

MARK SCHEME for the May/June 2010 question paper
for the guidance of teachers

9713 APPLIED ICT

9713/13

Paper 13 (Written A), maximum raw mark 80

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 must be read in conjunction with the question papers and the report on the examination.

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the May/June 2010 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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Question Number	Question (including any source details)	Part Mark
1 (a)	<p>Four from:</p> <p>PDA with wireless networking capability.... Laptop with wireless networking capability.... to connect to internet/log on to system Use authentication techniques..... to connect to a VPN/ access records from file (Mobile) telephone to phone medical centre/hospital Use authentication techniques.... ... to speak with someone about patient information (3 marks maximum for one device)</p>	[4]
(b)	<p>Two from:</p> <p>medical history... to see previous similar conditions to see current illnesses allergies to medication X rays to check on broken bones etc. Existing medication. to prevent any conflict if prescription is to be written</p>	[2]

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<p>2</p>	<p>Five from:</p> <p><i>Phone conferencing</i></p> <ul style="list-style-type: none"> The conference is booked with the phone company Organiser is given two PINs Own personal PIN and participants PIN Organiser tells participants their PIN Organiser dials number and enters own PIN Each participant dials a common number Enters a PIN to join conference <p><i>Video conferencing</i></p> <ul style="list-style-type: none"> To talk to more than one colleague Need webcam, speakers and microphone load software/access the internet/connect to the internet/internet connection is needed log on to system/conference webcam normally integral part of laptop/ webcam fixed to top of laptop webcam/laptop moved to ensure doctor can be seen communicate by speaking into the microphone communicate by looking at the webcam <p><i>Use mobile/cellphone</i></p> <ul style="list-style-type: none"> to contact one doctor to text to many doctors <p><i>Use VOIP</i></p> <ul style="list-style-type: none"> connect to internet Logon to system Call number of doctor(s) Speak with doctor(s) <p><i>Use laptop/PDA</i></p> <ul style="list-style-type: none"> to send email to use instant messaging Log on to email provider/instant messaging software <p>Send message to other doctors/Send group emails and ask for immediate response</p>	<p>[5]</p>
<p>3 (a)</p>	<p>Six from:</p> <ul style="list-style-type: none"> Printer (laser or inkjet) to print out information for checking Graphics tablet to input drawings/designs Scanner to scan hard copy images for inclusion in website Modem/Router for connecting to internet to upload/download web pages Network card for connecting to internet to upload/download web pages Microphone to create voiceovers where necessary Speakers to listen to sounds/voice/music to check accuracy/suitability Video camera to make videos for including in website Digital camera to take photographs for uploading to webpage 	<p>[6]</p>

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(b)	<p>Three from:</p> <p>Product advertising The advertising of a <u>single product such as</u> car/computer/chocolate bar/soft drink etc.</p> <p>Business advertising The advertising of a <u>single company name such as</u> (any reasonable example of a type of company)</p> <p>Service advertising The advertising of services <u>such as</u> insurance/government/tourism/banking etc.</p> <p>Business</p>	<p>[3]</p> <p>[1]</p>
(c)	<p>Six from:</p> <p>Customers would have to have a computer and be connected to the Internet to see websites/ don't need to for presentations/posters Large initial cost for website/can be expensive to maintain/low cost for other methods Posters/presentations can only be seen in a limited number of places Posters can be defaced so that the message cannot be seen clearly Posters are not interactive Websites/presentations have multimedia features Websites and presentations are easier to update as you don't have to reprint many copies A much wider area/potential customer base is covered cheaply by using a web site Emails may be mistaken for spam Email addresses may be difficult to collect Easy/cheap to send same message to many people at the same time</p>	<p>[6]</p>
4 (a)	<p>Six from:</p> <p>Payslips with description of information included Financial reports of payroll statistics Error/Exception reporting An employee earning unusually large amount of money Employee has been on emergency tax code for very long time Two employees having same NI number Reports showing hours worked per individual Report showing cost information by department or individual Reports including the analysis of the turnover of employees together with detailed absence reports Payments to employees automatically generated using BACS Tax paid by all employees NI contributions for all employees The amount of money paid to each bank All earnings and deductions of employees All earnings and deductions of employees by department Tax and NI payments automatically made direct to the Inland Revenue Specification of money required by company for payment to workers/Inland Revenue</p>	<p>[6]</p>

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(b)	<p>Six from:</p> <p>must have a website with an easy-to-remember domain name that is related to the bank</p> <p>a list of users accounts and balances</p> <p>easy to see list of services available</p> <p>Allow customers to navigate from service to service easily</p> <p>facility to print out statements/order statements</p> <p>Prompts to type in usernames and passwords to make the system secure.</p> <p>Prompts to ask for other required information (favourite place/date etc.) to make the system secure</p> <p>Customers must be able to contact bank directly</p> <p>Allow customers to manage their own accounts</p> <p>Allow customers to pay bills</p> <p>Allow customers to amend/create standing orders/direct debits</p> <p>Allow customers to order a new PIN</p> <p>Allow customers to stop a cheque</p> <p>Allow customers to see recent/pending transactions</p> <p>Allow customers to apply for a loan</p> <p>User guide to the system/interactive demonstration of the system/FAQs</p>	[6]
(c)	<p>Eight from:</p> <p>Single password not considered by banks to be sufficient protection</p> <p>Limited number of characters from password are asked for leading to hacker not being able to guess whole password</p> <p>Additional information such as mother's maiden name/favourite place/phone number/date of birth</p> <p>Additional information may be commonly known</p> <p>Key logging software can detect full passwords/additional information</p> <p>Data is encrypted allowing only users/computers with the key to decipher it/hackers only see meaningless strings of characters</p> <p>Encryption is not sufficient if hacker uses key logging software</p> <p>Anti spyware can detect spyware/keylogging software</p> <p>Anti- spyware needs constant updating</p> <p>TANs – passwords which are sent by post/email and are used once only only have few minutes validity reducing time hacker has to intercept it</p> <p>Virtual keyboard used to type in passwords</p> <p>Drop down lists used to select letters of password Key logging software can't detect key presses</p> <p>Different characters from password are asked for at each log on leading to hacker not being able to use part of password already intercepted</p> <p>Sometimes (random occurrence) same three characters are asked for making it easier for hacker to access account</p> <p>Two factor authentication – customer inserts card into chip and pin device and types in PIN and a pass number is produced hacker would need to have access to the Chip and PIN device, debit/credit card and the user's password to be able to hack into account</p> <p>pass number changes each time of use</p> <p>Firewalls reduces risk of unauthorised access but don't prevent it totally</p> <p>User can be timed out after a period of inactivity preventing another person using the site</p>	[8]

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5 (a)	<p>Four from:</p> <p>Use ergonomic/ergonomic keyboards Get up and walk around every so often Improve the lighting in the room/ have anti glare screens Height, position and distance from worker of screens/keyboards should be optimised Good quality seating that supports the back/sitting in an appropriate position Height-adjustable seating Don't overload sockets Only allow qualified electricians to install electrical equipment Equipment should be checked regularly Cabling should be tied up/trunked Electrical equipment must be located away from water supplies Do not take drinks near electrical equipment Have several carbon dioxide fire extinguishers Benching/workdesks should be sturdy enough to take the weight of heavy equipment/do not allow heavy equipment to overhang</p>	[4]
(b)	<p>Three descriptions from:</p> <p>Some workers may have to/will have the opportunity – to go part time There will be the opportunity to job share There will be the opportunity for flexible working hours/compressed hours Workers will need to have the ability to move from branch to branch Technical staff can work from home More job opportunities for technical staff Unemployment for some bank cashiers/security staff Some staff may need to be retrained</p>	[3]
6 (a)	<p>Six from:</p> <p>Establishing inputs, outputs and processing usually by examining all the documents used in the current system Recording information using data flow diagrams/interview transcripts/questionnaire analysis Identifying problems with the current system using the data already recorded about the current system Identify suitable hardware and software for the new system making generalised recommendations using the data already recorded about the current system such as volume of data Identify user and information requirements using transcripts of interviews with users/ observation</p>	[6]
(b)	<p>Three (with reference to student id) from:</p> <p>description of check digit description of range check description of invalid character check description of length check</p>	[3]
7 (a)	<p>Two from:</p> <p>Live data is data that has already been used in the existing system It is used because the outputs are already known Test results from new system can easily be compared with outputs of existing system Data can be chosen for when previously encountered special/unusual circumstances existed Data can be chosen for when it was a normal day to day situation</p>	[2]

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<p>(b)</p>	<p>Eight from:</p> <p>Parallel running – involves running <u>the old</u> system alongside <u>the new</u> system Normally more expensive than direct changeover as two sets of workers have to be paid If there is a problem with the new system still have the old system as a backup It is a slower method of implementation than direct changeover Two sets of workers would not be necessary for such a (relatively) small system/teachers would be expected to use both methods</p> <p>Phased implementation – involves implementing one part of the system at a time Normally cheaper than parallel running as you don't employ two complete sets of workers If there is a problem with the new system still have bulk of old system to fall back on It is a slower method of implementation than direct changeover There is only one system required (student records) so this may not be appropriate</p> <p>Pilot running – involves running new system in one area of the organisation whilst old system still operates in other areas Normally cheaper than parallel running as you don't employ two complete sets of workers If there is a problem with the new system it only affects one school Other schools learn from mistakes made in first area to have new system It is a slower method of implementation than direct changeover Probably most suitable as one small school could trial the system If it is successful the whole school can take it on</p> <p>Direct changeover – involves replacing the old system with the new system all in one go Normally cheaper than parallel running as you don't have to employ two sets of workers Quicker as there is no delay waiting for bugs to be fixed/benefits of the new system become apparent immediately unlike other methods If there is a problem you don't have the old system to fall back on unlike other methods Teachers might be unsure of moving over to a brand new system overnight/might be frightened of losing student marks</p>	<p>[8]</p>
<p>(c)</p>	<p>Three from:</p> <p>Observe teachers performing set tasks (record their progress using video) Measure the time taken to complete a given task Interview teachers to gather their responses about ease of use of the system Hand out questionnaires to all teachers to gather their responses about ease of use of the system</p>	<p>[3]</p>

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8	<p>Four from:</p> <p>Student records responses on OMR Computer scans OMR Computer asks questions of the students Student inputs responses on computer Responses are compared with stored answers Assessment can be either formative or summative Summative is responses are recorded and a total mark awarded No suggestions for improvement are provided Formative uses the results of students' answers to form a judgement on progress Areas for improvement are provided to the student On screen marking is used by examination boards Scripts are scanned into the system Examiner logs on and marks script online Manual marking still requires examiners to submit marks using OMR forms Teacher can enter marks into a spreadsheet/database Can chart results to show progress/comparative performance</p>	[4]
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