MARK SCHEME for the May/June 2013 series

0417 INFORMATION AND COMMUNICATION TECHNOLOGY

0417/22   Paper 2 (Practical Test A), maximum raw mark 80

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 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

Name, candidate number, Centre number

Header: Candidate details   1 mark
Filename and path   1 mark

Full file path and candidates file name

Building a *Crazy but Cool* Computer

Spelling correct, 26 point serif font   1 mark
Text italicised, centre aligned   1 mark

Spelling correct, 18 point serif font   1 mark
Underscored, right aligned   1 mark

Choosing your storage by: name

This is the third of our articles on building your "Crazy but Cool" computer. It may only b̲e̲ [...] articles we explored choosing a mo[...] speed gaming machine. Then we looked at cases and power supplies. This week we consider storage devices.

Page layout   changes here

You will like the SATA connections as each drive has its own cable and your motherboard will have plenty of connectors. No need any more for those ribbon connectors and daisy chaining your devices! There is another choice you will have to make. SATA2 is being replaced by SATA3 – twice as fast data transfer! So, will you look for a SATA3 drive as your [...] his?

Spellings corrected   1 mark

Get lots of storage

You have already, perha[...] good size hard disk, b[...] on examining it you see that its connection is a parallel ATA system and your new motherboard only supports serial ATA connections. You "only" had a 500gb drive and now you think that as this was getting pretty full you will need at least a tera[...] te of storage. If you are seriously gaming or streaming video you may [...] en this gets full soon. This may seem incredible, but whenever we [...] lled what seems to be an excessively huge amo[...] applications that will [...]

Use an SSD for the OS

For your main storage you will prob[...] use a mechanical hard drive which writes data to a series of "[...]" and has a moving read/write head. There is nothing wrong [...] devices, but for speed you might be thinking o[...]

Subheads body text plus 14 pt and centred   1 mark

have no moving parts, so are more robust in moving environments such as laptops or tablets. They are also very fast as they use flash memory. The disadvantage of them is that they are much more expensive than mechanical hard disk drives.

One choice you mi[...] operating system a[...] your data storage. [...] much quicker and [...]

Appropriate image found   1 mark
Placed here and aligned to top of text and
aligned to left margin   1 mark
with text wrapped   1 mark
Resized to half column width
with aspect ratio maintained   1 mark

Body text:
2 columns   1 mark
with 1 cm spacing   1 mark
12 point sans-serif font   1 mark
Single line spacing, left aligned   1 mark
Applied to all paragraphs with
consistent one line spacing between   1 mark

Name, candidate number, Centre number

Full file path and candidates file name

So, why not go all out for solid state storage? One reason is that even in this fantasy world of building a crazy but cool machine there are limits to finance and two 512gb SSD drives will probably cost more than the rest of the project together. Another reason is that currently SSDs are said to slow down rapidly when they have made a lot of writes to the disk. Controllers are being developed to "level" the wear and they are now said to be better at keeping to their original incredible speed. Hence the plan to use a small SSD for the operating system and programs, and a mechanical hard disk drive for data storage.

Here are examples of the cheapest storage devices per GB in our list.

Drives you might consider				
Type of drive	Model	Capacity	Price	Price_Per_GB
HDD	Samsung Spinpoint	2000	€129.99	€0.06
SSD	Corsair Force	120	€122.98	€1.02

You will find other combinations of hard disk and solid state technology. Some hard disk drives include a solid state cache to improve hard disk drive

Here is a RAID configuration. You might combine disks for speed or security or both. In RAID0, the data is written across two disks as though they were one. This is called "striping". This gives extra speed writing to disk, but has the disadvantage that the

the loss of data on both disks. You will need to make sure you have regular backups of your data.

RAID1 configuration mirrors the data on two discs. This gives the security of automatic backup as all data is recorded on both discs and if one disc fails, the other can take over.

For speed and security, RAID10 combines both striped and mirrored data using four disks. This now sounds a bit excessive for our gaming machine, but you might consider a pair of SSDs in RAID0 for your operating system.

Two correct records identified   2 marks
Text inserted into table and style matches body text
                                        1 mark
Top row cells merged and centred   1 mark
Second row only underlined   1 mark
Outside lines only thick   1 mark

Footer:
Date   1 mark
Automated page number   1 mark

01/08/2013

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Name, candidate number, Centre number   Full file path and candidates file name

Here are some fast solid state disk drives that you might consider for the system:

Model	Type	Gb_s	Capacity	Price
Samsung 830	SSD	6.0	128	€164.98
OCZ Agility	SSD	6.0	120	€129.99
Corsair Force	SSD	6.0	120	€122.98
OCZ Vertex	SSD	6.0	120	€144.98
Kingston HyperX	SSD	6.0	120	€149.98
Samsung 830	SSD	6.0	64	€89.99
OCZ Vertex	SSD	6.0	60	€83.99

Happy building! Next week we will ~~look at~~ options for a graphic card.

DB extract: Placed here   1 mark
                 SSD <=128   1 mark
          5 specified fields:
          All visible within margins   1 mark
          Sorted descending on capacity 1 mark

Document layout:
Page size A4, orientation landscape   1 mark
Margins: top, bottom 2 cms   1 mark
                left 2.5, right 1 cm   1 mark
      No widows, orphans, split lists, blank pages   1 mark
      Document complete, paras intact   1 mark

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Internal SATA storage devices

Report title   1 mark

Type	Code	Model	Connection	RPM	Interface	Gb_s	Capacity	Size	Price	Stock_item	Price_per_GB
HDD	973001	Seagate Barracuda	Internal	7200	SATA	6.0	500	3.5	€79.99	Yes	€0.16
HDD	973002	Hitachi Deskstar	Internal	7200	SATA	3.0	1000	3.5	€89.98	Yes	€0.09
HDD	973003	Samsung Spinpoint			SATA	3.0	1000	2.5	€99.99	Yes	€0.10
HDD	973004	Samsung Spinpoint			SATA	3.0	2000	3.5	€129.99	Yes	€0.06
HDD	973006	Samsung Spinpoint	Internal	7200	SATA	3.0	1000	3.5	€99.99	Yes	€0.10
HDD	973007	Samsung Spinpoint	Internal	5400	SATA	3.0	250	2.5	€54.99	Yes	€0.22
HDD	973008	Samsung Spinpoint	Internal		SATA	3.0	160	2.5	€49.99	Yes	€0.31
HDD	973009	Hitachi DeskS		7200	SATA	6.0	200		.08		
HDD	973010	Hitachi TravelStar	Internal	5400	SATA	3.0	500	2.5	€69.99	Yes	€0.14
HDD	973063	Hitachi UltraStar	Internal	10000	SATA	6.0	850	3.5	€459.99	Yes	€0.54
SSD	973022	Kingston HyperX	Internal	N/A	SATA	6.0	120	2.5	€149.98	Yes	€1.25
SSD	973023	OCZ Vertex	Internal	N/A	SATA	6.0	120	2.5	€144.98	Yes	€1.21
SSD	973024	Corsair Force	Internal	N/A	SATA	6.0	120	2.5	€122.98	Yes	€1.02
SSD	973025	OCZ Agility	Internal	N/A	SATA	6.0	120	2.5	€129.99	Yes	€1.08
SSD	973026	Samsung 830	Internal				128	2.5	€164.98	Yes	€1.29
SSD	973027	Samsung 830	Internal				64	2.5	€89.99	Yes	€1.41
SSD	973028	OCZ Vertex	Internal				60	2.5	€83.99	Yes	€1.40
SSD	973029	Samsung 830	Internal	N/A	SATA	6.0	256	2.5	€319.99	Yes	€1.25
SSD	973030	Kingston SSDNow	Internal	N/A	SATA	6.					1.42
SSD	973031	OCZ Octane	Internal	N/A	SATA	6.					1.31
SSD	973032	Crucial m4	Internal	N/A	SATA	6.					1.27

Sort Type ascending
and Code ascending   1 mark

Record added 1 mark

Price_per_GB calculated   2 marks

Select Connection is Internal   1 mark
Interface is SATA   1 mark
Stock_item is Yes   1 mark

Required data and labels all visible   1 mark
Landscape   1 mark
One page wide   1 mark

Type	Code	Model	Connection	RPM	Interface	Gb_s	Capacity	Size	Price	Stock_item	Price_per_GB
SSD	973033	Samsung 830	Internal	N/A	SATA	6.0	512	2.5	€629.98	Yes	€1.23
SSD	973037	OCZ Agility	Internal	N/A	SATA	6.0	480	2.5	€559.99	Yes	€1.17
SSD	973038	Crucial m4	Internal	N/A	SATA	6.0	512	2.5	€559.99	Yes	€1.09
SSD	973040	Intel 320	Internal	N/A	SATA	6.0	300	2.5	€392.98	Yes	€1.31
SSD	973041	Kingston HyperX	Internal	N/A	SATA	6.0	240	2.5	€384.99	Yes	€1.60
SSD	973062	Samsung 830	Internal	N/A	SATA	6.0	256	2.5	€389.99	Yes	€1.52
SSD	973064	Intel 320	Internal	N/A	SATA	6.0	512	2.5	€639.99	Yes	€1.25

Name, candidate number, centre number

Average price per GB for all drives €0.89

Record added 1 mark

Record added 1 mark

Label correct 1 mark

Candidate details on left 1 mark

Calculated average price 1 mark

Currency fields all euro and 2dp 1 mark

Title   1 mark

Candidate details at top   1 mark

Some of the fastest SSD drives

Model	Connection	Type	Interface	Gb_s	Capacity	Price	Stock_item
Kingston SSDNow	Internal	SSD	SATA	6.0	480	€679.96	Yes
OCZ Octane	Internal	SSD	SATA	6.0	512	€669.99	Yes
Crucial m4	Internal	SSD	SATA	6.0	512	€649.99	Yes
Intel 320	Internal	SSD	SATA	6.0	512	€639.99	Yes
Samsung 830	Internal	SSD	SATA	6.0	512	€629.98	Yes
Crucial m4	Internal	SSD	SATA	6.0	512	€559.99	Yes
OCZ Agility	Internal	SSD	SATA	6.0	480	€559.99	Yes
Intel 320	Internal	SSD	SATA	6.0	300	€392.98	Yes
Samsung 830	Internal	SSD	SATA	6.0	256	€389.99	Yes
Kingston HyperX	Internal	SSD	SATA	6.0	240	€384.99	Yes
Samsung 830	Internal	SSD	SATA	6.0	256	€319.99	Yes
Samsung 830	Internal	SSD	SATA	6.0	128	€164.98	Yes
Kingston HyperX	Internal	SSD	SATA	6.0	120	€149.98	Yes
OCZ Vertex	Internal	SSD	SATA	6.0	120	€144.98	Yes
OCZ Agility	Internal	SSD	SATA	6.0	120	€129.99	Yes
Corsair Force	Internal	SSD	SATA	6.0	120	€122.98	Yes
Samsung 830	Internal	SSD	SATA	6.0	64	€89.99	Yes
OCZ Vertex	Internal	SSD	SATA	6.0	60	€83.99	Yes

Eight fields only   1 mark

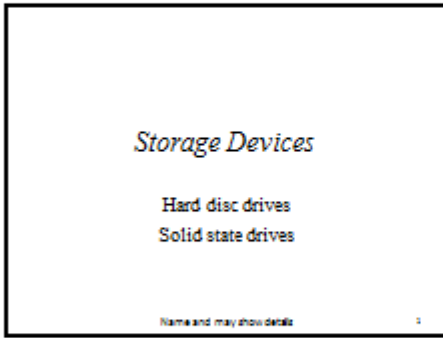List is refined   1 mark
SSD and 6 Gb_s   1 mark

Sort Price descending   1 mark

Portrait   1 mark
All data and labels visible   1 mark

01/08/2013

Presentation evidence

13/05/2013

Storage Devices

Hard disc drives
Solid state drives

Name and may show details

First slide layout changed to
title and subtitle   1 mark

Hard disc drives - benefits

- Very large capacities available
- Relatively cheaper per gigabyte of storage
- Good for videos and very large files

Name and may show details
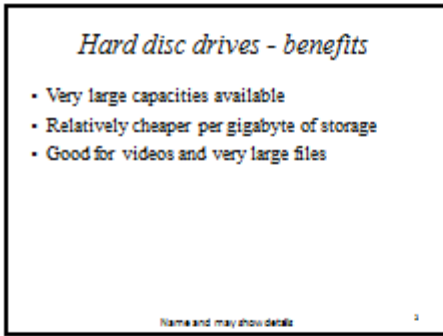
Slides created from source file
as headings and bulleted text   1 mark
Name and slide number on all slides   1 mark
Blank slide(s) deleted   1 mark

Hard disc drives - drawbacks

- Slower than SSDs
- Noisier than SSDs
- Hotter than SSDs

Name and may show details

1
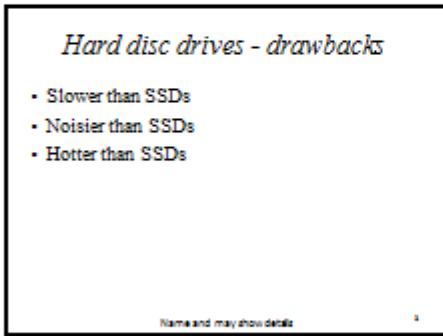
13/05/2013

Solid state drives - benefits

- Very fast operating system start up
- Very fast read and write speeds
- Silent in operation
- Cool running
- No moving parts, so resistant to shocks

Name and may show details

Bullet point added to slide   1 mark

Solid state drives - drawbacks

- Very large capacities not available
- More expensive per gigabyte than HDDs

Name and may show details

Handout **layout** 3 slides per page   1 mark

2

EVIDENCE DOCUMENT

Contacts added to address book

Jane Jones

Contact

Display Name: Jane Jones
Email: J.Jones@cie.org.uk

Work

Editor

Rajinder Ghee

Contact

Display Name: Rajinder Ghee
Email: R.Ghee@cie.org.uk

Work

Print Manager

Three contacts added to address book   1 mark
(Names addresses and job titles all correct)

Alice Nie

Contact

Display Name: Alice Nie
Email: A.Nie@cie.org.uk

Work

Manager

Evidence of group defined in address book

Mailing List

List Name: Editorial team

List Nickname:

Description:

Type email addresses to add them to the mailing list:

Jane Jones <J.Jones@cie.org.uk>
Alice Nie <A.Nie@cie.org.uk>
Rajinder Ghee <R.Ghee@cie.org.uk>

Group formed and named
with correct contacts   1 mark

OK   Cancel

01/08/

Evidence of page formats
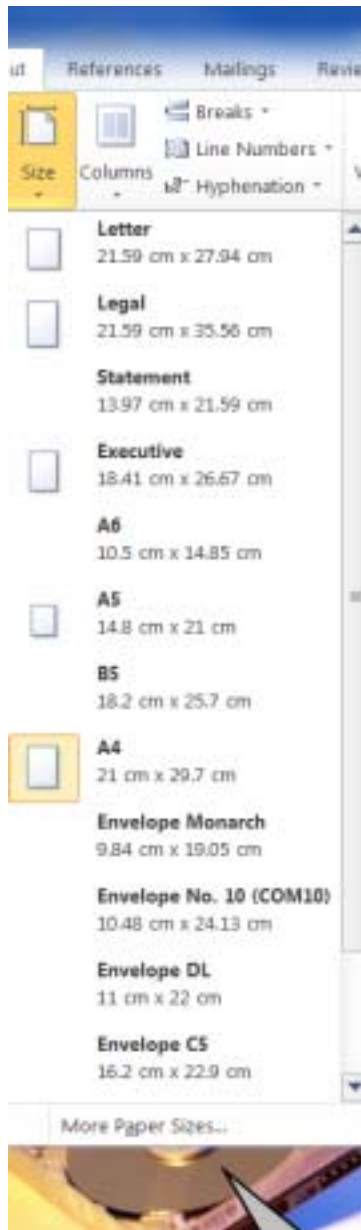
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Margins all set as specified
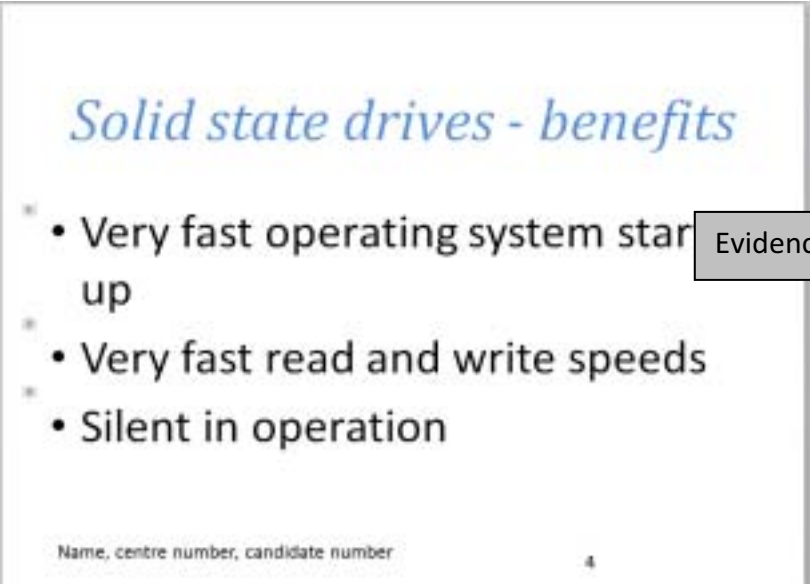
Database structure
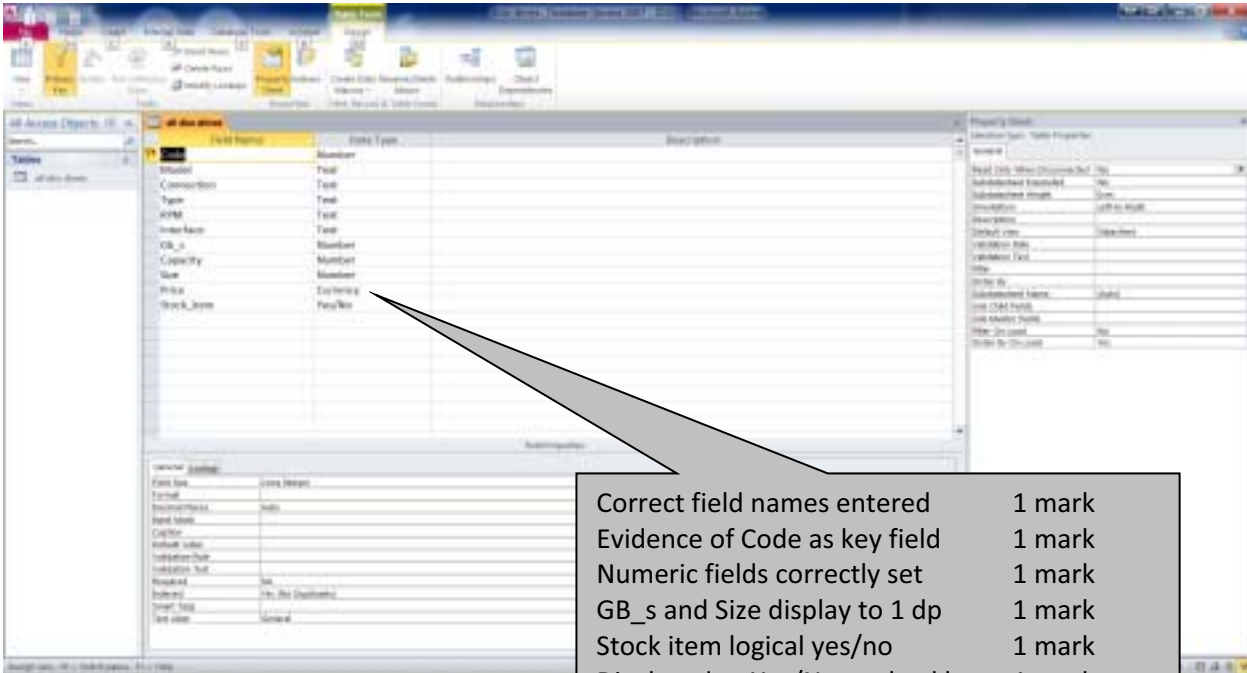
Correct field names entered	1 mark
Evidence of Code as key field	1 mark
Numeric fields correctly set	1 mark
GB_s and Size display to 1 dp	1 mark
Stock item logical yes/no	1 mark
Displayed as Yes/No or checkbox	1 mark

Evidence of transitions

Evidence of Transitions	1 mark

Evidence of animation of bullets

Evidence of Animations	1 mark

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Evidence of email

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CC to **Editorial team**   1 mark

Subject **Draft for storage article**   1 mark
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Name
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The document for your editorial comments is attached.   1 mark