UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the May/June 2008 question paper

9713 APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

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1 (a) Any **four** points from:
It is a continuous process
Sensors collect patient information/vital signs
Analogue signal from sensors needs to be converted by ADC to digital signal
Computer files contain acceptable data ranges
If data is outside acceptable range …
… Computer/microprocessor signals alarm e.g. trace goes red
If not then continue to monitor [4]

(b) Any **three** points from:
Gives 24/7 cover qualified e.g. leaving nurses free to deal with other matters/lower costs using microprocessor rather than nurses
Humans can misinterpret signs/microprocessor can detect small changes
Can be programmed to monitor specific areas
Rapid response to any problems
Can monitor several parameters at once
Need for fewer highly trained staff
Can be linked into auto administration of drugs
More accurate measurements than a human
More reliable results than a human [3]

(c) Any **four** points from:
Doctor enters answers to a series of computer questions
Knowledge base/fact base compared/searched
using inference engine …
… and rules/rule base
Output produced giving % probability of diagnosis
Doctor taken through a series of logical steps [4]

(d) Any **three** points from:
(Max of 2 marks for advantages and max of 2 marks for disadvantages)
Reduces time taken to diagnose an illness
Need for fewer skilled staff qualified …
More accurate than a consultant
Reduced chance of errors helps the doctor make a diagnosis
Portable systems can be used anywhere
Emotionally separates the doctor from the patient

Expensive to set up e.g. collect data/create program
Extensive training for doctor on how to use system needed
Needs to be kept up to date at all times
Requires work station in all offices …
… therefore potential security risks [3]

2 (a) Any **six** points from:
Previous results of research work stored …
… can X-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
Computers can automatically control and monitor mixing of ingredients
Storage of analysis results/can check analysis results against specification
Do statistical analysis of results
A description of collaborative research
Requirement for super computer due to amount of processing
Administering drug trials – feedback and monitoring
Modelling human system and testing drugs in this way   [6]

(b) Any **two** from:
Use of spreadsheets to do …
Use of expert systems to do …
Take into account company costs (price based on % profit level)
Goal seeking   [2]

(c) Any **four** points from:
Gannt chart shows all stages/tasks to be done
Gannt chart shows the critical path(s)
Gannt chart shows key project milestones
Gannt chart also shows:
    number of days to do tasks
    progress on tasks as % complete
    progress vs expected time to do work
    how tasks are all linked together
Allows emailing of tasks/project info to others automatically
Can use www/intranet to post or download project information
Allows use of PERT charts
Alert can be sent if target not met
Allows use of resource graphs   [4]

3 (a) Any **five** points from:
Can work at own speed
Can work when you want
Can re-run sections
Can come back any time they want/pause training at any point
Get immediate performance feedback
Immediate assessment made
Can include multimedia elements
No need for teacher/classroom ∴ cost saving
Easy to keep up to date/amend
Can be tailored to exact requirements   [5]

(b) Any **three** points from:
Difficult to monitor any malpractice/work rates
Little student/student or student/teacher interaction
Very specific training/doesn't allow discussions of novel situations
Can be expensive to produce CAL initially
Student can be distracted by … e.g. browsing emails/games   [3]

4 (a) Any **four** points from:

(Max of 3 marks for customer adv and max of 3 marks for retailer adv)

Much wider choice of CD available

If live in small town, have access to all music

No need to travel to store (saves money and time)

Less expensive since savings passed on to the customer

Operates at any time of day and …

Use of search engine to find …

Some people do not like going shopping

Safer to use the Internet because ... e.g. no chance of mugging

No need to have a large store which will lower prices

Larger buying public (e.g. overseas customers) which leads to

Increased sales

Can latch on to customer trends (promos etc.)

Better discounts for larger orders

Can seller cheaper due to lower overheads increasing profits

Larger customer base leads to bulk purchasing – lowers costs

Enables "just in time", qualified … e.g. no build up in stock   [4]

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

Shopping basket to show purchases

Link to secure website for purchase

A description of a 'wish list'

Login leading to account

Additional languages option

Order history feature

Hyperlinks to music related sites e.g. NME

Feature to submit reviews of tracks

"When customers bought X, they also bought Y" facility

Search facility for artist/title

Drop down boxes to choose music categories (etc.)

Help facility

Currency conversion

Data/sales confirmation by email

Saved customer details/customised pages/email registration

Ability to track status of orders

Ability to listen to tracks/see video clips of artists

Recognise customer as soon as they log onto web site

Animation

Hyperlinks to related sites   [5]

(c) Any **five** points from:

The bar code is read

Stock file holds details of item sold

Record found on stock file using key fields/bar code number

Number if items in stock reduced by 1 for each item sold

If number in stock ⩽ re-order level …

… automatic order sent out

When new stock arrives

Stock levels of that item increased accordingly

Automatic print out of stock levels   [5]

Page 5	Mark Scheme	Syllabus	Paper
	GCE A/AS LEVEL – May/June 2008	**9713**	**03**

(d) Any **three** points from:
Customer orders trigger a need to restock
Computer sends order to supplier
Supplies are ordered
To arrive at the warehouse as required e.g. within 48 hours
As required for selling/distribution
Could be sent direct to customer
Avoids need for large stores
Reduces cost by not having a lot of unsold items on shelves   [3]

5 **(a)** Any **five** points from:
Send out questionnaires/surveys to target groups
Research what competitors are doing
Description of personal interview
Description of telephone surveys
Customer uses a web site to complete questionnaire
Description of how customer using web site is prompted to fill in questionnaire
Monitor sales of items from the shops
Store all the information on databases …
… and later analyse the information
Produce report showing results of the surveys   [5]

(b) Any **four** points from:
Ability to download music straight to a computer
Plug and play devices/ease of USB port
Music downloaded to MP3 players
Reduced size of hard discs leading to smaller players
Increased capacity of storage media (flash memory or HD) holding more tracks
Improved compression techniques reducing size of files
Reduced size of batteries leading to smaller devices
Increased battery capacity leading to longer play time
Description of CODEC
Improvements to user interaction with hardware via HMI
Broadband enables much more downloading of music files
Most modern music is already held in a digital format
Solid state memory leads to more robust players
Use of hard drives to store music rather than CDs
Home entertainment system that combines TV, etc.
Generations of all digital music   [4]

6 (a) Any **five** points from each item:
Computer telephony integration (CTI) software
    used to combine the data and voice input to the system
Third party call control software
    allows any computer in network to control any phone in the system
Inbound calling handling software
    routing engine to ensure customers routed to correct "expert"
Script system
    control on screen information for operators
Predictive dialling
    auto dials next number on client list   [5]

(b) Any **four** points from:
Computer software provides the script
Prompts operator to ask appropriate questions
Leads onto suitable advice provided
Can give access to technical help
Can provide access to product stock file (to tell customer if item in stock)
Can provide operator with (email) link to higher technical level/moving off script
Stores customer file information/can display customer file information   [4]

(c) Any **three** points – covering what device and who benefits from it – from:
Touch screen with menus operated by head wands by …
Foot operated devices for pointing by …
Speech synthesis for dumb operators
Microphones for physically handicapped to communicate
Large tracker ball devices for physically handicapped to navigate
Special keyboards/concept keyboards for physically handicapped to select options
Software magnifier for visually impaired   [3]

7 Any **eight** points from:
Expansion of the provision of broadband
Price of computers has fallen dramatically over the last few years
Improved search engines
Faster operating systems/software allow multimedia
Large memory capacities (hard drives, DVD, …) …
… allow large files to be downloaded and stored
Wireless connections to share Internet service
Other devices (e.g. mobiles, digital boxes, portable music players …)
Introduction of online services expanded its use e.g. remote photo storage
Social networking such as chat/personal web space
Greater capacity of Internet backbone
Increase in:
    Operating system development – faster data processing
    More multimedia content posted on WWW
    Web authoring software improved making its easier to create own web site
    Online banking
    Online shopping
    Online auctions
    Music downloads
    Movie/TV programme downloads
    Video conferencing using Internet
    VoIP
    Businesses using WANs   [8]