2009 Information Systems

Advanced Higher

Finalised Marking Instructions

Question 1

Type & Source	Part	Marking Instructions
KU DBAD 2.1	(a)	For example: Legal feasibility – considers any aspects of the proposed development that have implications in terms of Data Protection Act, Computer Misuse Act & Copyright Design and Patents Act. Time feasibility – overall development time and proposed delivery date are estimated. Client must decide whether or not the delivery date is acceptable. **Award 1 mark for accurate description of each. Max 2 marks.**
KU DBAD 2.3	(b) (i)	For example: These are important because they provide the developers with information about what the client hopes to achieve from the new development. **Award 1 mark for accurate description of the importance.**
KU DBAD 2.3	(b) (ii)	For example: These are important because they provide the developers with information about how processes are carried out and the flow of data within the organisation. **Award 1 mark for accurate description of the importance.**
KU DBAD 4.1.2	(c)	For example: Logical design concentrates on what processes the system must perform without considering how the processes will be achieved. Physical design takes into account the limitations imposed by the software tools used to implement the system. **Award 1 mark for accurate description of logical design; award 1 mark for accurate description of physical design. Both descriptions must be part of comparison. Max 2 marks.**
KU DBAD 4.1.3	(d)	For example: Structure charts indicate the activities carried out in a system graphically. Each process is shown as a rectangle; the sequence of processes in indicated by ordering the processes from left to right. Iteration is indicated with rounded arrow and selection is indicated by diamonds. **Award 2 marks for detailed description of appropriate graphical design notation (description contains at least 2 separate valid points); award 1 mark for less detailed description; award 0 marks for simply naming a graphical design notation. Max 2 marks.**
KU DBIT 3.1	(e) (i)	User interface (accept form) **Award 1 mark**
	(e) (ii)	Script or macro **Award 1 mark**
KU DBIT 2.3	(f) (i)	For example: Systematic testing is • a methodical / logical way of testing a system that makes use of a test plan it is required to: • Rectify errors and bugs that may exist in the solution • Provide a summary of results that will allow the developers to determine the success of the development **1 mark each for description of any two clear points. Max 2 marks.**

Question 1 – continued

Type & Source	Part	Marking Instructions
KU DBIT 2.2	(f) (ii)	For example: A test plan identifies the elements to be tested and e.g. • the order of testing of the elements • the type of testing that will be carried out • the test values that will be used • expected output / results of testing **Award 1 mark for each for any 2 correct points. Max 2 marks.**
KU DBIT 2.1	(f) (iii)	For example: Acceptance testing would be carried out by clients and users of the system. They would be asked to work with the solution and provide feedback to the development team about the suitability of the system to meet their needs and fulfil their objectives. **Note: No need for answer to relate to scenario; answer may be a general description of personnel involved** **Award 1 mark for accurate description of role of users of the system; award 1 mark for accurate description of feedback to development team. Max 2 marks.**
KU DBIT 3.1, 4.3	(g)	For example: • Use of internal commentary in scripts to describe their purpose and explain any processing carried out. • Use of sensible names for attributes and entities in table structure. • other answers are possible **Award 1 mark each for any 2 acceptable features of a system's <u>implementation</u> that would impact on the system's maintainability. Max 2 marks.**
KU DBAD 1.1 DBIT 1.1, 4.3	(h)	For example: The development of any system follows a number of sequential steps that are part of the SAD life cycle: analysis, design, implementation, testing and maintenance. Any future maintenance of the system is carried out by following the steps of the SAD life cycle – but this means that the events of the SAD cycle for the system must be repeated. This repeating and revisiting of the stages of the SAD life cycle are possible because the cycle is iterative. **Award 1 mark for explanation of iterative nature of SAD life cycle; award 1 mark for explanation of need for iteration when carrying out maintenance activities. Max 2 marks.**

Question 2 Method 1: Single repeating group at UNF with complex PK at 1NF

UNF	1NF	2NF	3NF	Marking Instructions
Client First Name Client Last Name Client Date of Birth ~~Age~~ Client Passport # Arrival Date Hotel Name Hotel Address Hotel Phone # Rep ID Rep First Name Rep Last Name Rep Phone # Excursion # Excursion Name Excursion Cost Excursion Day Excursion Leaves Excursion Returns ~~Total cost~~	Client Passport # Arrival Date Client First Name Client Last Name Client Date of Birth Hotel Name Hotel Address Hotel Phone # Rep ID Rep First Name Rep Last Name Rep Phone # Client Passport #* Arrival Date* Excursion # Excursion Day Excursion Name Excursion Cost Excursion Leaves Excursion Returns	Client Passport #* Arrival Date Hotel Name Hotel Address Hotel Phone # Rep ID Rep First Name Rep Last Name Rep Phone # Client Passport # Client First Name Client Last Name Client Date of Birth Client Passport #* Arrival Date* Excursion #* Excursion Day* Excursion # Excursion Name Excursion Cost Excursion #* Excursion Day Excursion Leaves Excursion Returns	Client Passport #* Arrival Date Hotel Name* Rep ID* Client Passport # Client First Name Client Last Name Client Date of Birth Hotel Name Hotel Address Hotel Phone # Rep ID Rep First Name Rep Last Name Rep Phone # Client Passport #* Arrival Date* Excursion #* Excursion Day* Excursion # Excursion Name Excursion Cost Excursion #* Excursion Day Excursion Leaves Excursion Returns	**UNF** Award 1 mark for correct UNF with correct PK Award 1 mark for correct repeating attributes **Max 2 marks** **1NF** Award 1 mark for each new entity with correct PKs/FKs needed to remove repeating attributes **Max 2 marks** **2NF** Award 1 mark each for new entity with correct PKs needed to remove partial dependencies; max 5 marks Award 1 mark each for correct FK in ClientDate, ClientExcursion and ExcursionDay entities; max 3 marks **Max 8 marks** **3NF** Award 1 mark for each new entity with correct PKs/FKs needed to remove transitive dependencies **Max 3 marks** **Max 15 marks**

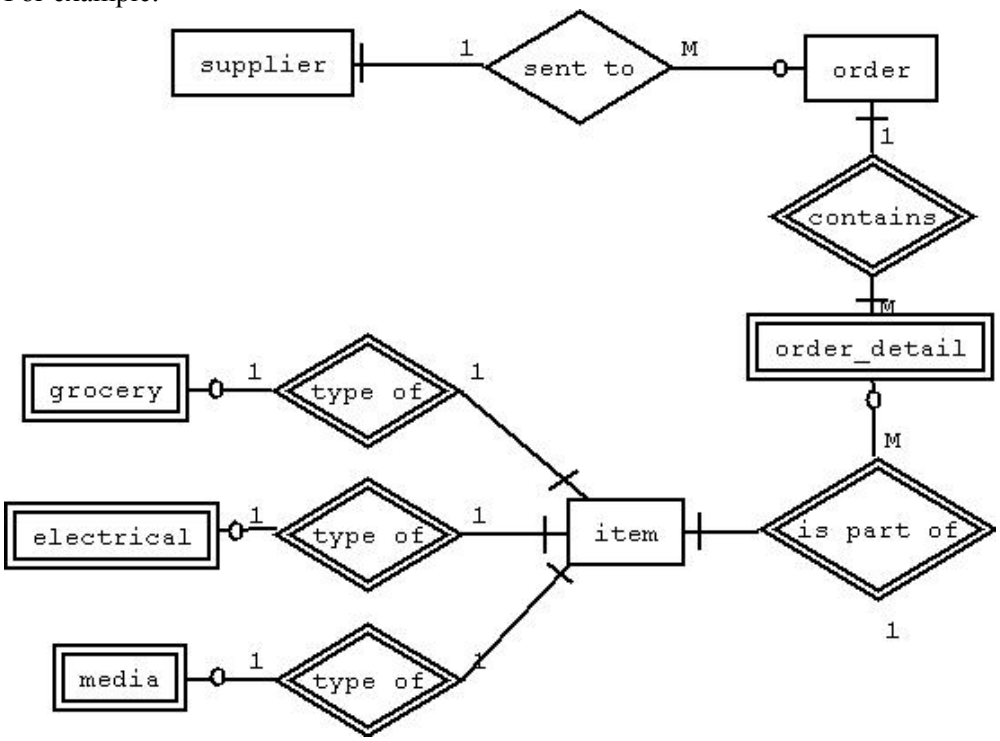
Question 2 Method 2: Repeating group within repeating group at UNF with consolidation at 2NF or 3NF to remove unnecessary entity

UNF	1NF	2NF	3NF	Marking Instructions
Client First Name Client Last Name Client Date of Birth ~~Age~~ Client Passport # Arrival Date Hotel Name Hotel Address Hotel Phone # Rep ID Rep First Name Rep Last Name Rep Phone # Excursion # Excursion Name Excursion Cost Excursion Day Excursion Leaves Excursion Returns ~~Total Cost~~	Client Passport # Arrival Date Client First Name Client Last Name Client Date of Birth Hotel Name Hotel Address Hotel Phone # Rep ID Rep First Name Rep Last Name Rep Phone # Client Passport #* Arrival Date* Excursion # Excursion Name Excursion Cost Client Passport #* Arrival Date* Excursion #* Excursion Day Excursion Leaves Excursion Returns	Client Passport #* Arrival Date Hotel Name Hotel Address Hotel Phone # Rep ID Rep First Name Rep Last Name Rep Phone # Client Passport # Client First Name Client Last Name Client Date of Birth ~~Client Passport #~~* ~~Arrival Date~~* ~~Excursion #~~* Excursion # Excursion Name Excursion Cost Client Passport #* Arrival Date* Excursion #* Excursion Day* Excursion #* Excursion Day Excursion Leaves Excursion Returns	Client Passport #* Arrival Date Hotel Name* Rep ID* Client Passport # Client First Name Client Last Name Client Date of Birth Hotel Name Hotel Address Hotel Phone # Rep ID Rep First Name Rep Last Name Rep Phone # Excursion # Excursion Name Excursion Cost Client Passport #* Arrival Date* Excursion #* Excursion Day* Excursion #* Excursion Day Excursion Leaves Excursion Returns	**UNF** Award 1 mark for correct UNF with correct PK; award 1 mark for correct inner and outer repeat **Max 2 marks** **1NF** Award 1 mark each new entity with correct PKs/FKs needed to remove repeating attributes **Max 3 marks** **2NF** Award 1 mark for each new entity with correct PKs/FKs needed to remove partial dependencies **Max 6 marks** **3NF** Award 1 mark for each new entity with correct PKs/FKs needed to remove transitive dependencies **Max 3 marks** **Consolidation** Award 1 mark for removal of unnecessary Client / Excursion entity at 2NF or 3NF **Max 1 mark** **Max for question 15 marks**

Question 2 Method 3: Two separate UNFs with consolidation after 3NF to create single 3NF solution and remove unnecessary entity

UNF	1NF	2NF	3NF	Marking Instructions
Client First Name Client Last Name Client Date of Birth ~~Age~~ Client Passport # Arrival Date Hotel Name Hotel Address Hotel Phone # Rep ID Rep First Name Rep Last Name Rep Phone # Excursion # Excursion Name Excursion Day Excursion Cost ~~Total Cost~~	Client Passport # Arrival Date Client First Name Client Last Name Client Date of Birth Hotel Name Hotel Address Hotel Phone # Rep ID Rep First Name Rep Last Name Rep Phone Number Client Passport #* Arrival Date* Excursion # Excursion Day Excursion Name Excursion Cost	Client Passport #* Arrival Date Hotel Name Hotel Address Hotel Phone # Rep ID Rep First Name Rep Last Name Rep Phone Number Client Passport # Client First Name Client Last Name Client Date of Birth Client Passport #* Arrival Date* Excursion #* Excursion Day Excursion # Excursion Name Excursion Cost	Client Passport #* Arrival Date Hotel Name* Rep ID* Client Passport # Client First Name Client Last Name Client Date of Birth Hotel Name Hotel Address Hotel Phone Number Rep ID Rep First Name Rep Last Name Rep Phone Number Client Passport #* Arrival Date* Excursion #* Excursion Day*	**UNF** Award 1 mark for each correct UNF with correct PK and repeating group **Max 2 marks** **1NF** Award 1 mark each new entity with correct PKs/FKs needed to remove repeating attributes **Max 4 marks** **2NF** Award 1 mark for new entity with correct PKs/FKs needed to remove partial dependencies; max 4 marks Award 1 mark for correct no change in Excursion entity **Max 5 marks** **3NF** Award 1 mark for each new entity with correct PKs/FKs needed to remove transitive dependencies **Max 3 marks** **Consolidation** Award 1 mark for removal of 2nd Excursion entity at 2NF or 3NF *OR* Award 1 Mark for additional FK in ClientDate entity (Excursion Day attribute) **Max 1 mark.** **Max for question 15 marks**
Excursion # Excursion Name Excursion Cost Excursion Day Excursion Leaves Excursion Returns	Excursion # Excursion Name Excursion Cost Excursion #* Excursion Day Excursion Leaves Excursion Returns	Excursion # ~~Excursion Name~~ ~~Excursion Cost~~ Excursion #* Excursion Day Excursion Leaves Excursion Returns	Excursion # Excursion Name Excursion Cost Excursion #* Excursion Day Excursion Leaves Excursion Returns	

Question 3

Type & Source	Part	Marking Instructions
PS DBAD 3.2.1	(a)	For example:  **Award 1 mark for each relationship (count grocery, electrical and media as 1 relationship) with correct cardinality indicated. Maximum 4 marks**
PS DBAD 3.2.1	(b) (i)	**Award 1 mark for correctly indicating all weak entities.**
	(b) (ii)	**Award max 1 mark each for correctly indicating the weak relationships needed for each weak entity. Max 2 marks.**
	(b) (iii)	**Award max 3 marks for correctly indicating all 5 optional relationships. Max 3 marks.**

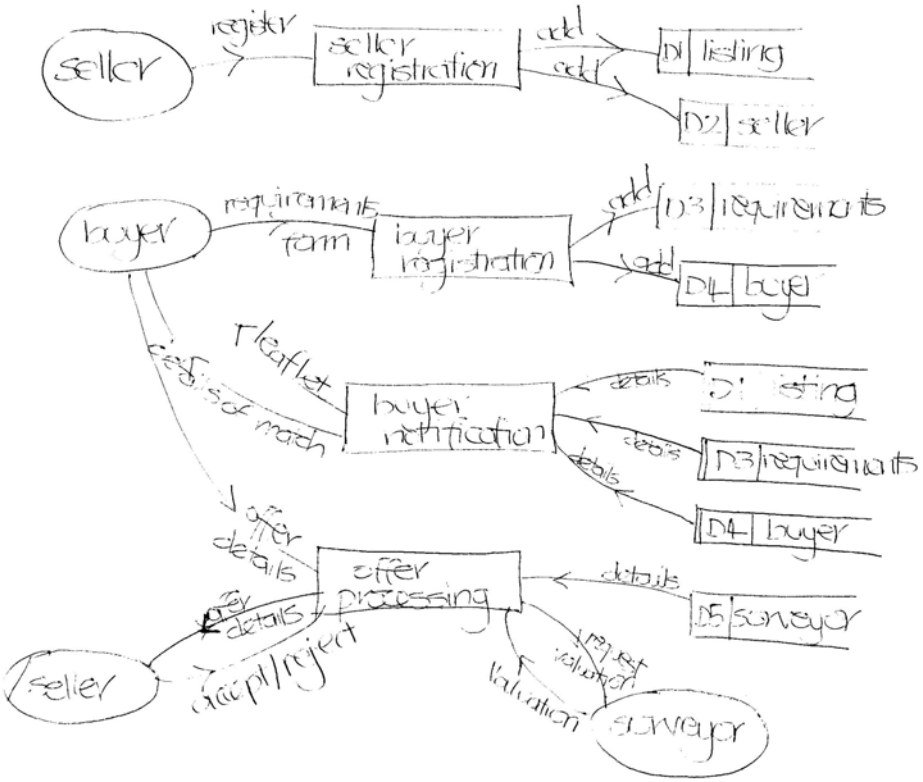
Question 4

Type & Source	Part	Marking Instructions
PS DBAD 3.3.1		For example:

Events \ Entities	Customer	Contact	Booking	Item	Menu
New customers registers	C				
Existing customer details checked	R				
Existing customer details updated	M				
Website booking	(R)	C	C	C	R
Telephone booking	(R)		C	C	R
Calculate deposit and notify customer	R	R	R	R	R
Payment of full deposit / Prov Confirm	(R)	(R)	M	(R)	(R)
Non payment of deposit after 1 month			D	D	
Adjust number guests			M		
Adjust number of servings				M	
Cancel booking			D	D	

Award max of 6 marks as follows:
Award 6 marks for correct recording of all 10 events
Award 5 marks for correct recording of any 8 or 9 events
Award 4 marks for correct recording of any 6 or 7 events
Award 3 marks for correct recording of any 4 or 5 events
Award 2 marks for correct recording of any 2 or 3 events
Award 1 marks for correct recording of 1 event
Note: events marked (R) do not need to appear in candidate's solution

Question 5

Type & Source	Part	Marking Instructions
PS DBAD 3.4		For example:  **Award max 9 marks as follows:** **Award 1 mark for all 3 correct data flows for seller registration process** **Award 1 mark for all 3 correct data flows for buyer registration process** **Award 1 mark for 2 correct data flows between buyer entity and buyer notification process** **Award 1 mark for each correct data flow between data stores and buyer notification process (max 3 marks)** **Award 1 mark for data flow between surveyor data store and offer process** **Award 1 mark for 2 correct data flows between surveyor entity and offer process** **Award 1 mark for all 3 correct data flows between buyer and seller entities and offer process**

Question 6

Type & Source	Part	Marking Instructions
KU ISI 4.3.5	(a)	For example: Example of good practice – font size can be easily adjusted for visitors to the site with bad eyesight Example of bad practice – site contains video and/or audio clips without a written script that hard-of-hearing visitors can read as an alternative to viewing the video/ listening to the audio **Award 1 mark for relevant example of good practice; award 1 mark for relevant example of bad practice. Max 2 marks.**
KU ISI 3.2	(b)	For example: Characteristics – users are inexperienced in finding their way around a website Needs – clearly labelled/identified links with audio cues, no dead ends **Award 1 mark for accurate description of characteristics; award 1 mark for accurate description of needs. Max 2 marks.**
PS ISI 1.4	(c)	For example: Syntax – this refers to the method used to issue an instruction. In this situation, two different methods of navigating to a new page are provided: clicking a hyperlink or hovering over a hotspot. Semantics – this refers to the meaning of an instruction. In this situation, both sets of syntax lead to the same result: the children navigate to the selected page. **Award 1 mark for description of syntax that refers to the example provided; award 1 mark for description of semantics that refers to the example provided. Max 2 marks.**
PS ISI 4.2.1	(d) (i)	For example: Time to learn – developers can measure how long it takes the children to learn to perform a particular task using the website unassisted. If time to learn is considered to be unacceptably long, user interactions would be simplified to increase accessibility for the children. **Award 1mark for accurate description of how time to learn could be used to provide feedback to the developers; award 1 mark each for explanation of how the feedback would be used by the developers to develop a usable website. Max 2 marks.**
PS ISI 4.2.4	(d) (ii)	For example: User retention of commands of commands over time – developers can ask a child to repeat a task that has been already been carried out successfully and measure the number operations that have been remembered from previously. If the figure is considered to be too low, steps can be taken to simplify the interface in order to increase the child's ability to remember how to perform the task. **Award 1mark for accurate description of how user retention of commands over time could be used to provide feedback to the developers; award 1 mark each for explanation of how the feedback would be used by the developers to develop a usable website. Max 2 marks.**
KU ISI 4.4.1, 4.4.2	(e)	For example: Surveys are completed by the researcher/developer whereas questionnaires are completed by the user – in this case, young children. Surveys would be more appropriate because the children may not be able to read the questions on the questionnaire and may not be able to write their own responses. **Award 1 mark for comparison in terms of method of completion; award 1 mark for justification of surveys for this situation. Max 2 marks.**

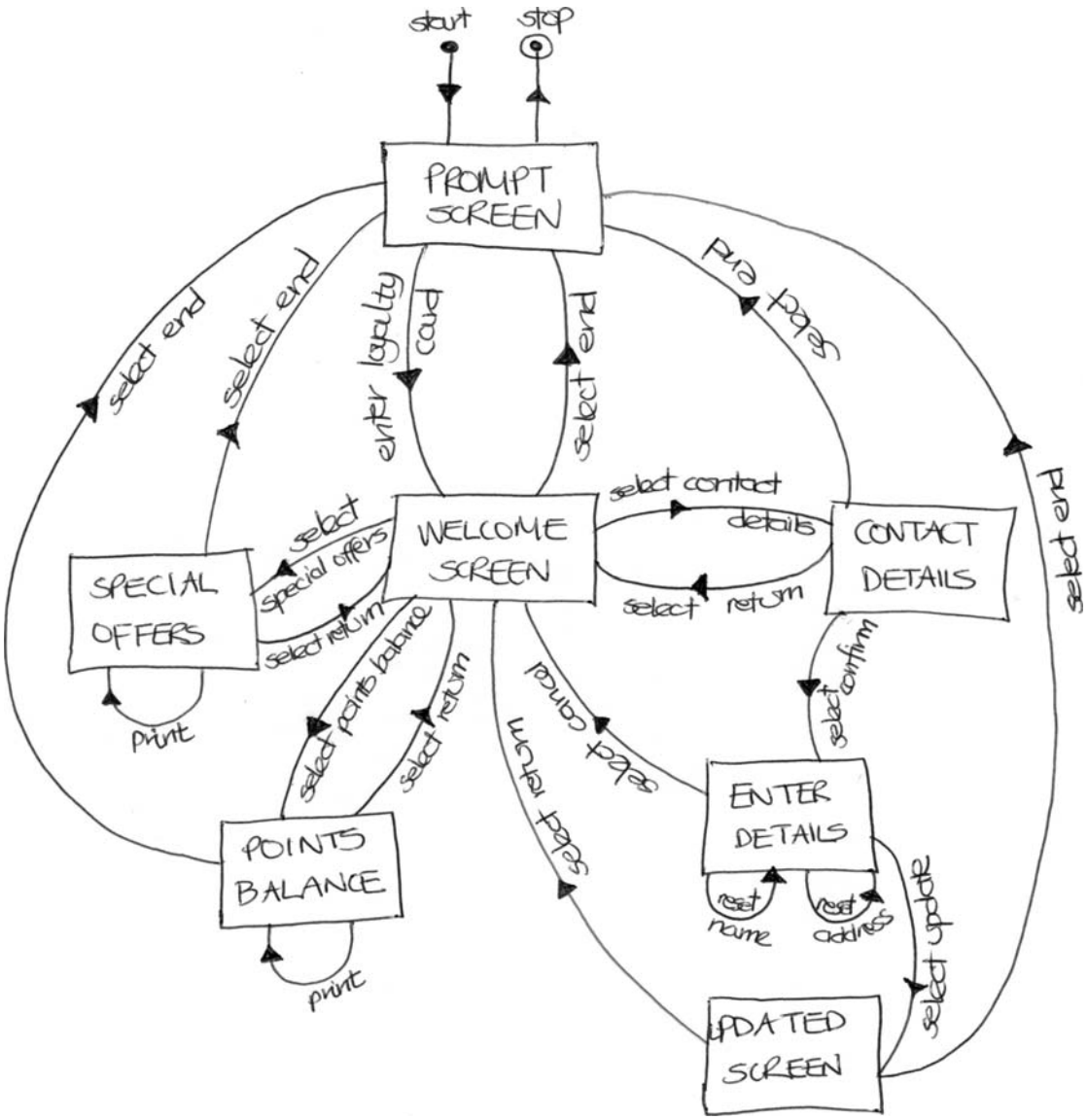
Question 7

Type & Source	Part	Marking Instructions
PS ISI 2.2.1, 2.2.2	(a)	Adaptive interface: "hit" area is enlarged Predictive text: anticipates letter most likely to be typed **Award 1 mark each. Max 2 marks.**
KU ISI 1.1	(b)	For example: Development of high speed wireless communications Miniaturisation of high capacity of memory Development of streaming technology Development of high speed processors **Award 1 mark each for any 2 technological development relevant to the iMP3 device. Max 2 marks**
KU ISI 3. 6	(c) (i)	For example: Hand-drawn storyboard or hand sketch of screen layout. Low fidelity prototypes are used by developers to gather feedback from users regarding the usability of the interface at an early stage of the interface design. During usability testing, a member of the development team acts as the computer, changing screens, vocalising error messages, etc. **Award 1 mark for any correct suggestion of low fidelity prototype; award 1 mar for accurate description of use made of such a prototype. Max 2 marks.**
KU DBAD 4.1.4	(c) (ii)	For example: RAD tools allow the developer to create a screen layout quickly using pre-defined interface controls. As a result, the prototype is much closer to the actual product in look and feel. **Award 1 mark each for any 2 clear points. Max 2 marks.**
PS ISI 4.1.4	(d) (i)	Eye tracking. **Award 1 mark**
	(d) (ii)	For example: The screen of the iMP3 is too small to accurately track eye movement. **Award 1 mark for appropriate justification**
KU DBIT 4.1	(e)	For example: A user guide describes how to use the features of the system. It is written for end users of the system and avoids technical jargon System design documentation is used as a means of communication between all members of the development team. It explains what the system was designed to do and how the system was developed. It also describes every aspect of the system. It is used by the maintenance team who carry out maintenance tasks. **Award 1 mark for accurate description of user guide; award 1 mark for accurate description of system design documentation. Max 2 marks.**

Question 8

Type & Source	Part	Marking Instructions
PS ISI 1.3	(a)	For example: Mode – graphical Methods of input/output – card reader, touch screen, printer, keypad/keyboard **Award 1 mark for mode; award 1 mark for methods of input/output. Max 2 marks.**
KU ISI 3.1	(b)	Design Foundation During design foundation, the layout, visual design and overall navigation of the screens are planned using the key screen – in this case, the welcome screen. **Award 1 mark for correct stage; award 1 mark for appropriate justification. Max 2 marks.**
PS ISI 3.5	(c)	See next page for sample solution Correct state transition diagram should show 7 states/screens with 18 transitions/ events. (20 transitions including print options) **Award maximum of 10 marks as follows:** **All 20 transitions correctly indicated – award 10 marks** **18 / 19 transitions correctly indicated – award 9 marks** **16 / 17 transitions correctly indicated – award 8 marks** **14 / 15 transitions correctly indicated – award 7 marks** **12/ 13 transitions correctly indicated – award 6 marks** **10 / 11 transitions correctly indicated – award 5 marks** **8 / 7 transitions correctly indicated – award 4 marks** **6 / 5 transitions correctly indicated – award 3 marks** **4 / 3 transitions correctly indicated – award 2 marks** **2 transitions correctly indicated – award 1 mark** **1 / 0 transitions correctly indicated – award 0 marks**
KU ISI 4.3.1 4.3.2	(d)	For example, walkthrough: A developer adopts the role of an ordinary users and works through a list of typical tasks. At each stage, the developer considers how difficult it is for the user to identify and operate the relevant interface control and how clearly the system provides feedback to the user. Role of developer is to anticipate where difficulties will arise of users so that these difficulties can be resolved before user testing is carried out. **Award 1 mark for accurate description of role of developer; award 1mark for accurate description of purpose of walkthrough. Max 2 marks.** For example, heuristic evaluation: The developers and evaluator would agree on the criteria to be evaluated. The evaluator would then examine the aspects of the kiosk interface that have been agreed and provide feedback to the developers. The feedback is in the form of a list of usability problems in the interface with references to the criteria that were violated by the proposed design. **Award 1 mark for description of use made of agreed criteria; award 1 mark for accurate description of heuristic evaluation. Max 2 marks.**

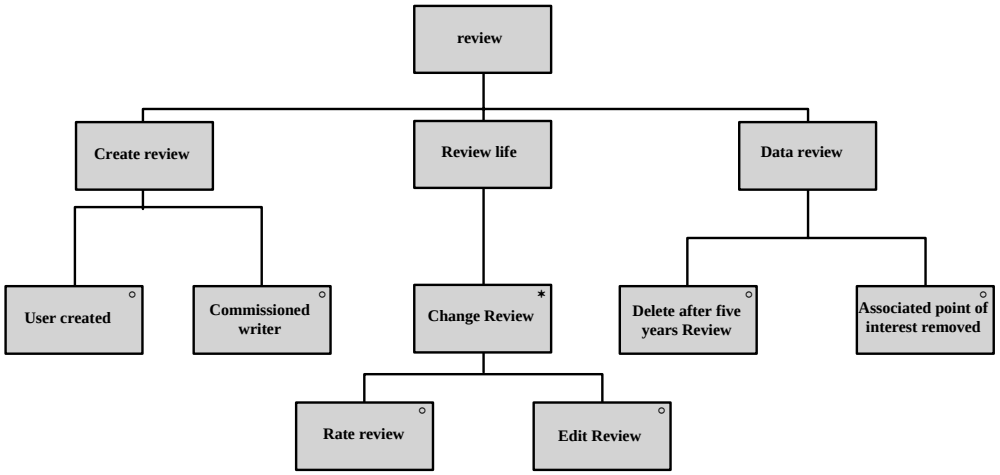
Question 8(c) State transition Diagram



Question 9

<table>
<tr><th>Type & Source</th><th>Part</th><th>Marking Instructions</th></tr>
<tr><td>PS
ISI
2.2.2</td><td>(a)</td><td>For example:
With a command and control system, the driver can issue verbal instructions and the device will react to the instructions by executing the required operation/task. This is appropriate in this situation because the driver can operate the device whilst driving without having to take his/her hands off the steering wheel.
Award 1 mark each for accurate explanation of command and control; award 1 mark for description of appropriateness for this situation. Max 2 marks.</td></tr>
<tr><td>PS
ISI
4.5</td><td>(b)</td><td>For example:
Subjective user satisfaction provides feedback to the developers about whether or not users enjoy using the Ta-Ta device, whether or not are users are frustrated by any aspect of the device, whether or not users would prefer an alternative design for the interface of the device. This feedback is importance because GPS Ltd can make improvements to the device to ensure that the Ta-Ta maintains its share of the market.
Award 1 mark for any 2 relevant criteria (criteria <u>must</u> be related to the interface of the Ta-Ta); award 1 mark for explanation of the importance to GPS Ltd. Max 2 marks.</td></tr>
<tr><td>PS
DBIT4.3</td><td>(c) (i)</td><td>Perfective maintenance
Award 1 mark</td></tr>
<tr><td>PS
ISI
4.1.3</td><td>(c) (ii)</td><td>For example:
The tester asks the user questions as to how screens are being interpreted and so on. This is a suitable technique for usability testing of this application because the developer can ask questions that are specific to the features of the upgrade and so get focussed feedback from the tester.
Alternatively:
The tester asks the user questions as to how screens are being interpreted and so on. This is not a suitable technique for usability testing because it could cause conflict with the command and control nature of the device.
Award 1 mark for accurate description of technique; award 1 mark for description of its suitability in this situation. Max 2 marks.</td></tr>
<tr><td>PS
DBAD
3.2.2</td><td>(d)</td><td>For example:
<table>
<tr><th>Attribute</th><th>Type</th><th>Size</th><th>Validation</th><th>Index/Key</th></tr>
<tr><td>Category</td><td>Text</td><td>20</td><td></td><td></td></tr>
<tr><td>Name</td><td>Text</td><td>30</td><td></td><td></td></tr>
<tr><td>Longitude</td><td>Number</td><td>N/A</td><td>>= -180 and <= +180</td><td>Yes (PK)</td></tr>
<tr><td>Latitude</td><td>Number</td><td>N/A</td><td>>= -90 and <= +90</td><td>Yes (PK)</td></tr>
<tr><td>Last updated</td><td>Date/Time</td><td>N/A</td><td></td><td></td></tr>
</table>
Award max 2 marks for correct type/size; deduct 1 mark for each error/omission (up to max 2 deductions). Award 1 mark for correct PK; award 1 mark for correct validation. Max 4 marks.</td></tr>
</table>

Question 9 – continued

Type & Source	Part	Marking Instructions
PS DBAD 3.3.2	(e)	For example:  **Award max 1 mark each for correct events indicated in Create, Review and Delete branches; award 1 mark each for correct use of o and * notation in Create, review and Delete branches. Max 6 marks.**
PS ISI 4.4.3	(f)	For example: User performance data logging could be used to keep track of options accessed by users or how frequently particular options are accessed. **Award 1 mark for description of any acceptable suggestion.**

Question 10

Type & Source	Part	Marking Instructions
KU ODB 1.1.1	(a)	For example: Software tools that allow a website manager, and others who contribute to website content, who may not know HTML, to manage the creation, modification, and removal of content from a website. **Award 1 mark for correct description of purpose of content management software; award 1 mark for accurate description of the users of content management software. Max 2 marks.**
KU ODB 1.1.1	(b)	For example: Automated templates are provided that can be automatically applied to new and existing content, creating one central place to change the look across all content on the site. The website content is stored separately from the visual presentation, making it easier and quicker to edit and manipulate the website content. Regular upgrades to the content management system ensure that the system meets current web standards. These updates are easily installed over the existing website. • Note that other answers are possible including: No HTML experience required, workflow features enable website administrator to easily keep track of what is being updated and by whom, administrator can approve content, different levels of user access can be granted **Award 1 mark each for accurate description of any 3 relevant benefits of content management systems. Max 3 marks**

Question 11

Type & Source	Part	Marking Instructions
KU ODB 1.1.2	(a)	For example: Information stored about existing customers can be analysed to enhance the relationship that the company has with these customers. Customers can then be sent targeted marketing literature. • Other answers are acceptable including descriptions of customer history, up-selling and cross-selling. **Award 1 mark for accurate description of any relevant use made of customer relationship management.**
KU ODB 4.3	(b) (i)	For example: Action attribute – this identifies the address / name of the script that will receive the data entered Method attribute – this identifies how the data will be transmitted (GET / POST) **Award 1 mark for correct description of action attribute; award 1 mark for correct description of method attribute. Max 2 marks.**
PS ODB 4.2, 4.3	(b) (ii)	For example: <INPUT type="text" name="customer_name" value="Enter first name followed by surname"> **Award 1 mark for correct type attribute; award 1 mark for correct name attribute; 1 mark for correct vale attribute. Max 3 marks.**
PS ODB 4.2, 4.3	(b) (iii)	For example: <BUTTON name="submit" type="submit"> **Award 1 mark for correct name attribute; award 1 mark for correct type attribute. Max 2 marks.**
KU ODB 1.3	(c) (i)	For example: Transaction standardisation is needed to ensure that data is transmitted in a format that is common to all parties involved in the exchange of electronic data. Without an agreed set of standards, it would not be possible for GorgeousGifts to ensure that date is compatible with data being transmitted / received from any of its suppliers. **Award 1 mark for explanation of use made of common data format; award 1 mark for explanation of importance of compatibility. Max 2 marks.**
KU ODB 1.3	(c) (ii)	For example: By subscribing to a VAN, GorgeousGifts can make use of the communications facilities provided by a large private company and thereby avoid the need to setup and maintain their own private network. The use of VANs has made it economically possible for small companies such as GorgeousGifts to participate in EDI. **Award 1 mark for accurate description of use made of VANs by GorgeousGifts; award 1 mark for explanation of benefit of VANs to GorgeousGifts. Max 2 marks.**

Question 12

Type & Source	Part	Marking Instructions
PS ODB 2.2, 4.1	(a)	For example: Select DB table properties Amend type from drop-down list (or similar) Enter size or select from drop-down list Save changes **Award 2 marks for full description that is accurate; award max 1 mark for partial solution. Max 2 marks.**
PS ODB 2.2	(b)	For example: Server-based database management tool would be used to: • execute the SQL query needed to retrieve the record from the *comicbook* table • extract the row information • leave author details unchanged • leave comic ID and title details unchanged • execute the SQL code needed to update artist and price details **Award 1 mark for accurate description of each step required. Max 5 marks.**
KU DBAD 4.1.4	(c)	For example: The RAD tools allow the user interface to be created visually rather than by generating the underlying code by hand. This visual creation reduces the development time. Commonly used coding routines such as those to handle database connectivity are created using wizards and helps further reducing the level of hand coding and the development time needed. **Award 1 mark each for any 2 valid points. Max 2 marks.**
KU DBIT 4.1	(d)	For example: A user guide describes how to use the features of the system. It is written for end users of the system and avoids technical jargon System design documentation is used as a means of communication between all members of the development team. It explains what the system was designed to do and how the system was developed. It also describes every aspect of the system. It is used by the maintenance team who carry out maintenance tasks. **Award 1 mark for accurate description of user guide; award 1 mark for accurate description of system design documentation. Max 2 marks.**

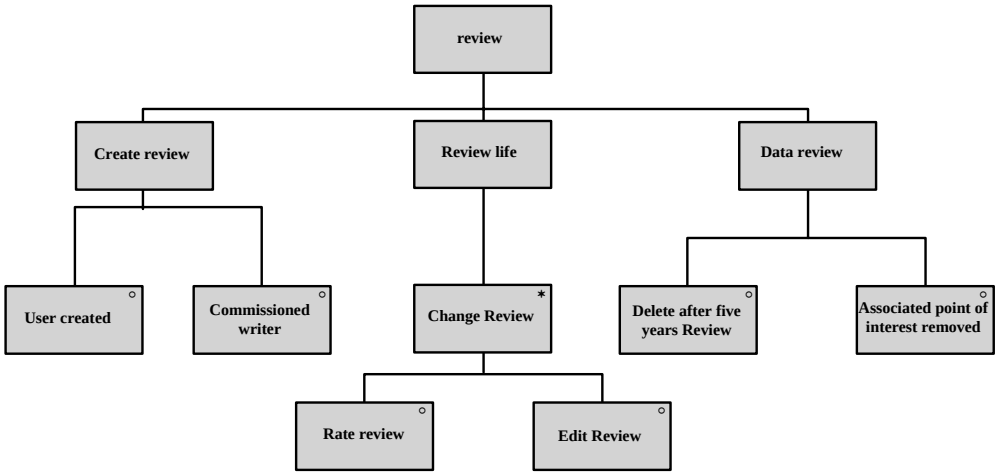
Question 13

Type & Source	Part	Marking Instructions
KU ODB 3.1, 3.2	(a) (i)	DML Data is to be removed from the table so the use of DELETE is required, a DML statement **Award 1 mark for correct choice; award 1 mark for a correct explanation. Max 2 marks.**
PS ODB 3.1	(a) (ii)	DELETE (FROM) photograph **award 1 mark** WHERE title="My House" **award 1 mark** *(alternatives include photograph number = "103" and price = "£3.50" but <u>not</u> Assignment ID= "1")* **Max 2 marks.**
PS ODB 3.2	(b)	SELECT Assignment.[Assignment ID], Assignment.Location, Photograph.[Photograph Number] FROM Assignment, Photograph **award 1 mark** WHERE Assignment.[Assignment ID] =Photograph.[Assignment ID] **award 1 mark** ORDER BY Assignment.Location ***<u>OR</u>*** ORDER BY Assignment.AssignmentID DESC **award 1 mark** **Note:** Accept ORDER BY AssigmentID DESC AND Location ASC but <u>NOT</u> ORDER BY [Photograph Number] *(alternative solution possible using INNER JOIN)* **Max 3 marks**
PS ODB 3.2	(c)	SELECT * From Assignment **award 1 mark** WHERE Location LIKE "Du*" ***<u>OR</u>*** WHERE Location LIKE "Dundee" OR Location LIKE "Dumfries" OR Location LIKE "Dumbarton" **award 1 mark** **Max 2 marks.**
KU ODB 1.1.3	(d)	For example: Description could include summary of following features - • Use of web-software to set up on-line store • Use of checkout/cart feature • Secure payment facilities • Catalogue search facility • Other answers acceptable **Award 1 mark each for accurate description of any 2 features of e-commerce platforms; award 0 marks for simply naming features. Max 2 marks.**
PS ODB 3.2	(e) (i)	SELECT MIN(price) **award 1 mark** FROM Photograph **award 1 mark** **Max 2 marks.**
PS ODB 4.1	(e) (ii)	For example: $querytext = "SELECT MIN(price) FROM Photograph" **award 1 mark** $result = mysql_query ($querytext); **award 1 mark** **Award 2 marks**

Question 14

<table>
<tr><th>Type & Source</th><th>Part</th><th>Marking Instructions</th></tr>
<tr><td>PS
ODB
1.2</td><td>(a) (i)</td><td>For example:
• Wider development opportunities since a greater number of developers involved in the project at no cost to company
• Possible loss of revenue since no income
• Potential increase in public awareness of the company due to increased number of users
• Other valid
Award 1 mark each for any 2 valid points with appropriate justification. Max 2 marks.</td></tr>
<tr><td>PS
ODB
1.2</td><td>(a) (ii)</td><td>For example:
• Large community of developers could that may result in the on-going development of additional features
• Main application and upgrades available at no cost
• Possibility of increased customer support available from wider community of users who are prepared to share knowledge
• Potential for concerns over reduced security / possibility of increased security threats
• Other valid
Award 1 mark each for any 2 valid points with appropriate justification. Max 2 marks.</td></tr>
<tr><td>PS
DBIT
4.3</td><td>(b) (i)</td><td>Perfective maintenance
Award 1 mark</td></tr>
<tr><td>PS
ODB
2.1, 4.1</td><td>(b) (ii)</td><td>For example, using PHP:
<pre>$link = mysql_connect('geotata.co.uk', 'tatauser', 'gpsltd');
$db_selected = mysql_select_db('geoinfosys', $link);</pre>For example, using ASP:
<pre><%
set conn=Server.CreateObject("ADODB.Connection")
conn.Provider="Microsoft.Jet.OLEDB.4.0"
conn.Open "c:/webdata/geoinfosys.mdb"
%></pre>Award 1 mark for correct server connection; award 1 mark for correct DB selection. Max 2 marks.</td></tr>
<tr><td>PS
DBAD
3.2.2</td><td>(c)</td><td>For example:
<table>
<tr><th>Attribute</th><th>Type</th><th>Size</th><th>Validation</th><th>Index/Key</th></tr>
<tr><td>Category</td><td>Text</td><td>20</td><td></td><td></td></tr>
<tr><td>Name</td><td>Text</td><td>30</td><td></td><td></td></tr>
<tr><td>Longitude</td><td>Number</td><td>N/A</td><td>>= -180 and <= +180</td><td>Yes (PK)</td></tr>
<tr><td>Latitude</td><td>Number</td><td>N/A</td><td>>= -90 and <= +90</td><td>Yes (PK)</td></tr>
<tr><td>Last updated</td><td>Date/Time</td><td>N/A</td><td></td><td></td></tr>
</table>
Award max 2 marks for correct type/size; deduct 1 mark for each error/ omission (up to max 2 deductions). Award 1 mark for correct PK; award 1 mark for correct validation. Max 4 marks.</td></tr>
</table>

Question 14 – continued

Type & Source	Part	Marking Instructions
PS DBAD 3.3.2	(d)	For example:  **Award max 1 mark each for correct events indicated in Create, Review and Delete branches; award 1 mark each for correct use of o and * notation in Create, review and Delete branches. Max 6 marks.**

Unit Content Statements – Core Units

Unit	Statement	Content
Database Analysis an d Design (DBAD)	1. Overview of Life Cycle	1.1 Stages and Iterative Nature
	2. Techniques Involved	2.1 Feasibility Study
		2.2 Project Plan
		2.3 Investigative Techniques
		2.4 Results from Investigation
		2.5 System Specification
	3. Modelling Techniques	3.1 Normalisation
		3.2 3.2.1 E/R Modelling
		3.2.2 Data Dictionary
		3.3 3.3.1 Entity Event Matrix
		3.3.2 Entity Life History
		3.4 Data Flow Diagram
	4. Database Design	4.1 Techniques
		4.1.1 System refinement
		4.1.2 Logical/physical design
		4.1.3 Process description
		4.1.4 Screen layout design
Database Implementation and Testing (DBIT)	1. Overview of DB Implementation	1.1 Stages and Iterative Nature
	2. Testing	2.1 Types of Testing
		2.2 Contents of Test Plan
		2.3 Systematic Testing
	3. DB Development	3.1 Components
		3.2 Conversion Techniques
	4. Documentation, Evaluation, Maintenance	4.1 Documentation
		4.2 Evaluation
		4.3 Maintenance

Content Statements – Information Systems Interfaces

Unit	Statement	Content
Information Systems Interfaces (ISI)	1. Interface Modes	1.1 Contributing Factors 1.2 Range of Interfaces (description) 1.3 Interface Modes 1.4 Syntax and Semantics
	2. Intelligent Interfaces	2.1 Trends and Characteristics 2.2 2.2.1 Predictive and Adaptive Predictive text Grammar / spell check Adaptive menus Agent-based interface 2.2.2 Natural Language Machine translation Natural language querying Command and control Speech driven software
	3. Interface Modelling and Design	3.1 LUCID 3.2 Classes of User 3.3 Comparison of Techniques 3.4 Storyboard 3.5 State Transition Diagram 3.6 Prototypes
	4. Usability Testing and Evaluation	4.1 Qualitative Techniques 4.1.1 Thinking aloud 4.1.2 Co-discovery 4.1.3 Question-asking 4.1.4 Eye tracking 4.2 Quantitative Techniques 4.2.1 Time to learn 4.2.2 Speed of task perform. 4.2.3 User error rates 4.2.4 Use retention 4.2.5 Subjective user satisfac. 4.3 Inspection Methods 4.3.1 Heuristic evaluation 4.3.2 Walkthrough 4.3.3 Feature set 4.3.4 Consistency inspection 4.3.5 Adherence to standards 4.4 Inquiry Methods 4.4.1 Surveys 4.4.2 Questionnaires 4.4.3 User perform. data log 4.4.4 Self reporting logs

Content Statements – On-line Database Systems

Online Database Systems (ODB)	1. Internet Developments	1.1 Applications 1.1.1 Content Management 1.1.2 Customer Relationship 1.1.3 E-Commerce 1.2 Open Source and Commercial 1.2.1 Cost effectiveness 1.2.2 Security 1.2.3 Flexibility and adaptability 1.2.4 Community of users 1.3 EDI 1.3.1 Transaction standarisation 1.3.2 Translation software 1.3.3 Communications 1.3.4 Legal restrictions
	2. Database Connectivity	2.1 Requirements 2.1.1 Username/password 2.1.2 Server address 2.1.3 Database name 2.2 Server Based Management Tools 2.2.1 Connect client to server 2.2.2 Edit table structures
	3. SQL	3.1 DML 3.2 DQL 3.2.1 SELECT Statement 3.2.2 Logical operators 3.2.3 Negating Conditions 3.2.4 Aggregate Functions 3.2.5 Sorting and Grouping 3.2.6 Joins
	4. Application Development	4.1 Server Side Scripting 4.1.1 Server connection 4.1.2 Database selection 4.1.3 Exe. query & extract results 4.2 Form Processing 4.2.1 Insert data 4.2.2 Amend data 4.3 HTML 4.3.1 <form> element 4.3.2 <input> element 4.3.3 <button> element

Analysis of Questions

Section I

Question	Type	Marks	Source Unit	Content Statement	Core/Option
1 (a)	KU	2	DBAD	2.1	Core
1 (b) (i)	KU	1	DBAD	2.3	Core
1 (b) (ii)	KU	1	DBAD	2.3	Core
1 (c)	KU	2	DBAD	4.1.2	Core
1 (d)	KU	2	DBAD	4.1.3	Core
1 (e) (i)	KU	1	DBIT	3.1	Core
1 (e) (ii)	KU	1	DBIT	3.1	Core
1 (f) (i)	KU	2	DBIT	2.3	Core
1 (f) (ii)	KU	2	DBIT	2.2	Core
1 (f) (iii)	KU	2	DBIT	2.1	Core
1 (g)	KU	2	DBIT	3.1, 4.3	Core
1 (h)	KU	2	DBAD DBIT	1.1 1.1, 4.3	Core Core
2	PS	15	DBAD	3.1	Core
3 (a)	PS	4	DBAD	3.2.1	Core
3 (b) (i)	PS	1	DBAD	3.2.1	Core
3 (b) (ii)	PS	2	DBAD	3.2.1	Core
3 (b) (iii)	PS	3	DBAD	3.2.1	Core
4	PS	6	DBAD	3.3.1	Core
5	PS	9	DBAD	3.4	Core

Totals

KU	20
PS	40

Analysis of Questions

Section II Part A: Information Systems Interfaces

Question	Type	Marks	Source Unit	Content Statement	Core/Option
6 (a)	KU	2	ISI	4.3.5	Option
6 (b)	KU	2	ISI	3.2	Option
6 (c)	PS	2	ISI	1.4	Option
6 (d) (i)	PS	2	ISI	4.2.1	Option
6 (d) (ii)	PS	2	ISI	4.2.4	Option
6 (e)	KU	2	ISI	4.4.1, 4.4.2	Option
7 (a)	PS	2	ISI	2.2.1, 2.2.2	Option
7 (b)	KU	2	ISI	1.1	Option
7 (c) (i)	KU	2	ISI	3.6	Option
7 (c) (ii)	KU	2	DBAD	4.1.4	Core
7 (d) (i)	PS	1	ISI	4.1.4	Option
7 (d) (ii)	PS	1	ISI	4.1.4	Option
7 (e)	KU	2	DBIT	4.1	Core
8 (a)	PS	2	ISI	1.3	Option
8 (b)	KU	2	ISI	3.1	Option
8 (c)	PS	10	ISI	3.5	Option
8 (d)	KU	4	ISI	4.3.1, 4.3.2	Option
9 (a)	PS	2	ISI	2.2.2	Option
9 (b)	PS	2	ISI	4.5	Option
9 (c) (i)	PS	1	DBIT	4.3	Core
9 (c) (ii)	PS	2	ISI	4.1.3	Option
9 (d)	PS	4	DBAD	3.2.2	Core
9 (e)	PS	6	DBAD	3.3.2	Core
9 (f)	PS	1	ISI	4.4.3	Option

Totals

KU	20
PS	40
Core/Option	15
Option	45

Analysis of Questions

Section II Part B: On-line Database Systems

Question	Type	Marks	Source Unit	Content Statement	Core/Option
10 (a)	KU	2	ODB	1.1.1	Option
10 (b)	KU	3	ODB	1.1.1	Option
11 (a)	KU	1	ODB	1.1.2	Option
11 (b) (i)	KU	2	ODB	4.3	Option
11 (b) (ii)	PS	3	ODB	4.2, 4.3	Option
11 (b) (iii)	PS	2	ODB	4.2, 4.3	Option
11 (c) (i)	KU	2	ODB	1.3	Option
11 (c) (ii)	KU	2	ODB	1.3	Option
12 (a)	PS	2	ODB	2.2, 4.1	Option
12 (b)	PS	5	ODB	2.2	Option
12 (c)	KU	2	DBAD	4.1.4	Core
12 (d)	KU	2	DBIT	4.1	Core
13 (a) (i)	KU	2	ODB	3.1, 3.2	Option
13 (a) (ii)	PS	2	ODB	3.1	Option
13 (b)	PS	3	ODB	3.2	Option
13 (c)	PS	2	ODB	3.2	Option
13 (d)	KU	2	ODB	1.1.3	Option
13 (e) (i)	PS	2	ODB	3.2	Option
13 (e) (ii)	PS	2	ODB	4.1	Option
14 (a) (i)	PS	2	ODB	1.2	Option
14 (a) (ii)	PS	2	ODB	1.2	Option
14 (b) (i)	PS	1	DBIT	4.3	Core
14 (b) (ii)	PS	2	ODB	2.1, 4.1	Option
14 (c)	PS	4	DBAD	3.2.2	Core
14 (d)	PS	6	DBAD	3.3.2	Core

Totals

KU	20
PS	40
Core/Option	15
Option	45

Content Coverage

Unit	Content		2009
Database Analysis an d Design (DBAD)	1.1	Stages and Iterative Nature	√
	2.1	Feasibility Study	√
	2.2	Project Plan	
	2.3	Investigative Techniques	
	2.4	Results from Investigation	√
	2.5	System Specification	
	3.1	Normalisation	√
	3.2	3.2.1 E/R Modelling	√
		3.2.2 Data Dictionary	√
	3.3	3.3.1 Entity Event Matrix	√
		3.3.2 Entity Life History	√
	3.4	Data Flow Diagram	√
	4.1	Techniques	√
		4.1.1 System refinement	
		4.1.2 Logical/physical design	√
		4.1.3 Process description	√
		4.1.4 Screen layout design	√
Database Implementation and Testing (DBIT)	1.1	Stages and Iterative Nature	√
	2.1	Types of Testing	√
	2.2	Contents of Test Plan	√
	2.3	Systematic Testing	√
	3.1	Components	√
	3.2	Conversion Techniques	
	4.1	Documentation	√
	4.2	Evaluation	√
	4.3	Maintenance	√

Unit		Content	2009
Information Systems Interfaces (ISI)	1.1	Contributing Factors	√
	1.2	Range of Interfaces (descrip)	√
	1.3	Interface Modes	√
	1.4	Syntax and Semantics	√
	2.1	Trends and Characteristics	
	2.2	2.2.1 Predictive / Adaptive	√
		2.2.2 Natural Language	√
	3.1	LUCID	√
	3.2	Classes of User	√
	3.3	Comparison of Techniques	
	3.4	Storyboard	
	3.5	State Transition Diagram	√
	3.6	Prototypes	√
	4.1	Qualitative Techniques	√
		4.1.1 Thinking aloud	
		4.1.2 Co-discovery	
		4.1.3 Question-asking	√
		4.1.4 Eye tracking	√
	4.2	Quantitative Techniques	√
		4.2.1 Time to learn	√
		4.2.2 Speed of task perform.	
		4.2.3 User error rates	
		4.2.4 Use retention	√
		4.2.5 Subjective user satis.	√
	4.3	Inspection Methods	√
		4.3.1 Heuristic evaluation	√
		4.3.2 Walkthrough	√
		4.3.3 Feature set	
		4.3.4 Consistency inspection	
		4.3.5 Adherence to standards	√
	4.4	Inquiry Methods	√
		4.4.1 Surveys	√
		4.4.2 Questionnaires	√
		4.4.3 User perform. data log	√
		4.4.4 Self reporting logs	
Online Database Systems (ODB)	1.1	Applications	√
		1.1.1 Content Management	√
		1.1.2 Customer Relationship	√
		1.1.3 E-Commerce	√
	1.2	Open Source and Commercial	√
	1.3	EDI	√
	2.1	Requirements	√
	2.2	Server Based Tools	√
	3.1	DML	√
	3.2	DQL	√
	4.1	Server-Side Scripting	√
	4.2	Form Processing	√
	4.3	HTML	√

[END OF MARKING INSTRUCTIONS]