

**MARK SCHEME for the October/November 2009 question paper  
for the guidance of teachers**

**9713 APPLIED ICT**

**9713/03**

Paper 3 (Written B), 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.

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- 1 (a) **Any three points from:**  
files are compressed MP3 file is 1/10th the size of a normal "song" file  
developments in CODECs  
removes high frequency information  
however: higher the bit rate, larger the file, less can be stored but music quality is better  
more compression results in lower quality sound [3]
- (b) **Any four from:**  
possible to download files from **the Internet**  
much **more** material on the Internet  
torrent type of usage more prevalent  
MP3/4 players/flash memory cards are more available/have larger capacities/cheaper hard disk storage  
video on demand being promoted by service providers  
Blue ray technology with more information/higher quality  
MP3/I-Pod docking stations have replaced CD players  
combined mobile phone/MP3/movie players [4]
- (c) (i) **Any four points from (max 3 advantages and 3 disadvantages):**  
advantages  
more programmes available  
not as affected by atmospheric conditions  
high definition sound/picture  
better format for compression  
better quality recordings possible  
more sophisticated programme guide  
  
disadvantages  
can break up (pixelate) if signal is interrupted  
time lag  
requires special electronic decoders  
hardware can be more expensive [4]
- (ii) **Any two points from:**  
use of satellite dishes rather than an aerial  
**high speed** cable to UBR/service  
LNB to reduce received frequencies  
need for digital receiver/decoders connected to TV [2]

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**2 (a) One mark for each problem (max of 3) and one mark for each solution (max of 3):**

problems

computer fraud  
 money taken from **Daniel's** accounts  
 stolen **customer** ids  
 fraudulent orders placed by hackers  
 viruses/trojan inserted into web site  
 hacking into systems  
 deleting/amending and distributing personal data  
 "spyware" on computer system  
 tracking sites logging customer interests

solution

locked rooms/physical security  
 firewalls configured to prevent unauthorised access  
 digital certification for transactions  
 encryption of customer data transferred  
 anti-virus software kept up to date  
 user ids and passwords  
 anti-pop up software  
 anti-spyware software  
 monitoring web traffic  
 authentication techniques

[6]

**(b) Any three points from:**

use of emails and attachments  
 use of web forms on his website to answer queries  
 on line chatting/instant messaging/webcams for a webcast/forum  
 use of VoIP technology  
 mail merge email newsletter  
 Daniel maintains a blog/twitter site

[3]

**(c) Use of any four of the following:**

use of scanners to import images of his products  
 use of digital cameras to take photographs of his products  
 web authoring packages to create his web site  
 DTP/word processors to create text  
 photo image editing of images for the web site  
 use thumbnails to link to full sized image/fit a number of images on one page  
 use of library of designs  
 use of clip art to save time  
 photo galleries to save time

[4]

**(d) One mark for device and one mark for reason:**

dot matrix printer  
 this uses physical pressure/impact  
 impact printer goes through several pages

[2]

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- 3 (a) **Any two points from:**  
 can work anywhere in the building  
 more convenient mode of working  
 safer – no trailing wires  
 can use away from home – e.g. airports  
 less expensive way to set up a LAN [2]
- (b) **Any four points from:**  
 an increase in RSI risk due to long hours on computer  
 vision and posture problems/back ache due to incorrect use of system  
 electrocution risk with mains leads  
 concerns with long term exposure to wifi  
 fire risks due to laptop overheating  
 trip hazards due to any cables/bag [4]
- 4 (a) **Any four (3 maximum for each) points from:**  
Company:  
 reduces (booking) expenses:  
     no need to print out tickets  
     no need for postage  
     do not so many offices/staff to issue tickets  
 eliminates loss of important documents  
 can't be lost, stolen or mislaid
- Customer:  
 simplifies and speeds up check-in at airports  
 easier to buy tickets and arrange seat  
 simpler for passengers – all that is required is a form of id [4]
- (b) **Any two points from:**  
 security features when ticket issued e.g. customer must provide passport number  
 need proof of ID (e.g. passport)  
 need to provide customer details when using e-ticket e.g. customer last name [2]
- (c) **Any four points from:**  
 unemployment for clerical workers  
 new employment in technical work  
 shorter working times/more flexible working for staff  
 less time spent queuing at check-in/buying tickets  
 no need to wait for tickets to arrive  
 less time spent in the process of checking in  
 e-tickets have encouraged more travellers benefiting certain societies/countries  
 increases digital divide as customers need Internet access [4]

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- 5 (a) **Any three points from:**  
 safer than flying the real thing  
 can try out manoeuvres without risk  
 can try out various scenarios to see how the pilot reacts  
 pilot can be automatically assessed  
 less expensive to run once set up  
 a scenario can be repeated as often as required [3]
- (b) **Any six points from:**  
 pilot makes changes to controls  
 sensors give feedback to system  
 information from sensors is compared to stored data  
 computer sends signals to motors to change position etc.  
 use of ADC **and** DAC interfaces  
 system sounds warning sounds/buzzers  
 system updates displays for pilot  
 automatically records data during training [6]
- 6 **Any five points from:**  
 system asks questions  
 user responds with answers  
 future questions are dependent on answers received  
 searches the knowledge base to find a match with input  
 using the inference engine to match...  
 according to rules base  
 most likely outcome is given ...  
 ... with % accuracy/probability [5]
- 7 **Any seven points from (each point needs expansion and reference to scenario, rather than generic responses, to gain the mark)**  
 analysis  
 research similar systems, establish I/O, look at existing system, observation/questionnaires/  
 interviews of users/managers  
 design  
 hardware and software specification for this situation, I/O layouts, establish suitable  
 validation rules, create suitable file structures  
 developing  
 create data structures, amend structures and program modules in light of testing  
 testing  
 test each module with normal/live data, test each module with abnormal and extreme data,  
 test system with all modules connected  
 implementation  
 parallel runs, direct changeover, phased implementation, pilot run  
 documentation  
 technical documentation (test plans and runs, purpose, listings, flowcharts, etc.) and user  
 documentation (guide to software and hardware that makes up the system)  
 evaluation  
 evaluate system with regards to efficiency, evaluate system with regards to ease of use,  
 compare to user requirements etc. [7]

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- 8 (a) **Any four points from:**  
 send out questionnaires/surveys to target groups  
 carry out personal interviewing  
 carry out telephone surveys  
 web sites – ask views and collect information on line  
 store all the information on a database ...  
 ... and later analyse the information  
 produce a report showing results of surveys [4]
- (b) **Any four from:**  
 previous results of research stored ...  
 ... can cross match results and save time and money  
 results from tests on certain drugs stored  
 avoids need to repeat expensive tests  
 can predict likely outcome of doing certain tests on drugs  
 computer can automatically control and monitor mixing of ingredients  
 computer model can be used to predict effects of new drug  
 storage of analytical results/can check analysis against criteria  
 do statistical analysis of results [4]
- 9 **Any seven points described from:**  
 webcams to **capture** images  
 microphones and loudspeakers to hear others  
**large** computer screens to **see** captured images  
 high speed internet connections/routers for data transmission  
 high speed processor to produce good quality images/smooth motion  
 compression software to reduce data transmitted  
 communications software to establish link between sites/protocol  
 sometimes sound/picture quality not good due to delay in signals  
 requirement for high bandwidth to avoid video breakup  
 time difference can be a problem  
 link to server using password and ID  
 software to cover security issues (hacking, etc.) [7]