UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2009 question paper

for the guidance of teachers

0417 INFORMATION AND COMMUNICATION TECHNOLOGY

0417/01 Paper 1 (Written), maximum raw mark 120

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International Examinations

1 **A** Magnetic stripe (1)
B Magnetic ink characters (1)
C Chip (1)
D Optical marks (1)
E Bar code (1) [5]

2 Graphics tablet (1)
Touch screen (1) [2]

3 F (1)
F (1)
T (1)
T (1)
F (1) [5]

4

Desk top publishing	→	producing a school magazine (1)
Measuring program	→	monitoring temperature in a science experiment (1)
Spreadsheet	→	managing personal finance (1)
Inference engine	→	suggesting medical diagnoses (1)
Database	→	storing pupil records in a school (1)

[5]

5 **(a)** Numeric (Integer) (1)

(b) Alphanumeric (1)

(c) Boolean (1)

(d) Date (1) [4]

6

Forward	80
Right	90
Forward	180
Right	90
Forward	70
Penup	
Forward	10
Pendown	
Right	90
Forward	80
(Left	90)

Pendown and Right 90 are interchangeable

1 mark for each pair of statements [5]

7 **(a)** Hybrid/tree (1) [1]

(b) Star (1)
Bus (1) [2]

(c) **(i)** A hub (1)

(ii) A switch (1)

(iii) A proxy server (1)

(iv) A bridge (1) [4]

8 F (1)
T (1)
T (1)
F (1) [4]

9 Real Time (1)
Batch (1)
Real Time (1)
Batch (1) [4]

10 **(a)** 1 [1]

(b) A4 [1]

(c) Any cell in the range B2 to F5 [1]

(d) (=) D2*E2 [1]

(e) Fill down (1)
Copy and paste (1)
Dragging the fill handle down (1) [3]

11 (a) Questionnaires (1)
Interviews (1)
Examination of documents (1)
Observation (1) [4]

(b) To detect typing errors/data entry errors/transcription errors [1]

(c) **Either:**
Visual verification (1)
Typed in data is visually compared with original data (1)
Or
Double entry (1)
Date is typed in twice and computer compares the two versions (1) [2 max]

(d) **Four** from:
Name
Title/gender
Customer number/id
Address
Post code
(Work/Mobile) phone number
(Home/Mobile) phone number
Email address
Car registration number(s) [4]

(e) **Four** from:
Button to close form
Button to first record/form
Button to end of file/new record
Button to previous record/form
Button to next record/form
Submit/continue button
Space to enter required record number
Search facility/engine
Button to go to sub forms [4]

(f) Field names (1)
Validation routines (1)
Field Lengths (1) [3]

(g) **Three** from:
Parallel running
Pilot running
Phased implementation
Direct changeover [3]

(h) The appropriateness of the solution (1)
Comparing the solution with the original task requirements (1)
Any improvements which can be made to the system (1) [3]

12 (a) **Two** from:
Flight/pilot simulation/training
Large scale chemical experiments
Design of fairground rides
Design of large buildings/bridges
Traffic control
Building fire simulation
Car driving simulation
Drug trials [2]

(b) **Three** from:
Real thing may be too expensive to build
Real thing requires too large a time scale
Real thing would be too wasteful of materials
Real thing is too vast a scale
Real thing may occur too rarely
Rate of change can be adjusted for human eye to detect
Corrections can be made if mistakes in real thing/amendments are easier in a model [3]

13 Inference engine (1)
Interactive input screen (1)
Knowledge base (1)
Rules base (1) [4]

14 (a) RSI (1)
Headaches (1) [2]

(b) Take regular breaks (1)
Put a screen filter in front of the monitor (1) [2]

(c) Electrocution (1)
Fire (1) [2]

(d) Don't overload electrical sockets (1)
Make sure there are no bare wires (1) [2]

15 **Three** from:
Keyboard/typing in data
A bar code (reader)
A magnetic stripe (reader)
Touch screen

Three from:
Scanning bar codes/swiping magnetic stripes/touch screen gives fast data entry/keying in data can be slow
Scanning bar codes/swiping magnetic stripes/touch screen reduces errors/keying in data can lead to data errors
Keyboards/touch screens are robust/bar codes can be flimsy
Magnetic stripes are more robust than bar codes [6]

16 (a) **Three** from:
Reduced cost of wage bill
Computer readings are more accurate/human errors are reduced
Readings can be taken more frequently/continuously
Nurses can get tired and forget to take readings
Nurses are so busy they might not be able to take readings regularly
Nurses won't be exposed to contagious diseases
Automatic warnings can be generated
Graphs can be produced automatically
Nurses can be freed up to do other tasks [3]

(b) **Four** from:
Sensors are used (to generate data)
Data are then sent to computer
Sensors read analogue data
Computers work with digital data only
Data needs to be converted so computers can process/understand data [4]

17 **Six** from:
Advantages
Workers can use own office so documents do not get lost in transit/bulky documents/equipment do not have to be carried around
Company can call meeting at short notice
Employees can work from home
Company does not have to pay travelling expenses
Company does not have to pay hotel expenses
Company does not have to pay for conference room facilities
Travelling time is saved
Might be dangerous to fly/travel
Disabled people may find it difficult to travel

Disadvantages
Takes time to train employees
Difficult to call international meetings because of time differences
Initial cost of hardware
Equipment can break down
Strength of signal/bandwith/lipsync can be a problem/connection can be lost/power cuts
Loss of personal/social contact
Takes time for workers to learn new technology
Can't sign documents

Max. 4 advantages/disadvantages

One mark available for reasoned conclusion [6]

18 **Four** from:
Data more difficult to copy
Extra layer of security with PIN number
Even if stolen card cannot be used unless thief knows PIN number
Larger amount of information can be stored
Disabled people find it easier than signing
Reduces disputes at checkouts over validity of signature/
Saves time at checkouts
Not affected by magnetic fields [4]

19 **Eight** from:
Fax
Advantages
Can be used as a legal document
Documents can be very long
Disadvantages
Cannot be certain if correct person has received it
Very slow transmission rates
Not very good quality
Documents cannot be edited easily
Cannot send multimedia files
Won't be received if line is busy/receiving fax machine switched off/out of paper
Wastes/expense of ink/paper

Email
Advantages
Can be confident message will only go to the correct person (if addressed correctly)
Fast transmission times
Attachments can be downloaded and edited
Easier to send large documents
Disadvantages
Can be slow turnaround times
Some systems have limits to size of attachments
Addresses more difficult to remember than phone numbers
Description of how phishing can occur
Description of how viruses can be transmitted

Bulletin boards
Advantages
You don't need an ISP
Messages can be moderated
Automatically creates an archive
Disadvantages
Lack of privacy (every member of the group can see every message)
In older systems only one person can be online at one time
Doesn't alert you to incoming messages
One mark available for reasoned conclusion [8]