UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the October/November 2008 question paper

7010 COMPUTER STUDIES

7010/01 Paper 1, maximum raw mark 100

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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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International Examinations

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]

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]

(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 <u>manage accounts</u>
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]

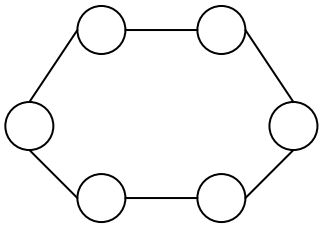
8 **(a)** keyed/typed in twice/compared to stored password [1]

(b) **(i)** encrypt the data [1]

(ii) Any **one** from:
read only access
back up the files regularly
generations of files [1]

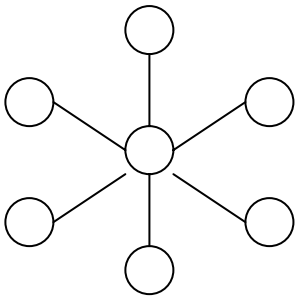
(c) Any **two** from:
data must be up to date
data can only be read/used for the purpose for which it was collected
data must be accurate
data must be destroyed/deleted when no longer required/don't keep longer than necessary
data user must register what data is used/stored
data must be used/collected 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

ring:

shared resources
less efficient than star because it needs to travel through all other work stations first 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]

12 (a) (i) 4 [1]

(ii) = B3 * C3 [1]

(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 } max of
download images of stock from the internet } 2 marks
scan in images/photographs of the shop/stock } for input
upload images of shop and stock from a digital camera } of images
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.) [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]

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]

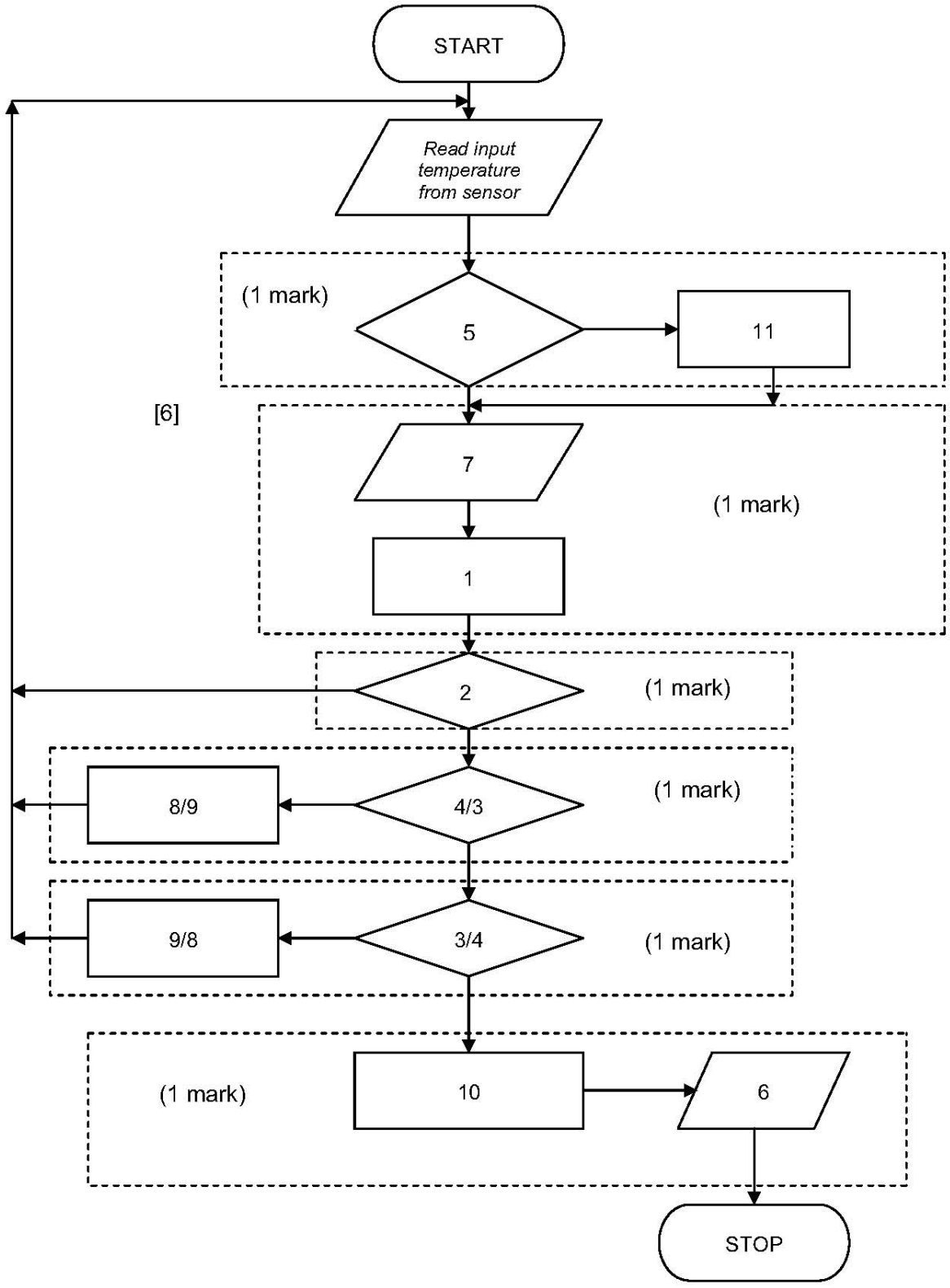
16 (a) Any **one** point from:
3D visual world
created by a computer
computer simulation [1]

(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]

17



[6]

18 (a) customer code/borrower number/customer number [1]

(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 <u>Marking points</u>

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]
```