

MARK SCHEME for the October/November 2008 question paper

0420 COMPUTER STUDIES

0420/01

Paper 1, maximum raw mark 100

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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

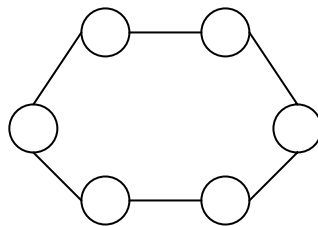
[1]

(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
- finances 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

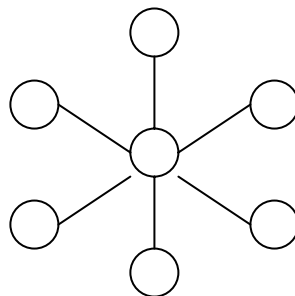
[2]

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 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]

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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 } 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]

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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]

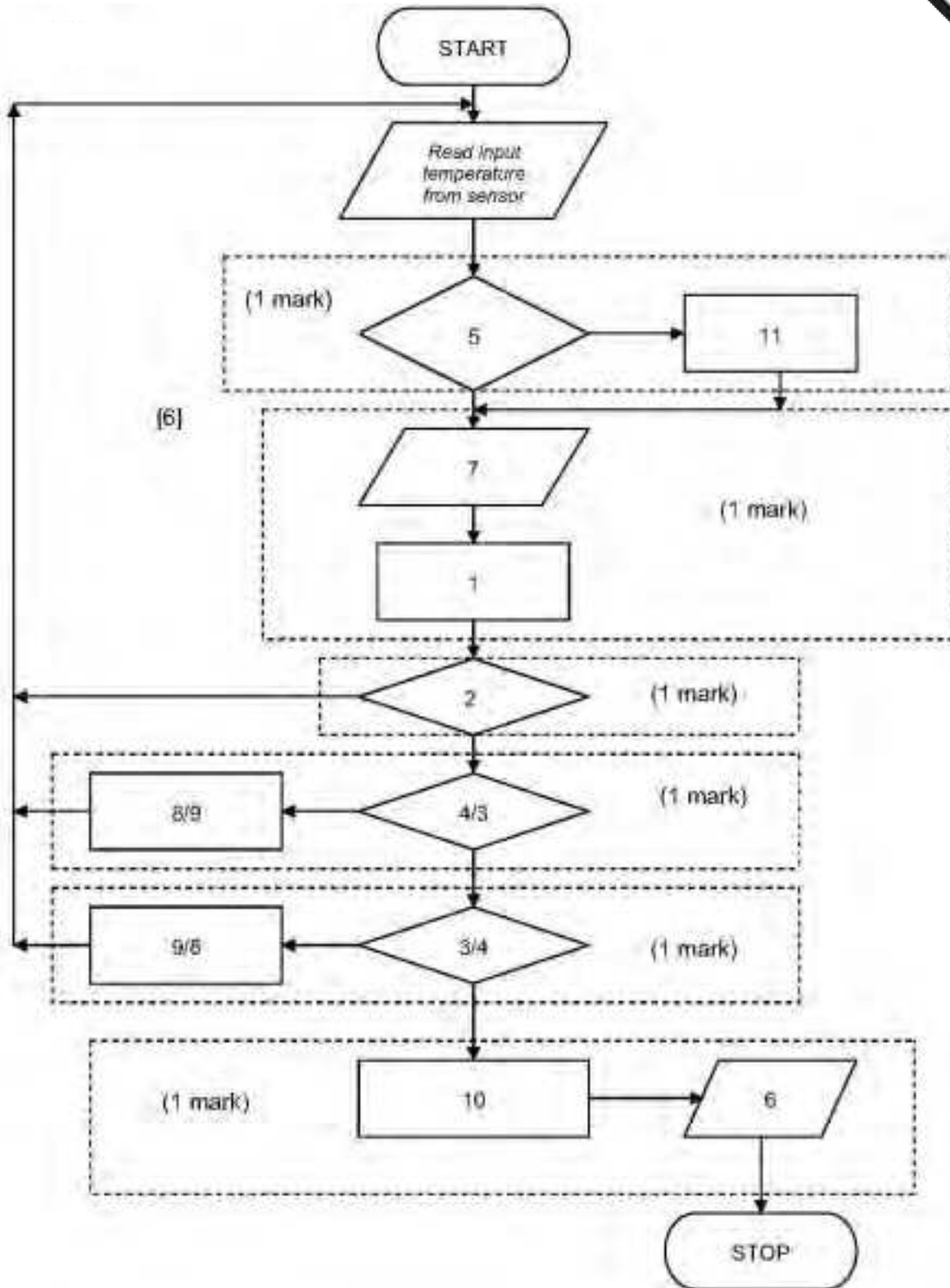
- (d) (i) range check
character/type check
- (ii) character/type check
length check
- NB check in (ii) must be different to check in (i) [2]

- (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]

17



[6]

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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]