
APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

9713/33

Paper 3 Written B

October/November 2017

MARK SCHEME

Maximum Mark: 80

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2017 series for most Cambridge IGCSE[®], Cambridge International A and AS Level components and some Cambridge O Level components.

© IGCSE is a registered trademark.

This document consists of **7** printed pages.

Question	Answer	Marks
1	<p>Four from:</p> <p>Several copies of the database can be stored to help protect against loss/corruption of data reliability increase due to data replication If one server is not available/crashes then users can access other servers Users can have most-used parts of the database stored on local area network but others can access it over WAN ...reflects the structure of the organisation where portions are stored where needed most Expansion of database/hardware is easier Improved performance as not all users are accessing the same hardware/database sections Different portions of database can be assigned different access levels/rights.</p>	4

Question	Answer	Marks
2	<p>Eight from:</p> <p>Define how data is organised... ...create/modify/delete data tables/definitions/relationships ...validation routines to ensure reasonable/sensible data is entered Update/insert/add/modify/edit data in the tables Retrieve data in useable format for use ...using search/query method/techniques with providing support for query languages/SQL ...sort into order to allow/enable output in useable form/file/report/graph/chart</p> <p>Administration of data.... ...produce logs of activity of users/queries/output for later analysis/archiving ...add/remove users/change user access rights ...enforce security to protect data from loss/theft/corruption/unauthorised editing ...monitor performance of database/impact of performance on system/network to allow/enable improvements ...organise storage of data to increase efficiency of storage/access speeds ...maintain data integrity to reduce data loss/corruption due to data being spread over several servers ...can organise backup/restore data to ensure that data is kept safe ...provide tools for data migration/export/import to/from other software packages ...provide user interface to data structures to allow manipulation of data/analysis of data.</p> <p><i>Max 6 for points without explanations.</i></p>	8

Question	Answer	Marks
3	<p>Six from:</p> <p><i>Advantages:</i> Lower cost of collecting data compared to paper questionnaires Real-time access to data ...participants input their own data leading to fewer transcription errors So data automatically stored electronically so analysis available immediately Inaccurate data entry can be known immediately Participants can answer questions as and when it is convenient Complex survey routes can be programmed Skip patterns and logic can be used without participant noticing Inbuilt validation routines/options can be used Participants more willing to share personal information as not disclosing it directly to another person</p> <p><i>Disadvantages:</i> Some populations fail to respond to online questionnaires ...may not have internet access ...participants get annoyed because they too many requests to take part Probability samples based on email addresses/website visitations difficult to produce Lack of trained interviewer can lead to less reliable data No interviewer to clarify/probe/ask additional questions.</p> <p><i>Max 5 for all advantages or all disadvantages. One mark is available for a reasoned conclusion.</i></p>	6

Question	Answer	Marks
4	<p>Eight from:</p> <p>Computer Assisted Personal Interviewing/CAPI ...interviewer present to ask questions and enter the responses ...interviewee answers questions and enters responses with assistance from interviewer</p> <p>Computer Assisted Self Interviewing/CASI ...no interviewer present so interviewee answers questions using computer</p> <p>Computer Assisted Telephone Interviewing/CATI ...computer initiates call/dials the telephone number to be called ...questionnaire is administered to participants over the telephone</p> <p>Interviewer sits in front of a computer screen and interviewer reads the questions from the computer screen Interviewer/computer records/using speech recognition the participants answers directly into the computer Reports can be compiled in real-time as the data is collected Interviewer/computer can follow scripted logic to ask questions Software can enhance data accuracy with built-in logic control for logically incorrect answers e.g. percentage answers that do not add up to 100 percent Questions can be personalised with branching logic to skip questions that are not applicable Can probe for more detail depending on received answers.</p>	8

Question	Answer	Marks
5	<p>Six from:</p> <p>High performance/multi-core processor for multi-tasking/threading...to enable multiple customers to access system at the same time Large amount of RAM available/accessible to handle simultaneous tasks/requests from users Large amount of secondary storage available to store vast amounts of data... ...such as vast numbers of customer records Secondary storage should be high speed/fast access times for fast retrieval of customer data Able to use/have raid arrays for multiple copies of data/files to protect against device failure.</p>	6

Question	Answer	Marks
6	<p>Four from:</p> <p>use of VPN to connect remotely ...allow branches to appear to be all on same network ...transmitting data with encryption Use of HTTPS for remote access to online accounts Using dedicated cabling between LANs Using an extranet connected via a firewall.</p>	4

Question	Answer	Marks
7	<p>Six from:</p> <p><i>Advantages:</i> No need to travel to branch No need to use/find branch with disabled access Can use accessibility features of web sites to allow ease of operation Can access/use services at own speed/pace without stress/pressure to proceed</p> <p><i>Disadvantages:</i> People with sight problems may not be able to read the screen Disabled people are less likely to be able to afford/have access to own/suitable computer Motor disabilities could make using keyboard/mouse difficult Cognitive disabilities could make understanding how the system works difficult.</p> <p><i>Max 5 for all advantages or disadvantages.</i></p>	6

Question	Answer	Marks
8	<p>Six from:</p> <p>Data encrypted when stored/during transmission Use of public key cryptography to encrypt/decrypt data ...scrambles data so information is unreadable/not understood ...use of 128/512, or more, bit encryption keys for enhanced resistance to hacking Key only known to authorised people Data transfer by HTTPS ...use of secure socket layer/SSL ...use of digital certificates issued by licencing authority ...to authenticate website/web browsers use of site.</p>	6

Question	Answer	Marks
9	<p>Eight from:</p> <p>Electronic delivery of tests to students using objective tests/standard multiple choice questions/ multiple response/word entry/number entry/gap fill/ free-format/cloze tests so automatic marking of the tests is possible Keyword search uses to compare student response to correct solution automatically marked/progress recorded/immediate feedback Online structured questions can provide hints if necessary Customisation of tests for individual students ...variation in questions aimed at different students/abilities Recording of results/progress in data manipulation software/ spreadsheet/database so that the results can be analysed more easily ...conditional formatting can be used to highlight/show student progress Analysis of results over time by production of reports/graphs/charts ...easier comparison with other students/classes.</p>	8

Question	Answer	Marks
10(a)	<p>Six from:</p> <p>Use WYSIWYG features such as drag and drop to place text/images where you wish them to go</p> <p>Automatic generation of the source code as objects added/moved</p> <p>Multiple views available to be able to view the source code and final layout of web page</p> <p>Ability to create headings/subheadings/frames for individual web page</p> <p>Insertion of links to other pages/to places in web pages</p> <p>Insertion of images/graphics in a web page/frame</p> <p>Insertion of video/audio links to external resources</p> <p>Control of style using style sheets/css files</p> <p>Control whole web site</p> <p>...check for broken links</p> <p>...change/update all links using single command</p> <p>...check for missing alt text/accessibility problems</p> <p>...check the whole site for HTML errors</p> <p>...check site for compatibility across multiple browsers.</p>	6
10(b)	<p>Four from:</p> <p>Use as virtual tracing paper</p> <p>...to add/draw information</p> <p>Manipulate image using transparent/opacity/flip/rotate/scale</p> <p>...edge detection for add lines/borders</p> <p>Add a layer to add text/information/copyright notice/watermark</p> <p>Use image as visual reference for animations.</p>	4

Question	Answer	Marks
11	<p>Eight from e.g.:</p> <p>The lesson for computer-based is student-orientated while with traditional it is teacher-orientated</p> <p>Motivation is increased with the use of computers due to more student involvement, but in traditional teaching motivation varies from low to interested/unengaged</p> <p>The teacher has a facilitator role when using computers, but without computers the teacher dictates the lesson structure</p> <p>The emphasis of the learning is when using computers is on 'how' students research information while in traditional teaching students learn what the teacher tells them to</p> <p>The subject matter in computer-based learning is determined by the student, but in traditional learning the teacher dictates the subject matter</p> <p>The learning process in computer-based learning is in small groups/individuals while in traditional teaching groups could be large/whole class</p> <p>Discussion/interactions in computer-based learning is the teacher with individuals/small groups while in traditional teaching it is often/mostly with whole classes</p> <p>In computer-based teaching students with disabilities can work at different paces than the other students, but this is not easy in traditional teaching</p> <p>In computer-based teaching students with disabilities are less likely to be criticised than in traditional teaching.</p> <p><i>Max 7 for all computer-based or all traditional.</i></p>	8

Question	Answer	Marks
12	<p>Six from e.g.:</p> <p>Security of test/exam files before/after/during test/exam</p> <p>Ensuring that the person sitting test/exam is who they say they are</p> <p>...more difficult with online tests as there is no handwriting</p> <p>All students may not be able to sit test/exam at same time</p> <p>Students may be able to see/read other students screens during test/exam</p> <p>Plagiarism by copying information from internet/sources</p> <p>...access to internet/USB drives is disabled</p> <p>Security of test/exam results in storage/transmission to awarding body.</p>	6