MARK SCHEME for the October/November 2009 question paper

for the guidance of teachers

9691 COMPUTING

9691/11   Paper 11 (Written), maximum raw mark 90

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, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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

1 (a) -Spreadsheet
    -to keep the accounts/forecast planning/stock records/sales transactions/invoices
-DTP/graphics/publishing software
    -to produce promotional leaflets/posters
-Database
    -to store customer records/stock file/supplier file
-Website authoring
    -to produce a website for the garage
-Presentation software
    -to create presentations for meetings/open days for new models
-Accounting/Payroll
    -to produce accounts of business/pay for workers.
-image editing software
    -to edit photos of cars (for use on website)
-stock control software
    -for use in parts department
(1 per -, max 3 pairs, max 6) [6]

(b) -standard letter is produced…
-with fields ready to accept data.
-Database of records of cars is searched…
-for all cars whose last service is >10 months < 12 months ago/or sensible comment about search criteria.
-Details taken from record and inserted into copy of letter for printing, like…
-Customer name/address/car model/registration/type of service…
-note made that letter has been sent
-mailmerge
(1 per -, max 4) [4]

2 (i) -Divides up the surface of the disk
    -to create areas of disk that can be used for different purposes/prepare disk for use/delete all from disk.

(ii) -To control messages to and from the disk and OS/to make messages understandable between the disk and the O.S.
    -to install the disk/prepare it for accepting data after wiring up.

(iii) -Changes size of files while maintaining data integrity
    -to decompress/compress video/allows faster download/allows more files to be stored

(iv) -To ensure files imported to system are virus free
    -to check the video files before saving them to system.

(Up to 2 per dotty, max 8) [8]

3 **(a)** **(i)** A piece of hardware which allows the user of a computer system to give the system data.

(ii) A piece of hardware which will keep the data even when switched off/to be used at a later time.

(iii) A piece of hardware which allows a computer system to tell a user information.
(1 per dotty) [3]

(b) **(i)** -The bar code is read by a laser scanner/wand
-The light is reflected back so that the bars can be identified
-Combinations of light and dark bars
-Pairs of bars
-different thickness/width
-stand for different characters
-These characters, once read, are subject to validation checks/check digit calculation.
(1 per -, max 3) [3]

(ii) -Sound/Beep
        -to signify that bar code has been accepted
-Hard copy
        -to provide portable documentation of sale/receipt
-LCD/Screen display
        -to give instant report of price from stock file
(1 per -, max 2 pairs, max 4) [4]

4 **(a)** **(i)** -Instructions typed in…
-at the prompt
-Commands may be combined to make a command sequence
-User must know/understand commands
(1 per -, max 2) [2]

(ii) -e.g. Technician who maintains a computer system
-Requires access to whole system/faster access because done directly
-e.g. application such as telnet [2]

(b) **(i)** -spaces for input
-in strict order
-explanatory comments on screen
-use of drop-down lists/tick boxes/radio buttons
(1 per -, max 2) [2]

(ii) -e.g. ordering goods on-line/applying for membership on-line…
-ensures all relevant information is collected [2]

5 (a) -Each worker has an employee number which can be stored in a logical order
-Matched easily with sorted TF
-So that there are no duplications of people's wages.
-So that no worker is missed
-every worker needs to be accessed.
(1 per -, max 2) [2]

(b) (i) -Large number of records in file…
-make access to an individual record time consuming
-worker will not be satisfied/worker will not get immediate response
(1 per -, max 2) [2]

(ii) Either
-Indexed sequential
-Because it allows both sequential and random/direct access to data
-Because it allows fast access to data while maintaining sequential nature
Or
-Random/direct access
-Because it gives direct access to data/faster access to data
-because immediate access is allowed (while payroll may be produced serially).
(1 for type, 1 for justification) [2]

(c) -Serial
-Because no logical order to input of data
-Records/fields/items input with no logical sequence to file/chronological order.
(1 for type, 1 for justification) [2]

(d) (i) -The production of the payroll
-Because all processing similar/large amount/can be done at off-peak time/data is collected before processing. [2]

(ii) -Individual enquiry made by a worker
-Time critical/must be done while worker waits/changes may be time critical. [2]

6 (i) -Manages execution of instructions
-Fetches instructions in sequence/decodes them.
-Uses control signals to manage rest of <u>processor</u>.
(1 per -, max 2) [2]

(ii) Stores:
-Program instructions;
-Data associated with program;
-Parts of O.S. (currently in use).
(1 per -, max 2) [2]

(iii) -Carries out all arithmetic.
-Carries out logic operations.
-Acts as gateway to and from processor.
(1 per -, max 2) [2]

7 **(a)** -Two sides to problem which must contribute to the problem definition
-The owner of the problem and the system analyst
-They must agree or…
-the result will be a solution to the wrong problem.
(1 per -, max 2) [2]

(b) -Interviews
    -allow a departure from a set script
-Questionnaires
    -allow large participation in short space of time
-Observation
    -can see faults in present process first hand
-Documentation
    -see what people are used to and how to improve docs.
-Meetings
    -allow large number of people to have their say in an unstructured environment.
(1 per -, max 2 groups, max 4, advantages are examples) [4]

(c) -Success of system must be measured against the original objectives
-otherwise system may be considered to be working despite not satisfying objectives
-Payment based on number of objectives satisfied
(1 per -, max 2) [2]

8 **(a)** -LAN has computers geographically close, same building/WAN has computers geographically remote.
-LAN connected using own communication media, cable/WAN relies on external communication media, telephone line.
-LAN more secure from hacking/WAN may have security problems [2]

(b) **(i)** -Each client/computer at end of cable
-each has individual cable to hub/server/switch
-Peripherals like printers are shared.
(1 per -, max 3) [3]

(ii) -Advantage: Reliability/taking machine off or adding new is easy/high security/fewer collisions
-Disadvantage: More expensive due to large amount of cabling/extra hardware/hub failing means network fails.
(1 per -, max 2) [2]

(c) **(i)** To ensure that both are on and ready for communication/to ensure that both are using same protocol. [1]

(ii) -Data sent to buffer from primary memory
-Processor can continue with other tasks
-Data downloaded from buffer to file server
-When buffer empty, interrupt sent to **processor** requesting refill of buffer
-Interrupt added to queue and dealt with when top of queue/interrupt dealt with on receipt by processor.
(1 per -, max 4) [4]

9 **(a)** -Anti-glare screens/low radiation screen
-to protect eyes and reduce headaches
-Wrist supports
-to protect against muscle strain/RSI/ulnar neuritis
-Concealed cables
-to eliminate tripping over wires
-Ensure screens are at correct height/keyboards in correct position
-Avoid muscle problems/stiff neck/back problems.
(Up to 2 per measure, max 2 measures, max 4)　　　　　　　　　　　　　　　　[4]

(b) -Do not want people to see tax details/personal financial details
-May lead to targeting of property because of wealth of owner
-May lead to comparison with others/difficulty with relationships with friends/colleagues
-May lead to blackmail if details wrong.
-concern that details may be incorrect
-leading to incorrect tax demands
-identity theft
(1 per -, max 20)　　　　　　　　　　　　　　　　　　　　　　　　　　　　[2]

10 **(a)** e.g.
INPUT I
LET P = I – 500
IF P < = 0 THEN REPORT "NO TAX TO PAY"
　　ELSE T = P *.1
　　　　　REPORT "TAX TO PAY =", T
END IF

Mark points:
-Input of I to algorithm
-Calculate taxable income
-Correct condition for no tax
-Report no tax to pay
-Calculation of tax iff there is some to pay
-Report tax to pay iff there is tax to pay.
(1 per -, max 5)　　　　　　　　　　　　　　　　　　　　　　　　　　　　[5]

(b) -Do not indicate what they stand for/will make maintenance/debugging difficult to do.
-e.g. INCOME and TAX_TO_PAY (Any sensible)
(1 per -, max 2)　　　　　　　　　　　　　　　　　　　　　　　　　　　　[2]

(c) -Incomes kept in suitable data structure e.g. array (so that they can be read in order into algorithm)
-Loop structure (Repeat, While or For)
-With end condition based on rogue value of I (to indicate end of values) or end of file/ number in file
-Outputs will either be identifiable by inputting (and outputting) person ID with Income/OR will be output to data structure so that ID can be determined by position in data structure.
(1 per -, max 3)　　　　　　　　　　　　　　　　　　　　　　　　　　　　[3]