

**MARK SCHEME for the May/June 2010 question paper  
for the guidance of teachers**

**9691 COMPUTING**

**9691/13**

Paper 13 (Written Paper), 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.

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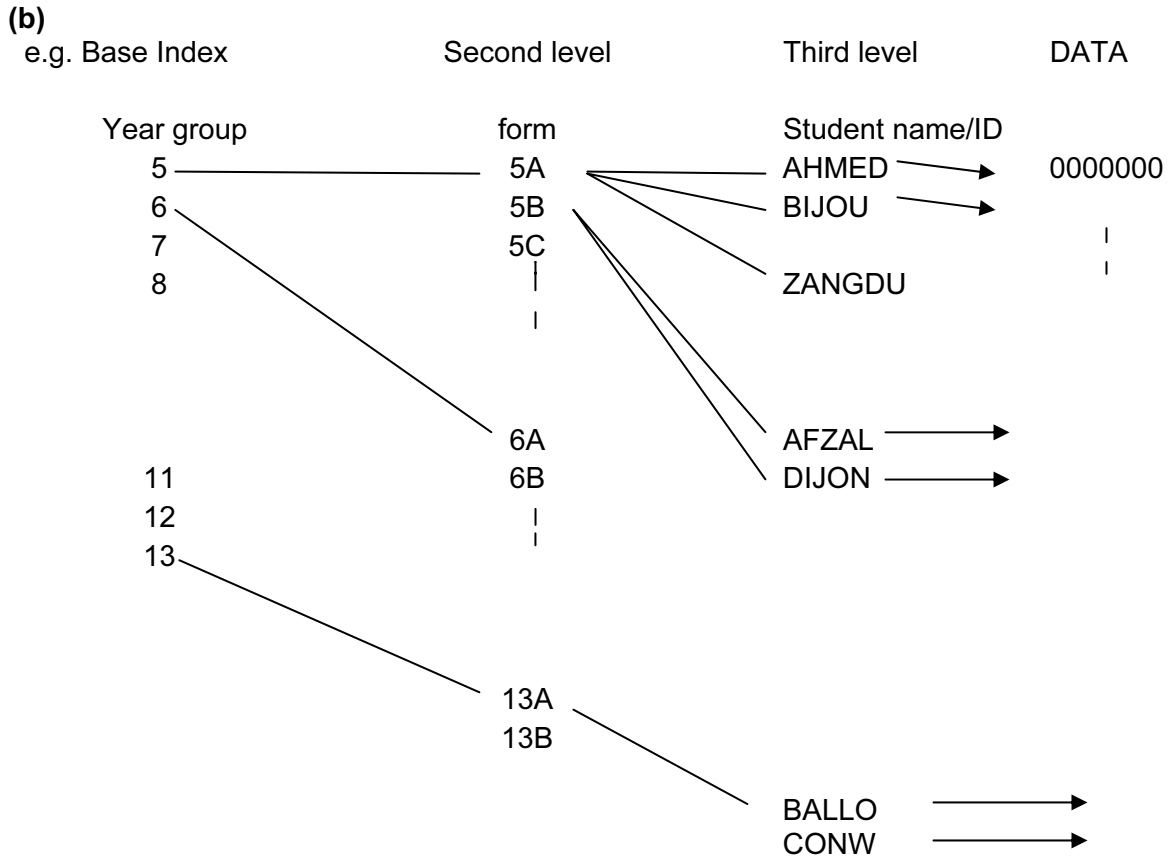
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- 1 (a) (i) -Data held in RAM can be changed  
 -RAM is volatile, ROM is not volatile  
 -RAM normally has greater storage capacity to accommodate the data that is required by the processor  
 (1 per -, max 2) [2]
- (ii) -Software currently being used  
 -Those parts of the operating system currently required by the processor  
 (1 per -, max 2) [2]
- (b) (i) -To connect the motherboard to...  
 -...the communication medium/cable/wireless  
 -To uniquely identify the PC  
 (1 per -, max 2) [2]
- (ii) -Cable/wireless/optic fibre link  
 -The communication medium itself down which signals are sent  
 -Modem/Router/Gateway  
 -In order to communicate over a WAN rather than a LAN  
 -Hub or switch  
 -to connect the computers in a star LAN  
 (1 per -, max 1 pair) [2]
- 2 (a) Input:  
 -Optical mark reader/OMR  
 -used to input the marks on the paper  
 -positions of marks relate to the answers which the candidate wants to register  
 -Keyboard/mouse  
 -to allow user to change parameters/communicate with system  
 Output:  
 -Screen  
 -to show current state of marking  
 -Speaker/light  
 -to make audio/light signal that signifies alarm if problem arises  
 -Printer  
 -to print the results/results so far/answers to individual queries  
 Storage:  
 -Hard disk  
 -to store all the data after it is read  
 -CDRW or DVDRW or flash memory stick or removable hard disk  
 -to make back-up copies of the results  
 (2 per -, max 4 -, only one group to have two -, max 8) [8]
- (b) -OMR reads positions of marks on the paper  
 -Paper must be in the correct position and also clean to avoid misreads  
 -Positions of marks relate to values stored in the memory of the computer  
 -Some marks identify candidate/centre/exam/date  
 -Some marks are the answers  
 -If the mark position matches that in the memory then one is added to the score  
 -When all the marks have been read the score is stored  
 -in the computer's storage for later use  
 -Human being can intervene in order to change parameters at any time  
 (1 per -, max 6) [6]

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- 3** -Digital camera takes picture/existing picture scanned  
 -by means of array of light sensitive pixels  
 -Picture stored in computer memory in...  
 -JPEG format (or other)  
 -Displayed on screen to allow...  
 -manipulation by suitable image editing software  
 -Combined with text using suitable software (DTP, WP, ...)  
 -Sent to colour printer to be printed onto card.  
 (1 per -, max 6) [6]
- 4 (a)** -Set of rules...  
 -to control the transmission of data. [2]
- (b) (i)** -The two devices must be using the same parameters for communication  
 -Bit rate needs to be set  
   -otherwise the message will be sent at a different rate than the receiving device is expecting it to arrive  
   -Which will lead to bits being dropped or counted twice  
 -Error checking procedures need to be determined  
   -if the two devices use different error checking then messages will not be accepted  
 -Codes must be agreed  
   -or a character code will be interpreted as the wrong character  
 (1 per -, max 2 per group, max 5) (Accept other features of a protocol if explained) [5]
- (ii)** Advantage: Packets of message will arrive in the same order that they were sent/No reordering is necessary  
 Disadvantage: Message ties up a complete route through the network for the duration of the communication [2]
- 5 (a)** e.g.
- (i)** Produce advertising material about the cars on sale
- (ii)** Make presentations on cars at marketing events/in the showroom
- (iii)** Store records of customers/cars for sale
- (iv)** To send orders to suppliers/to email customers to tell them when a service is due... [4]
- (b)** e.g.  
 -Control of the petrol pumps and their accuracy/the measurement of different exhaust gasses from cars during servicing  
 -This is a one-off problem/off-the-shelf software will not exist though it may be produced for a number of garages [2]
- (c)** -Standard letter is written with data markers/fields  
 -Database of customers searched with the following criteria  
 -Engine type = 'Petrol'  
 -Year of last purchase < 2009  
 -Selected customers have their details input to data areas/fields on standard letter  
 -May be done electronically resulting in emails being sent.  
 (1 per -, max 5) [5]

- 6 (a) -Enquiries about individual students made by teachers...  
 -need to access data quickly, which is possible through indexes in system  
 -Structure of data lends itself to a series of indexes...  
 -e.g. year that student is in; form that student is in  
 -Some updating/amending/reading needs to be done on groups of students/all students...  
 -e.g. Amending the exam results of students in a year group/reading the contact details for the students in a form  
 (1 per -, max 4) [4]



- Mark Points:  
 -Use of Base index (year group)...  
 -pointing to second level index (form)  
 -Indexes shown to be sequential  
 -Finally pointing to data (block).  
 -Appropriate diagram used for answer  
 (1 per -, max 4) [4]

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- 7 -Backup will be (at most) daily...  
 -because any corruption will lead to loss of important information about students  
 -Archiving is done annually...  
 -removal of redundant/little used data to free space on medium/tidy up index/speed up direct access  
 -Back up is used as security/requires whole file including structure  
 -Sensible to use an incremental back-up as most of the table will remain unchanged from one back-up to the next  
 -Archive is used for statistics and references/tends not to include structure as may never be required/long term queries  
 -Data will be archived after students have left school for good  
 (1 per -, max 5) [5]
- 8 (a) (i) -Form based interface/menu based interface  
 -Contains areas to be filled in with information/gives options to choose from the student table  
 -Data must be input like the form/data can be chosen e.g. from a list of classes  
 -May have drop-down lists/radio buttons  
 -Will have prompts for teacher so correct information is ascertained.  
 (1 per -, max 3) [3]
- (ii) -e.g. Fee payments/medical problems  
 -Restrict number of staff who have access...  
 -by using passwords/access rights  
 -Use firewall to stop hackers/outside access to system/do not allow on a WAN  
 -Control physical access by only allowing data on limited machines/locking files away when not in use  
 -Encrypt data on files.  
 -Make files RO  
 (1 for first point, + 4 more points, max 5) [5]
- (b) (i) -Passive, is a system which provides information but the information cannot be altered by the user.  
 -e.g. Details of the curriculum at the school/pastoral care/fees...  
 -Interactive is a system which allows the information to be altered by the user.  
 -e.g. Parent can make a payment which will change the fees paid data in the student record  
 [4]
- (ii) -Owner of the site/school administrator  
 -Documentation will be in hard copy format  
 -Requires information about how to alter things on the site/e.g. the fees payable  
 -Needs to know what to do if something goes wrong/FAQs/other sensible contents  
 -Visitor to the site/Parent of child at the school  
 -Documentation will be on-screen  
 -Will include simple things like tool tips and more complex like instructions for downloading brochure  
 -Will require guidance when paying fees electronically  
 (2 per -, max 6) [6]

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9 (a) e.g. PROCEDURE MEAN  
TOTAL = COUNTER = 0  
WHILE NOT END OF MARKS, DO  
    READ MARK  
    COUNT = COUNT + 1  
    TOTAL = TOTAL + MARK  
ENDWHILE  
AVERAGE = TOTAL/COUNT

Mark Points:

- Naming of MEAN in some way
  - Initialise Total and Counter
  - Use of WHILE loop with suitable condition
  - Increment counter
  - Cumulative total
  - Calculation of average outside loop
- (1 per -, max 4)

[4]

(b) e.g. PROCEDURE PRIZE  
OPEN FILE STUDENTS  
SEARCH FOR FORM  
SET HIGH = 0  
WHILE NOT END OF STUDENTS, DO  
    CALL PROCEDURE MEAN  
    IF AVERAGE > HIGH THEN HIGH = AVERAGE; STUDENT = CURRENT NAME;  
    FLAG = FALSE  
    ELSE IF AVERAGE = HIGH THEN FLAG = TRUE  
    ENDIF  
ENDIF  
ENDWHILE  
IF FLAG = TRUE THEN REPORT 'Problem Equal high scorers'  
ELSE OPEN FILE 'PRIZES'  
    COPY FORM AND STUDENT TO PRIZES  
ENDIF  
END

Mark Points:

- Name procedure and open student file
  - Initialise high score
  - While loop with correct condition
  - Use of Mean, not repeat of statements
  - Condition between average and high
  - Correct action if average > high
  - Correctly identify problem if average = high
  - Sensible action taken for equal values
  - Correct problem report
  - Correctly opens PRIZES and stores values of form and student name in it
- (1 per -, max 7)

[7]