, graphics, audio, video, animation, sequence of screens **Award 1 mark each for any 2 correct components. Max 2 marks.**
PS ISI	(c) (i)	Qualitative technique should be named. Any technique is acceptable: Thinking aloud, question-asking, co-discovery or eye-tracking The explanation for the choice is important, not the choice itself. A sample answer is given but alternative answers are possible. Answer should relate to task and the use made of the technique to test vending machine in a railway station concourse. For example: Question asking: this technique is appropriate because, unlike eye tracking, no additional equipment is necessary; also, co-discovery requires 2 passengers to work together to test the interface which may be difficult to organize since many passengers travel on their own. **Award 1 mark each for any 2 valid reasons given to justify named technique. Max 2 marks.** <u>To be considered</u> Eye-Tracking is only valid technique since testing is to be carried out in busy railways station which will be very noisy. Any spoken thoughts, comments and questions will be drowned out by background noise. Award 1 mark for technique; 1 mark for reason.
PS ISI	(c) (ii)	For example: • These venues are noisy, and the noise is likely to interfere with any speech recognition that is required. • The software would have to cope with the different voices, pitches and accents of many different speakers and could not be "trained" • The potential users might include people who do not speak English (or the language that the machine is programmed to recognise). **Award 1 mark each for any two relevant reasons why command and control systems would be inappropriate in the environment suggested. Max 2 Marks.**
PS ISI	(d)	A – Not enough coins/Add coins B – Selection C – Selection out of stock OR Invalid selection D – Not enough money for selection E – Cancel transaction F – Return coins/Give change **Award 1 mark for each appropriate label. Max 6 Marks.**

Question 9 continued

Type & Source	Part	Marking Instructions
PS DBIT	(e)	For example: Component testing would be required to check that individual sections of the system were working in isolation. For example, all aspects of the Count Money state would need to be tested on its own in isolation from the rest of the system. Integrative testing would be needed to ensure that the different sections of the system worked properly together and that the data flow between different sections is successful. For example, the Count Money state successfully communicates with the Selection state to ensure that enough money has been entered. **Award 1 mark for accurate description of each type of testing that refers to the drinks vending machine described. Max 2 Marks.**

Question 10

Type & Source	Part	Marking Instructions
KU DBAD DBIT	(a) (i)	Testing **Award 1 mark**
KU DBAD	(a) (ii)	Corrective maintenance is now needed. **Award 1 mark** This is needed to fix an error that wasn't discovered when initial testing was carried out. **Award 1 mark. Max 2 marks.**
PS DBIT	(b) (i)	Table/entity **Award 1 mark**
PS DBIT	(b) (ii)	Query **Award 1 mark**
PS ODB	(c)	Solution expected: Credit Card: <input type="radio" name="Payment" value="Credit Card"> Debit Card: <input type="radio" name="Payment" value="Debit Card"> **Award 1 mark for <u>both</u> labels correct (Credit Card, Debit Card)** **Award 1 mark for type attribute = "radio"** **Award 1 mark for name attribute =** "------" (accept any appropriate name) **Award 1 mark for value = "Credit Card" (Credit Card button)** **Award 1 mark for value = "Debit Card" (Debit Card button)** **Max 5 marks**

Question 11

Type & Source	Part	Marking Instructions
KU ODB	(a)	For example: Customer Relation Management covers the collection and use of all available data about customers in order to improve service, increase sales etc. **Award 1 mark for an accurate description of CRM.**
PS ODB	(b)	The CRM would need to store information about • Customer Order Histories • Product descriptions (category or genre that can be matched with customer preferences/selections) **Award 1 mark each valid item stored. Max 2 Marks.**
KU ODB	(c)	Description of features of e-commerce platform is required. No marks should be awarded for simply naming features without providing a description. Valid features of e-commerce platforms include: • Transaction software • Online shopping cart • Check out • Secure payment facility • Searchable product catalogue • Other answers possible **Award 1 mark each for accurate description of any 2 valid features of e-commerce platform. Max 2 marks.**

Question 12

Type & Source	Part	Marking Instructions
PS ODB	(a)	For example: • Transaction standardisation gives an agreed set of rules for production of a document/form from the patient data so that it can be used by the health service after the data transfer. • Translation software is needed to convert the patient data from the doctor's application into an EDI format and to convert the EDI formatted data into data which can be used by the health service. • Communication is the method by which the data is transferred electronically from the doctor's system to the health service system eg by HTTPS. **Award 1 mark each for correct description of how feature is used in transfer of data to health service. Max 3 marks.**
KU ODB	(b)	For example: • Can continue to use their old software − less new training required. • Faster transfer. • Elimination of keying errors and lost documents. • Fewer discrepancies. • Elimination of duplicate paper processes and associated costs. • Reduction of storage costs as archiving moves to CD-ROM/DVD-ROM and other electronic storage media. • Less people power devoted to printing, sorting, mailing, coding and inputting. • Lower postage costs. • Improved flow of information and improved response rate. • Better inventory management. • More effective and in-depth sales and management reports. • Electronic "paper trail" and tracking **Award 1 mark each for description of any two valid advantages to the doctors. Max 2 marks.**
KU ODB	(c)	For example: • Principles of the Data Protection Act must be adhered to since patients' records are used to store personal details. • Patient data must be secure when it is being transmitted to ensure that it cannot be hacked. • International laws must be followed when transmitting patient data to organisations outside the UK. **Award 1 mark each for any two valid legal restrictions that apply when using EDI to exchange patient data. Max 2 marks.**

Question 13

Type & Source	Part	Marking Instructions
KU ODB	(a)	For example: A CMS is software that is used to separate the content of a website from the layout and navigation of the pages on the site. **Award 1 mark for accurate statement of what is meant by the term content management system.**
PS ODB	(b) (i)	For example: Creation of the website will be straightforward since use of the Lenz CMS means that David doesn't need to know or learn HTML coding. The Lenz CMS provides software tools that can protect the copyright of David's photo images. The Lenz CMS provides easy to use search facility and allows David to categorise his photo images in the topics that he plans. The Lenz CMS provides a thumbnailer tool that can be used by David to create thumbnails of his photo images. The Lenz CMS allows captions and descriptions to be integrated with the Lenz Shopping cart system that would enable users to purchase David's photos. **Award 1 mark each for any two relevant benefits associated with creation of the website as described by David. Max 2 marks.**
PS ODB	(b) (ii)	For example: The Lenz CMS provides a number of templates that can be used by David to vary the layout and presentation of his photo images to keep the site fresh and up-to-date. The Lenz CMS provides tools that can be used to reorganise the images in the photo gallery meaning that David will be able to easily update the site content. **Award 1 mark each for any two relevant benefits associated with maintenance of the website as described by David. Max 2 marks.**
PS ODB	(c)	For example: The web server receives the HTTP request from the browser of the person requesting images of Castles. Web server uses a script to run a query on the image database stored on the database server. The web server receives the query results from the database server, formulates the HTML page and passes it to the browser of the person who made the search request. **Award 1 mark each for an accurate description of each stage of processing. Max 2 marks.**
KU ODB	(d) (i)	For example: With so many developers contributing to an open source product, potential security problems are discovered and resolved much more quickly than with commercial software. **Award 1 mark for description of any accurate benefit in terms of security.**
KU ODB	(d) (ii)	For example: There are a large number of websites and online forums that provide support for users of commercial software products. Similar levels of support are only available for more popular open source products. **Award 1 mark for description of any accurate drawback in terms of support.**

Question 13 continued

Type & Source	Part	Marking Instructions
PS ODB	(e) (i)	For example: `<button type="submit" name="submit_button" value ="click to search" </button>` **Award 1 mark for correct use of type attribute; award 1 mark for correct use of name attribute; award 1 mark for correct use of value attribute. Max 3 marks.**
KU ODB	(e) (ii)	For example: • Use of the button element rather than the input element gives greater control over the rendering of graphical images used. • Button element can have content such as text and images. **Award 1 mark for accurate description of any one advantage. Do not accept button element allows use of graphics but input element does not.**
KU ODB	(f)	For example: Server-side database management tools provide a GUI interface that would allow owners to modify table structure without the need to know or learn a server-side scripting language. Also, use of server-side management tools allow remote access to the table structures meaning that remote administration is a possibility. **Award 1 mark each for accurate description of any two benefits. Max 2 marks.**

Question 14

Type & Source	Part	Marking Instructions
KU DBAD	(a)	Information gathering technique should be named. Any technique is acceptable: Document sampling, questionnaires, interviews or observation **Award 1 mark** For example: Interview is a formal meeting between the analyst and the client. The analyst must prepare questions in advance to ensure that all necessary facts are discovered and that nothing is omitted. The analyst asks the questions and the client supplies the answers. Follow-up questions can be asked. **Award 1 mark for accurate description of technique named. Max 2 marks.**
PS ODB	(b) (i)	<form method="POST" action="S2ssmarks.asp" > Accept also: <form method="GET" action="S2ssmarks.asp" > Note: order or method and action attributes is interchangeable **Award 1 mark for correct syntax** **Award 1 mark for choice of POST or GET method** **Award 1 mark for correct action** **Max 3 marks.**
PS ODB	(b) (ii)	Explanation must refer to method used in answer to (b) (i) above. For example: Method = "POST" means that SCN and password are not visible when data is sent Method = "GET" since SCN and password are hashed before being transmitted **Award 1 mark for accurate explanation that refers to method used in part (i).**

Question 14 continued

Type & Source	Part	Marking Instructions

PS
DBAD
	(c)	set total score = 0
		connect to database server and correct table
		FOR each question
		get user's answer
		IF user's answer = correct answer THEN
		marks = 1
		ELSE
		marks = 0
		END IF
		total score = total score + marks
		execute SQL update command to add user's answer and marks awarded to table
		NEXT
		execute SQL update command to add user's total score to table
		close connection
		
		Award max 6 marks as follows:
		Award 1 mark for initial set up
		Award 1 mark for iteration structure
		Award 1 mark for steps within iteration
		Award 1 mark for selection structure
		Award 1 mark for selection process
		Award 1 mark for steps after selection structure

PS DBIT	(d)	For example: Component testing would be required to check that individual sections of the system were working in isolation. For example, individual SQL scripts would need to be tested on their own in isolation from the rest of the system. Integrative testing would be needed to ensure that the different sections of the system worked properly together and that the data flow between different sections is successful. For example, the total score is updated by the question marking component and is then sent to the table using a separate SQL script. The data flow between these two components must be tested to ensure that, once it has been updated, the total score is passed successfully to the script. **Award 1 mark for accurate description of each type of testing that refers to the online testing system described. Max 2 Marks.**

Question 15

<table>
<tr><th>Type & Source</th><th>Part</th><th>Marking Instructions</th></tr>
<tr><td>PS
ODB</td><td>(a) (i)</td><td>INSERT INTO Charge (award 1 mark)
VALUES ('D', 25.00) (award 1 mark)

Note that the following alternatives are also acceptable:
INSERT INTO Charge (ChargeCategory, ChargeAmount)
VALUES ('D', 25.00)

INSERT INTO Charge
VALUES ('D', '25.00)

Max 2 marks.</td></tr>
<tr><td>KU
ODB</td><td>(a) (ii)</td><td>Data Manipulation Language
Award 1 mark</td></tr>
<tr><td>PS
ODB</td><td>(b)</td><td><table><tr><th>FirstName</th><th>LastName</th><th>Postcode</th></tr><tr><td>David</td><td>Foster</td><td>DD81 4AP</td></tr><tr><td>Ian</td><td>Dobbin</td><td>PA16 7XE</td></tr></table>Award 1 mark for correct attributes displayed; award 1 mark for each correct record. Max 3 marks.</td></tr>
<tr><td>PS
ODB</td><td>(c)</td><td>ORDER BY ChargeCategory (award 1 mark)
DESC (award 1 mark)
Max 2 marks.</td></tr>
<tr><td>KU
ODB</td><td>(d)</td><td>For example:
To total a selected range of values.
Award 1 mark for accurate description of function’s purpose.</td></tr>
</table>

[END OF MARKING INSTRUCTIONS]