UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

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.
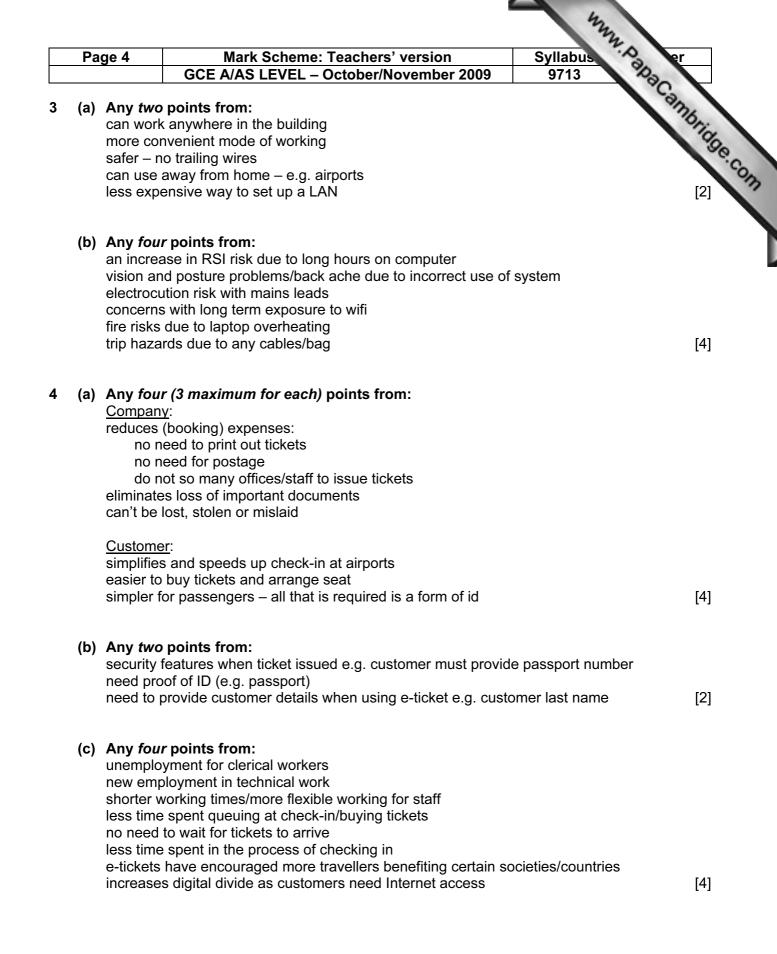
Mark schemes must be read in conjunction with the question papers and the report on the examination.
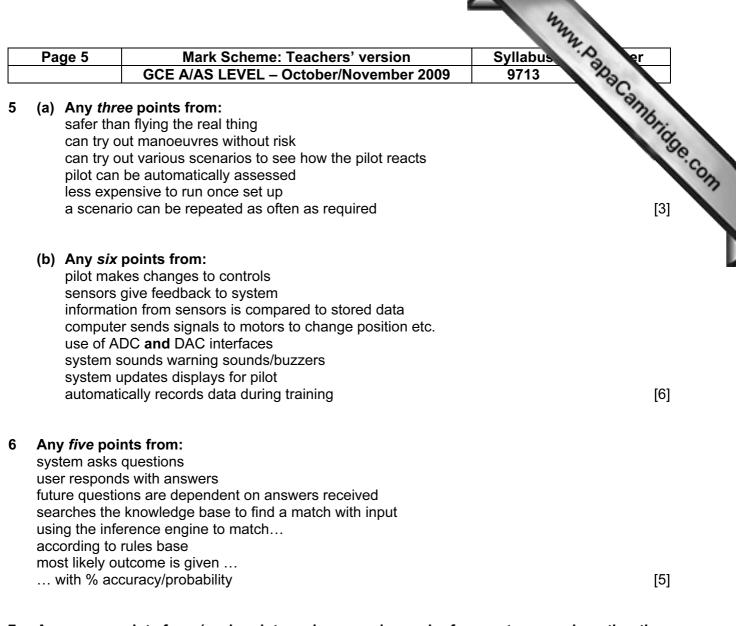
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CIE is publishing the mark schemes for the October/November 2009 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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]

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

    <u>problems</u>
    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

    <u>solution</u>
    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]

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:**
<u>Company</u>:
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

<u>Customer</u>:
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]

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]

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/smoother 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]