

CAMBRIDGE INTERNATIONAL EXAMINATIONS
GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the May/June 2014 series

9691 COMPUTING

9691/12

Paper 1 (Written), maximum raw mark 75

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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

1 (a)

	A	B	C	D
	primary memory storage	magnetic secondary storage	optical secondary storage	solid state secondary storage
DVD – RAM			✓	
ROM	✓			
hard disk		✓		
flash memory				✓

1 mark for each correct tick

[4]

(b) (i) A

[1]

(ii) B

[1]

(iii) C / D (If both ringed here then still award a mark)

[1]

(c) 1 mark for a benefit and 1 mark for a drawback

benefit

- faster start up speed (no “spin-up” required)
- no moving parts (so more robust)
- very fast read write seek (latency) times
- doesn’t require additional read/write hardware devices (just plugs into USB)
- can store data indefinitely provided that it is periodically refreshed

drawback

- vulnerable to magnetic fields and electrostatic charges
- limited write cycles
- more vulnerable to corruption if used as primary source of saving files
- because it is small, very easy to lose

[2]

Page 3	Mark Scheme	Syllabus	Paper
	GCE AS/A LEVEL – May/June 2014	9691	12

2 (i) Any **two** from:

circuit switching

- path decided on before data transmission starts
- system decides in which route to follow ...
- ... and transmission goes according to this path/route
- for whole length of communication session, route is dedicated exclusively
- route only released when data transmission stops

packet switching

- data is broken up into packets
- packets are reassembled at destination
- packets are sent towards destination independent of each other
- each packet has to find its own route to destination
- decision as to which path to take is decided when each node is reached
- nodes are switches, routers, etc.
- each packet finds its way based on information it carries

[2]

(ii) Any **two** from:

baseband

- data sent as digital signals ...
- ... through the media as a single channel
- ... that uses entire bandwidth of the media
- it is bi-directional
- (frequency-division) multiplexing is not possible

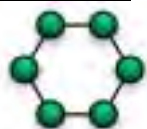
broadband

- data sent in form of analogue signals
- each transmission is assigned to a portion of the bandwidth ...
- ... thus multiple transmissions are possible at the same time
- communication is uni-directional
- to send and receive needs two pathways ...
- ... either by assigning a frequency for sending and a different frequency for receiving
- ... or by using different communication paths
- multiplexing is possible using this method

[2]

(iii) Any **two** from:

ring topology



or if diagram described

- faulty connections can cause whole network to fail
- it is difficult to expand this type of network
- works well under heavy loading
- possible to form very large networks
- no server
- less secure (because data passes through all computers)

Page 4	Mark Scheme	Syllabus	Paper
	GCE AS/A LEVEL – May/June 2014	9691	12

star topology



or if diagram described

- failure in any connection doesn't necessarily stop the rest of the network from working
- if the central hub/switch fails then the whole network fails
- it is easier to identify faults in this arrangement
- it is easier to expand this type of network
- needs server
- more secure (nodes contact each other directly through the hub)

[2]

3 (a) 1 mark for feature + 1 mark for reason (reason must match feature)

- very clear, non-confusing icons/representations of flight paths
 - therefore it is easy to identify flights/less errors in identification
- use of very clear and consistent colours (e.g. green – ok, red – danger, etc.)
 - allows “at a glance” status of each flight
- easy to navigate between screens
 - to allow fast transfer to and from other flight information screens
- audible warnings of dangerous situations
 - in case any messages on the screen have been “overlooked”
- not too much information on the one screen
 - to avoid “information overload”/so that important details aren't “hidden”

(b) 1 mark for method + reason which must be in context of air traffic control

appropriate

- pilot or direct
- not possible to run two systems together for safety reasons
- direct is an immediate changeover, so only one system in place
- pilot system only works if there is more than one control room

not appropriate

- parallel or phased
- parallel requires two systems running concurrently .. not possible here
- whole system needs to be up and running so phased wouldn't work for safety reasons