

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2006 question paper

0418 INFORMATION TECHNOLOGY

0418/01

Paper 1 maximum raw mark 120

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

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*.

The minimum marks in these components needed for various grades were previously published with these mark schemes, but are now instead included in the Report on the Examination for this session.

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

CIE is publishing the mark schemes for the May/June 2006 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



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- 1 **A** Joystick
B Digital camera
C Memory stick
D Mouse
E Keyboard
- 1 mark each 5 marks

- 2 Bar code reader
Joystick
- 1 mark each 2 marks

- 3
- | | | |
|--------------------------|---|---|
| Control program | → | typing letters |
| Database | → | automatic washing machine |
| Measuring program | → | storing records of books in a library |
| Search engine | → | monitoring rainfall in a weather station |
| Word processor | → | doing research on the Internet |
- 1 mark each correct arrow 5 marks

- 4 Evaluation
Implementation
Implementation
Evaluation
- 1 mark each 4 marks

- 5 Magnetic Stripe reader
Keypad
Bar code reader
- 1 mark each 3 marks

- | | |
|---|---|
| <p>6</p> <p>50</p> <p>-----</p> <p>RIGHT</p> <p>END REPEAT</p> <p>-----</p> <p>RIGHT 180/LEFT 180/PENUP</p> <p>FORWARD 60</p> <p>-----</p> <p>PENDOWN</p> <p>REPEAT 4</p> <p>-----</p> <p>FORWARD 60</p> <p>RIGHT 90</p> <p>-----</p> | <p>6</p> <p>50</p> <p>-----</p> <p>RIGHT</p> <p>END REPEAT</p> <p>-----</p> <p>PENUP</p> <p>FORWARD -60</p> <p>-----</p> <p>PENDOWN</p> <p>REPEAT 4</p> <p>-----</p> <p>BACKWARD 60</p> <p>LEFT 90</p> <p>-----</p> |
|---|---|
- Each 2 statements 1 mark each 5 marks

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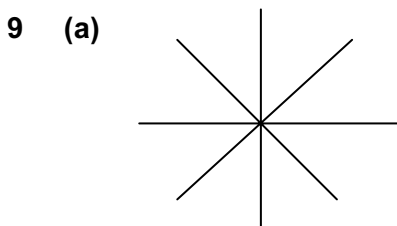
7 (a) Three methods and three corresponding advantages from:

- Parallel running/implementation 1 mark
 - Information is not lost/always a second copy 1 mark
 - Phased implementation 1 mark
 - Still have most of system if things go wrong/ no expense of running two systems together 1 mark
 - Direct implementation/changeover 1 mark
 - Time is not lost/do not have expense of running two systems together 1 mark
 - Pilot running 1 mark
 - Still have most of system if things go wrong/ no expense of running two systems together 1 mark
- 6 marks max

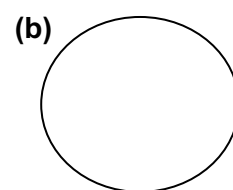
- (b) Normal data is data which is within an acceptable range/ is usual for the situation 1 mark
- Between 0 and 500 (<500 is acceptable as is an example in the correct range) 1 mark
- Extreme data is data which is at either end of a normal range of data 1 mark
- 0 and 500 1 mark
- Abnormal data is data which is outside the acceptable range/ is of the wrong data type 1 mark
- Any negative number or number greater than 500 or text example 1 mark

- (c) Three from:
- Program listing/algorithm
 - List of variables
 - File structure
 - Purpose of the system
 - Screen layouts
 - Print formats/report formats
 - Purpose of the program
 - Hardware requirements/information
 - Software requirements
 - Sample runs
 - Known bugs
 - Validation rules
 - Systems flowchart (1 mark for writing flow chart only)
 - Program flowchart
- 3 marks

- 8 Three from:
- ROM cannot be changed
 - RAM can be read from and written to
 - ROM is read only memory and RAM is random access memory
 - ROM holds instructions that need to be unchanged such as BIOS/program cycles in a washing machine/program instructions in games such as gameboys, playstations etc.
 - RAM holds the work that is being currently done by the user
 - Ram is volatile/ROM is non-volatile
- 3 marks



1 mark each



2 marks

Page 4	Mark Scheme	Syllabus	Paper
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- 10 (a)** Direct/random **not** RAM 1 mark
- (b)** Harry Potter and the Philosopher's Stone 1 mark
- (c)** Must be device
 Borrower - bar code *reader*/magnetic stripe *reader* 1 mark
 Book - bar code *reader* 1 mark
- (d)** Quicker to input 1 mark
 Less likelihood of errors on input 1 mark
- (e)** Two from:
 check digit
 length check
 type check – all digits
 existency check 2 marks
- (f)** Paperback or hardback 1 mark
- (g)** Text/alphanumeric/string 1 mark
- (h)** Code number 1 mark
- (i)** Five from:
 computer reads a record from the book file
 compares the date due back
 with 27th May
 if date due back is less/earlier than 27th May
 using the borrower number
 reads the corresponding record from the borrower file
 address is read from record
 mail merged letter/email is generated
 otherwise reads next record and repeats above
 until end of file 5 marks
- 11** Booking a flight using a computerised booking system
 Withdrawing money from a cash machine
 1 mark each 2 marks
- 12 (a)** any cell from B4 to E7 1 mark
- (b)** five 1 mark
- (c)** D4-C4 1 mark
- (d)** centred 1 mark
- (e)** =SUM(E4:E7) / =E4+E5+E6+E7 1 mark

Page 5	Mark Scheme	Syllabus	Paper
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- 13 (a)** Each field must have appropriate space for answers or be example
 Personal data (name, address, phone, date of birth, etc.) 2 marks for 4 items, 1 for 3 items
 else 0
 Parent's name and phone number/ e-mail address
 Space for minimum of two lines of medical condition(s)
 Information fills the page and clearly be an input screen form 5 marks
- (b)** Three from:
 Field Name
 Field Type
 Field Length
 Key Field
 Validation Check
 Index
 Input mask 3 marks
- (c)** Two from:
 Data could be changed
 Data could be deleted
 Data could be distributed to anybody 2 marks
- (d)** Three from:
 Password protect computer
 Password protect file
 Keep computer/removable media locked securely away when not in use
 Encrypt data
 Keep data on removable storage medium only
 Anti-spyware
 Firewalls 3 marks
- 14 (a)** OMR 1 mark
- (b)** a disc 1 mark
- (c)** e-mail 1 mark
- 15** TRUE
 FALSE
 FALSE
 FALSE
- 1 mark each 4 marks

Page 6	Mark Scheme	Syllabus	Paper
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- 16 (a)** Five from:
 Save spreadsheet
 Load images from clipart
 Download images from the Internet
 Scan images
 Upload images from digital camera
 Load word processing software
 Insert pictures/import pictures/copy and paste pictures
 Insert spreadsheet/import spreadsheet/copy and paste spreadsheet/embed spreadsheet
 Type in text
 Insert file/paste chart
 Format reports
 Edit images
- (Max three marks from 'images') 5 marks
- (b)** Moisture/humidity sensor 1 mark
 light sensor 1 mark
- (c)** Sensors measure analogue quantities 1 mark
 computers use digital data 1 mark
- (d)** Analogue to digital converter 1 mark
- (e)** Two from:
 Computer readings are more accurate
 Readings can be taken continuously
 Humans cannot work without a break
 Actions are taken immediately
 Readings can be taken at night/during the holidays 2 marks
- (f)** Five from:
 temperature read from temperature sensor
 computer compares this temperature
 with preset value
 if lower computer/microprocessor switches heater on
 if lower computer/microprocessor closes windows
 if higher computer/microprocessor switches heater off
 if higher computer/microprocessor opens windows
 if still higher computer/microprocessor switches fan on
 and repeats continuously 5 marks
- 17 (a)** Two from:
 flight simulations
 driving simulations
 nuclear power stations
 simulating traffic flow
 any civil engineering situation which can be modelled
 1 mark for each 2 marks
- (b)** Two from:
 too expensive to build real thing
 too large a time scale required
 wasteful of materials
 variables can be easily changed/different scenarios can be easily used 2 marks

Page 7	Mark Scheme	Syllabus	Paper
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18 Input – symptoms are typed in/input direct from data logger/embedded computer processing

expert system compares symptoms
with those in the knowledge base
using inference engine
using rules base
matches are found

Output – suggested/probable faults

4 marks

19 Eight from:

Customer – advantages

Don't have to waste time travelling (long distances to banks)
Disabled people don't have to travel to bank/leave home
Easier for customers to make transactions
Don't have to spend money on travelling expenses travelling (long distances to banks)
No embarrassment of having to ask for loans face to face
Can bank when banks are closed
Don't have to wait for post/immediate payments can be made
Less danger of mugging

Customer – disadvantages

Lack of socialising/social contacts
Hackers may intercept data and defraud customer
Deprived of personal touch
Easier for customers to mismanage accounts
Phone bills can increase
Without broadband other family members cannot use the phone
Cannot deposit/withdraw cash/money
More vulnerable to phishing
Customers must have a computer/Internet access/(basic) computer skills

Bank – advantages

Fewer cashiers needed – less spent on wages
Fewer branch offices needed – less spent on rates/rent
Less actual cash handled – fewer robberies
Less money spent on security staff

Bank – disadvantages

Lose customers due to lack of personal touch
Initial outlay on computers expensive
Greater risk of fraud so lose money
Need to retrain staff

8 marks