

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MARK SCHEME for the October/November 2008 question paper

<p>0420 COMPUTER STUDIES</p> <p>0420/01 Paper 1, maximum raw mark 100</p>
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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.

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1 Generally, one mark per valid point. Two examples can gain two marks.

(a) **mouse**

pointing device/controls cursor
input device
allows user to select options from a menu
used in windows environment
uses buttons/scroll wheels(s)/touch pad

[2]

(b) **search engine**

used on the Internet
to locate web sites/web pages/other links
based on input of certain key phrases/words

[2]

(c) **buffer**

temporary memory/storage area
compensates for speed differences of device and CPU
for data being transferred/downloaded between components of a computer system
allows other functions to take place at same time

examples

printer
keyboard

[2]

(d) **RAM**

random access memory
memory that can be read from and written to
temporary storage/volatile/memory lost on switching off computer
holds user work/programs/data

[2]

(e) **download**

transfer/copy a file/data/program
from a central computer/host computer/server
to a smaller computer/remote station/user's computer

[2]

2 Any **two** from:

development time is faster

easier to debug

easier to modify/update/understand/edit

leads to a structured approach

can use several programmers to work on individual modules at the same time

complex/large problem/task is broken down into simpler/smaller tasks

[2]

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- 3 marks: 1 mark for correct for/to loop
 1 mark for BOTH input and output in the correct place
 1 mark for finding out how many negative numbers input

e.g. **for** x = 1 **to** 100

input n

if n < 0 **then** neg = neg + 1

next x

print neg

[3]

- 4 Any **two** from:
 viruses
 hacking then changing/deleting data (NOT just hacking)
 surges in electricity supply
 loss of electricity supply/power
 fault in computer/storage device/storage media
 incorrect shutdown of computer system
 fault occurs during transmission of data

Any **two matching above named ways**:

antivirus software
 use of passwords (and ids)/firewall
 anti-surge power supply unit
 UPS
 back up data regularly
 back up data regularly
 retransmission

[4]

- 5 Any **two** from:
 actual musical notes now generated by software
 digital sampling
 software can autocorrect notes/rhythm
 can play back a section straight after written (notes appear on screen)
 don't need to understand music notation to write a score
 instruments play back through electronic effects machines
 mixers/samplers are computer controlled
 use of electronic/digital synthesisers
 electronic keyboards can now simulate any instrument
 music notes automatically printed out in correct format

[2]

- 6 (a) Any **one** from:
 no need to individually price goods/can change prices easily
 shop assistants at tills don't need to know prices
 less chance of fraud (can't change price by simply altering price tag)
fewer staff because of unmanned checkouts

[1]

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(b) Any **one** from:
 produces an itemised bill
 permits unmanned checkouts/use of hand held devices whilst shopping (giving a shorter queuing time)
 less chance of errors in final bill [1]

(c) Any **three** points from:
 bar code read/scanned/entered by POS
 item code identified
 subtracts 1 from number of that item in stock (stock file)
 when number in stock < minimum stock level
 system **automatically** re-orders new stock
 when new stock arrives, number of item in stock is increased
 printouts of stock levels produced for manager [3]

7 (a) Any **one** from:
 fewer cashiers needed/less money on wages
 fewer branches needed/less money on rates or rent
 less actual cash handling/fewer chances of robbery
 can attract more customers (from home and abroad)
 can offer full banking facilities (may not be possible at smaller branches) [1]

(b) Any **one** from:
 can lose customers due to lack of personal touch
 initial outlay on computers/software can be expensive
 greater risk of fraud/hacking and therefore loss of money
 need to set up call centres (can be expensive) [1]

(c) Any **two** from:
 no time wasted travelling to the bank
 easier/faster to manage accounts
 no money spent on travelling expenses going to bank
 no embarrassment asking for loans face to face with a manager
 possible to still bank even when banks closed/can bank 24/7
 don't have to wait for post/immediate payments can be made
 disabled people don't have to travel to a bank
 less chance of being robbed for cash [2]

(d) Any **two** from:
 hackers can intercept data/risk of fraud
 no personal touch
 customers can easily mis-manage their accounts
 increase in phone bills
 without broadband, ties up the phone line
 increased risk of losing personal data [2]

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8 (a) keyed/typed in twice/compared to stored password

(b) (i) encrypt the data

(ii) Any **one** from:
 read only access
 back up the files regularly
 generations of files

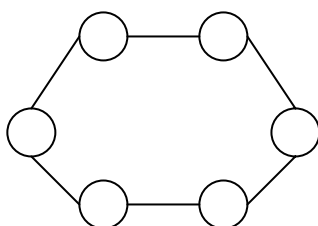
[1]

(c) Any **two** from:

data must be up to date
 data can only be read/used for the purpose for which it was collected
 data must be accurate
 data must be destroyed/deleted when no longer required/don't keep longer than necessary
 data user must register what data is used/stored
 data must be used/collected fairly and lawfully
 data must be held securely
 data must be protected from accidental damage
 only authorised people can have access to data
 fines imposed for data mis-use
 data should not be passed on to a 3rd party without owner's permission
 person can view data and have it changes/removed if incorrect
 safe harbour

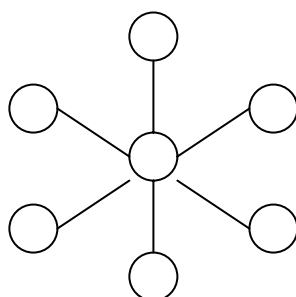
[2]

9 ring network



(1 mark)

star network



(1 mark)

Any other **three** points from:

star:

shared resources
 cable failure isolates/affects only the work station where cable failed
 if one station/connection fails the other devices are not affected
 if the central hub breaks down, the whole network fails
 it is easier to identify faults using this type of topology
 it is easy to expand this type of network

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ring:

- shared resources
- less efficient than star because it needs to travel through all other work stations to get to destination work station
- a faulty connection between two stations can cause network failure
- it is difficult to add a new station/device as it has to come between 2 existing stations
- this type works well during heavy loading
- it is possible to create large networks using this topology

(NOTE: can get a maximum of 3 marks from advantages/disadvantages if diagrams missing or incorrect) [3]

10 (a) Any **two** points from:

- speed of the traffic
- information from number plates
- traffic violation information (e.g. jumped red light)
- number of vehicles on road/at junctions
- whether vehicles are stationary/moving/timing of vehicles

[2]

(b) Any **two** from:

- (fibre optic)cables connected to computer
- radio waves/use of transmitters
- use of satellite/microwave technology

[2]

(c) Any **two** from:

- can keep traffic moving freely.....
- since system can control light sequences (i.e. timing) and traffic signs
- helps to prevent traffic build up/jams
- can reduce pollution levels (less stationary traffic)
- can re-route traffic using electronic signs if accident has occurred
- no need to employ/train human traffic controllers

[2]

11 (a) Any **two** points from:

- local service provider receives Mike's outbound message
- the destination email address is analysed
- service provider looks (service provider) server that handles inbound messages for destination email address
- email 'bounced' with error message if not found
- message is then sent to destination service provider server
- Asif logs onto his computer
- message is downloaded when he opens up his in box
- Asif opens the attached file

[2]

(b) Any **two** from:

- size of file attachment may be too large/take too long to download
- potential for sending viruses
- receiver may not have correct software to read attachment
- ISP could be down

[2]

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12 (a) (i) 4

(ii) = B3 * C3

(iii) = SUM(D3:D9) OR

= D3 + D4 + D5 + D6 + D7 + D8 + D9 [1]

(iv) D7, D10 [1]

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

save the spreadsheets

load images of stock from clipart

download images of stock from the internet

scan in images/photographs of the shop/stock

upload images of shop and stock from a digital camera

load up word processor/DTP software

type in the required text

paste/import/insert picture into document

paste/import/insert spreadsheet (data) into document

insert/paste charts into document

edit the images (e.g. crop, re-size, etc.)

format report (e.g. fonts, layout in columns, etc.)

} max of
} 2 marks
} for input
} of images

[3]

13 (a) Any **four** from (order doesn't matter):

definition of the problem

description of existing situation

evaluation of existing solutions

consideration of alternative solutions

feasibility study/report

fact finding/investigation technique....

.....example of technique (questionnaire, interview, document search, observation)

objectives of proposed solution/requirements specification

[4]

(b) Any **two** from:

re-training

loss of jobs/entrenchment

de-skilling

health problems from over-use of computers

becomes easier to search for/organise information rather than doing it manually

no filing to do

[2]

(c) Any **two** from:

wider audience

less expensive than advertising in the press

more information can be made available (e.g. pictures of cars)

can do automatic calculations (e.g. monthly re-payments)

can have a smaller showroom

fewer sales staff needed

can allow on-line test drive booking (etc.)

[2]

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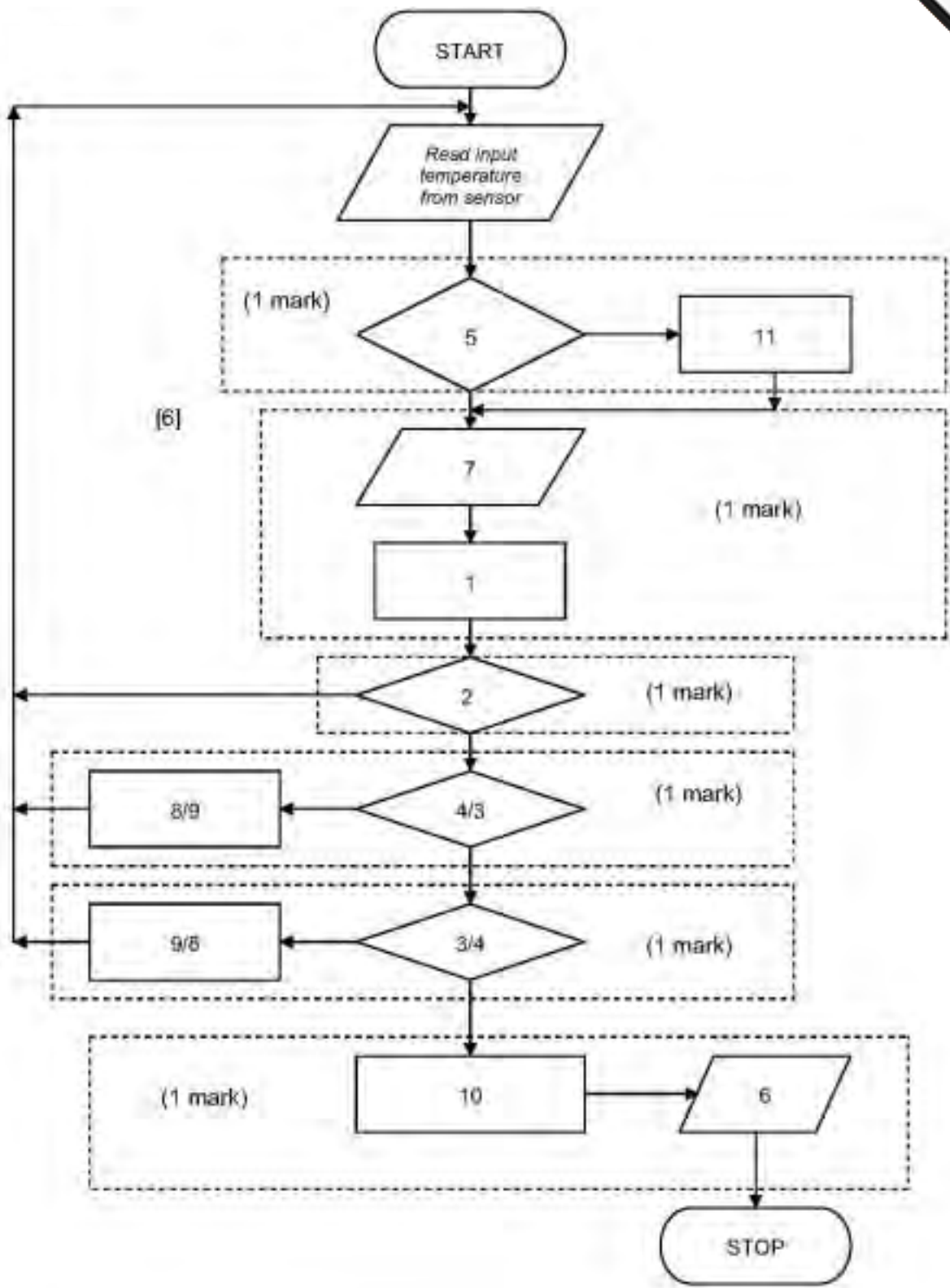
- 14 Any **three** from:
gather information from experts/carry out questionnaires
create knowledge base
put information into the computer
create knowledge base
create the rules/rule base
create/design the inference engine
create/design the input-output interface
fully test the system with known diagnostic scenarios [3]
- 15 (a) 9 [1]
- (b) Earth, Mars, Pluto
(-1 for each error/addition/omission) [2]
- (c) **(Number of rings > 0)** OR **(Diameter (km) > 50 000)**
< ----- 1 mark ----- > < ----- 1 mark ----- >
or
(Diameter (km) > 50 000) OR **(Number of rings > 0)**
< ----- 1 mark ----- > < ----- 1 mark ----- > [2]
- (d) (i) range check
character/type check
(ii) character/type check
length check
NB check in (ii) must be different to check in (i) [2]
- (e) Saturn, Jupiter, Uranus, Neptune, Mars, Earth, Pluto, Mercury, Venus
↑ ↑
(any order) (any order)
(1 mark for the correct data – ALL data must be correct for the mark)
(1 mark for all planets in correct order) [2]

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- 16 (a)** Any **one** point from:
3D visual world
created by a computer
computer simulation
- (b)** Any **two** from:
data gloves
data goggles/visors
special suits fitted with sensors [2]
- (c)** Any **two** from:
3D output of the surroundings
sound effects
smells/simulated smells
movement [2]
- (d)** Any **one** from:
medical training
general teaching
investigating problems in nuclear/chemical plants
3D games
design (of chemical plants, nuclear plants, bridges, buildings, etc.)
virtual tours [1]

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[6]

Page 11	Mark Scheme	Syllabus
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18 (a) customer code/borrower number/customer number

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

computer reads record from book file

compares date due back

..... 11th November 2008/this date

if date due back < November 11th

..... using borrower number/customer code/customer number

reads corresponding record from borrower/customer file

address is read from the record

mail merge/email automatically sent to customer/borrower

read next file

until end of file

[3]

19 Marking points

correct loop

correct inputs

check for type and calculate itemcost

action taken if type NOT 1, 2 or 3

calculate totalcost

calculate the average totalcost

both outputs in the correct place

Sample algorithm:

total cost = 0

for x = 1 **to** 1000

(1 mark)

input type, partcost

(1 mark)

if type = 1 **then** itemcost = partcost * 1.5}

if type = 2 **then** itemcost = partcost * 2.5}

(1 mark)

if type = 3 **then** itemcost = partcost * 5.0}

else print error

(1 mark)

 totalcost = totalcost + itemcost

(1 mark)

print itemcost

next x

average = totalcost/1000

(1 mark)

print average

(1 mark)

[5]