

**MARK SCHEME for the May/June 2009 question paper
for the guidance of teachers**

9691/01	9691 COMPUTING Paper 1 (Written Paper 1), maximum raw mark 90
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Page 2	Mark Scheme: Teachers' version	Syllabus
	GCE A/AS LEVEL – May/June 2009	9691

- 1 (a) (i) To allow the user to give the computer data/change data into computer understandable form
- (ii) To allow the computer to give information/communicate with the computer/to change information from computer into human understandable form
- (iii) To keep data while the computer is not using it
(1 per dotty) [3]

- (b) -Black and white laser
 -e.g. Use in office to produce letters
 -Produces high quality/speedy so does not develop large queue on a LAN
- Colour laser
 -e.g. To produce reports for a meeting
 -High quality outputs/can produce large quantity quickly
- Dot Matrix
 - e.g. Print receipts at checkout/tickets on railway
 -Produces more than one copy at a time, one for customer + one for shop
- Inkjet
 -e.g. Doing homework at home
 -Relatively cheap and slowness does not matter
- Plotter
 -e.g. Produce architect's plans
 -Precision drawing tool
- Braille printer
 -Producing documents/books for blind people
 -Outputs physical/3D form of data
 (3 per type, max 3 types, max 9) [9]

- 2 (a) (i) Name: Text/String/alpha/alphanumeric
 Description: Text/String/alpha/alphanumeric
 Cost: Currency/integer/real/float
 Whether: Boolean
 Number: Integer
 (1 for first three, 1 for last 2) [2]

(ii) Field Sizes:

10	–	50
50	–	250
4	–	8
1		
<u>1</u>	–	<u>4</u>
Total		66 – 313 bytes (1)

- (1) for showing that the field sizes should be added up
 Multiply Total by 1000 (1) = 66000 to 313000 bytes
 Add extra (10%) for overheads (1) = 72600 to 344300 bytes
 Convert to sensible unit (÷1024) (1) = 70.9Kb to 344.3Kb.
 (5 possible mark points, max 4) [4]

Page 3	Mark Scheme: Teachers' version	Syllabus
	GCE A/AS LEVEL – May/June 2009	9691

- (b) Advantage:
 -Processed/Searched more easily/quickly/Estimate of file size is easier
 -e.g. When a customer wants to know the availability of an item the record can be
 quickly/makes selection of storage easier
 Disadvantage:
 -The size of fields must be determined before use so space is often wasted/not sufficient
 -e.g. The "description" field may not be large enough for a particular item.
 (1 per -, max 4) [4]

- 3 -Working from home
 -Fewer journeys/more free time/less supervision...
 -Different types of jobs/jobs lost/job opportunities arising
 -Production line/manual jobs being lost/replaced by more technical jobs
 -Work done can be more visible to managers
 -All work/times working can be seen/leading to rewards where appropriate/sanctions when poor effort
 -Safety of workers is improved
 -Computers/robots do dangerous tasks/can be used to accurately monitor dangerous processes
 -Work time can be less rigid
 -Work can be fitted in round other commitments/leads to simpler ways of job sharing
 -The 24 hour job/office/commitment/world workforce
 -Workers may always be contactable/throughout the world/communications.
 (Up to 2 per group, max 3 groups, max 6) [6]

4 (a)

Line	X	A	OUTPUT	CONDITION
1	1			
3	1	1		
4	1	1	1,1	
5	2	1		
6	2	1		FALSE
3	2	4		
4	2	4	2,4	
5	3	4		
6	3	4		TRUE
7	3	4		

(1 for values of X and matching line numbers; 1 for values of A corresponding to values of X; 1 for giving correct outputs; 1 for giving 2 conditions) [4]

- (b) (i) Change X = 3 to X = 11 [1]
 (ii) -A first line to allow user to input value (N)
 -UNTIL X = (N + 1) [2]

Page 4	Mark Scheme: Teachers' version	Syllabus
	GCE A/AS LEVEL – May/June 2009	9691

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(c) e.g.

```
X = 5
REPEAT
  A = X * X
  OUTPUT X, A
  X = X + 5
UNTIL X > 25
END
```

Mark points:

- Begins with 5 (as first output)
- Loop with working condition
- Counter correctly incremented

[3]

5 (a) (i) -Options appear on screen from which to select

-Selection may lead to submenus

-Menus arranged in a tree structure (from single root to many branches)

Use: In a passive information system e.g. Tourist guide at a train station.

(1 for use, + 2 other -, max 3)

[3]

(ii) -Follows a spoken language allowing user to input queries in normal vocabulary/syntax

-Computer understands keywords/positions in sentence to get idea of syntax

-Will then search database for keyword to provide output or responses.

Use: e.g. On an expert system or search engine.

(1 for use, + 2 other -, max 3)

[3]

(b) -Provides utility programs to allow user to carry out maintenance tasks (any 3)

-Provides security measures like passwords and identifications.

-Controls the hardware and the operations they allow.

-Provides translators to convert software into a form useable by the computer.

-Manages interrupts.

-To provide a platform for the execution of software

(1 per -, max 3)

[3]

6 (a) (i) Data is transmitted along a single wire/one bit at a time.

[1]

(ii) Data is transmitted along a number of wires/one byte (or more) at a time.

[1]

(iii) Data can only be transmitted in a single direction.

[1]

(iv) Data can be transmitted in both directions but only one at a time.

[1]

(b) (i) -Each byte contains an even number of 1's

-A special bit is set to 0 or 1 to ensure that total is even.

-Byte is checked for even number of 1's after transmission.

(1 per -, max 2)

[2]

(ii) -When two bits are in error the errors cancel each other out/10101001.

[1]

Page 5	Mark Scheme: Teachers' version	Syllabus
	GCE A/AS LEVEL – May/June 2009	9691

- 7 -Data collected on site/by drilling /observation/explosions
-Data collected remotely/by satellite/by electronic means
-Collected data input to system via HCI/automatically
-Data input is compared to library of data to find matches...
-by inference engine...
-Using rules found in rule base
-Decisions made about geologic structure reported through HCI.
(1 per -, max 4) [4]
- 8 (a) -Site map
-a diagram showing the way the different screens fit together
-shows the links between screens,
-Gantt chart/progress chart
-shows the different parts that need to be developed
-shows which parts of the development are independent and which are reliant on each other.
-Spider diagram
-to show interaction between the different elements of the solution
-and those parts which are independent of each other.
-Flow diagram
-to show the order of producing the parts of the solution
-or to show the flow through the proposed site.
(Up to 2 groups, up to 2 per group, max 4) [4]
- (b) -Documentation for owner of site
-will be paper based
-will contain instructions for changing/maintaining site
-Documentation for viewer/visitor to site
-will be on-screen
-giving detailed help on searches/use of facilities/communication with site owner... [4]
- 9 -Sound
-Music to accompany the pictures/speech to explain the pictures....
-Video/animation
-Moving pictures to better describe the object on the site
-Automatic hard copy/saving
-Automatic downloading of data to printer/hard drive for future reference.
-Hyperlinks
-Allowing access to different sites/parts of site
(Up to 2 groups, up to 2 per group, max 4) [4]
- 10 Colour:
-Contrast
-Corporate schemes
-Aggressive/passive/soothing colour schemes
-Consistency over site to make site look cohesive
-Use colour to provide emphasis
-Accessibility issues e.g. colour blindness

Page 6	Mark Scheme: Teachers' version	Syllabus
	GCE A/AS LEVEL – May/June 2009	9691

Layout:

- Consistent layout so user gets used to 'what is where'.
- Important things to top and left
- Data spread out across whole screen
- Tab order
- Group similar data together

Content:

- Limit to amount of content on a page
 - Content on a page is cohesive
 - Content matches the published intentions of the site
 - Content is of sensible type and reading age for audience.
- (1 per -, max 2 per group, max 6)

[6]

- 11** -The bit rate is a measure of the rate that data can be sent across the communication medium
- Different communication media have different bit rates
 - For simple text/still pictures...a low bit rate connection is adequate
 - because volume of data per page is low and fixed
 - For (live) video/sound...bit rate needs to be high
 - because large volume of data which must be downloaded in real time because...
 - information is time sensitive.
- (1 per -, max 4)

[4]

- 12 (a) (i)** -Custom written software is especially written/according to the requirements of the customer
- Off the shelf is readily available/needs tailoring to the needs of the customer

[2]

- (ii)** -no delay as it is ready immediately
- No shortage of experienced users/ready trained/No learning curve
 - Software should be error free
 - Help available through Internet/colleagues/courses
 - Compatible with other users/software
- (1 per -, max 2)

[2]

- (b) (i)** -Check data input to ensure it matches source data
- Typed in twice...
 - by different people/at different times
 - inputs checked against each other for errors
 - manual check by comparing...
 - screen output of input with original document.
- (1 for first -, + any 2 other -, max 3)

[3]

- (ii)** -Check data input is sensible/follows set rules/are reasonable
- Data type/should be numeric
 - Data format/should be in currency form/xxx.xx
 - Length check/input should be < x characters
 - Presence check/something has been input.
 - Range check/value between 0 and some upper limit
- (1 for first -, + any 2 other -, max 3)

[3]