

7.1.1 Computer Systems

Class Tasks

Mark Scheme



Class Task 1 – Personal Computer Systems

Question 1.1

Identify **FOUR** internal components of a personal computer system? (4 marks)

Magnetic hard disc drive.

Solid state hard drive. (*both are acceptable answers as PC's can have 2 hard drives*)

Power supply.

Mainboard / motherboard.

Cooling system.

Central Processing Unit / CPU / Processor.

Main Memory / RAM.

Cables / Cabling.

Question 1.2

Identify any **THREE** advantages of a desktop PC over a laptop? (3 marks)

Desktop PCs are powered by mains electricity and so will not run out of power.

Desktop PCs are usually more powerful than laptops.

Desktop PCs can be upgraded more easily than laptops.

Desktop PCs can have a bigger monitor than a laptop.

Desktop PCs have better cooling than a laptop.



Question 1.3

Explain what is meant by Form Factor? (1 mark)

Form factor refers to the size of the motherboard / the size of the case.

Question 1.4

List any **TWO** advantages a Magnetic HDD has over an SSD? (2 marks)

HDDs are substantially cheaper than SSDs.

HDDs have a greater storage capacity than SSDs.

There is no limit on the number of read / write operations that can be carried out.

Question 1.5

What is the difference between a Processor and a Core? (1 mark)

A core is located on a processor.

A processor can have many cores.

A core is a processor inside the processor.

A core will decode and execute program instructions.

A core can belong to only one processor.



Question 1.5

What does RAM stand for? (1 mark)

Random Access Memory

Question 1.6

RAM is **VOLATILE**. What does this mean? (1 mark)

If the power is lost, and unsaved data in RAM will also be lost.

Question 1.7

You have been given a motherboard with four slots for Main Memory.

List **ALL** possible memory combinations of 16Gb RAM chips that you could choose, and their totals. (4 marks)

1 x 16Gb, total 16GB

2 x 16 GB, total 32GB

3 x 16GB, total 48GB

4 x 16 GB, total 64GB



Question 1.8

List **THREE** advantages that a wired network has over a wireless network (**3 marks**)

Wired networks are faster than wireless networks.

Wired networks are cheaper than wireless networks.

Less hardware devices required in a wireless network.

Wired networks are more secure than wireless networks.

Wired networks are not affected by walls or anything else causing interference in the signal.



Class Task 2 – Servers

For each of the following servers, identify what the server does, the client requests and possible server responses.

File Server	A server that stores data as files for reading and writing.		
REQUESTS	Meaning	RESPONSES	Meaning
OPEN	Open a file for editing	OK	Request complete
CLOSE	Close a file once finished	FILE IN USE	Request cannot be carried out as the file is in use by another person or program
MOVE	Move a file from one folder to another	NAME ALREADY EXISTS	Request cannot be carried out as the file name or folder already exists
COPY	Make a duplicate copy of a file		
PASTE	Paste the duplicate copy to another location		
RENAME	Change the name of a file or folder		
DELETE	Delete a file or folder		
NEW	Create a new file or folder		

Database Server	A server that stores data as tables and allows clients to connect to them to access the data		
REQUESTS	Meaning	RESPONSES	Meaning
SELECT	Get data out of the database	OK	Request complete
UPDATE	Change data in the database	DATA NOT FOUND	The data cannot be found
DELETE	Remove data from the database	DATA IS LOCKED	The data is in use by another person or process
INSERT	Add data to the database		



Print Server	A server that stores files in a queue before sending them to a printer		
REQUESTS	Meaning	RESPONSES	Meaning
PRINT ALL PAGES	Print all the pages in the document	PRINT SUCCESSFUL	Printing completed
PRINT SINGLE PAGE	Print only one specified page in the document	OUT OF PAPER	No paper in the printer
PRINT PAGE RANGE	Print pages in the specified range	OUT OF INK	No ink in the printer
PRINT COLOUR	Print the document in colour	PAPER JAM	The paper is jammed in the printer
PRINT GREYSCALE	Print the document in black and white		

Mail Server	A server that allows the sending and receiving of emails.		
REQUESTS	Meaning	RESPONSES	Meaning
SEND	Send an email	DELIVERED	Email delivered
CC	Carbon Copy – send a copy of the email to the specified address	DELIVERY FAILED	Email could not be delivered to the receiver
BCC	Blind Carbon Copy - send a copy of the email to the specified address but the receiver does not know about this	SENDING FAILED	Email failed to send from the sender's computer
ADD ATTACHMENT	Add a file or image to the email	ATTACHMENT TOO LARGE	The attachment was larger than the server allowed
READ	Read the email	UNRECOGNISED ADDRESS	The address had an error in it
FLAG	Mark the email to do something to		
ADD ADDRESS	Add the receiver address		
MARK AS READ	Identify that the message has been read by the receiver		



Class Task 3 – Smart Devices

Question 3.1

What is a Smart Device? (**1 mark**)

A device that can communicate with a user or another device using a network

Question 3.2

What are the four smart device categories you are required to know for this course? (**4 marks**)

Appliances

Security

Wearables

Inventory Trackers

Question 3.3

Identify any **three** commands that you can send to a smart door camera? (**3 marks**)

Turn on the camera.

Turn on the microphone.

Turn off the camera.

Turn off the microphone.

Start recording.

Stop recording.

Save recording to cloud.



Exam Style Questions

Question 1

Explain any **TWO** advantages of a laptop over a desktop PC? (**4 marks**)

Answer	Mark
<p>Award one mark for identification and one mark for an appropriate linked explanation/expansion up to a maximum of four marks.</p> <p>Laptops are battery powered / do not require mains power (1) and so can be moved to different locations (1)</p> <p>Laptops are battery powered (1) and so will continue to function in the event of a power cut (1)</p> <p>Laptops have built in Input/output devices / monitors, keyboards and track pads (1) and so take up a smaller footprint on a desk (1)</p> <p>Accept any other appropriate responses.</p>	<p>(4)</p>



Question 2

Name **TWO** advantages of a large form factor case. (2 marks)

Answer	Mark
<p>Award one mark for each of the following, up to a maximum of two marks.</p> <ul style="list-style-type: none">• A large form factor case can use a large form factor motherboard.• A large form factor motherboard can have more RAM slots.• More RAM means that more programs / applications can be open at the same time.• Large form factor cases allow for recirculation of air for better cooling.• Large form factor cases can have multiple hard drives.• Large form factor cases can easily have more components added to them. <p>Accept any other appropriate responses.</p>	<p>(2)</p>



Question 3

East Berkshire Computers (EBC) is a small software development company that has decided to upgrade all the development computers. EBC has decided to use computer systems containing solid state hard drives (SSD) instead of magnetic HDDs.

Discuss how SSDs can have an impact on the company. (6 marks)

Answer	Mark
<p>Learners might refer to some/all of the following in their responses, but learners should be rewarded for other pertinent contextualised answers:</p> <ul style="list-style-type: none">• SSDs are substantially faster than HDDs and so the computers will boot faster than the old machines meaning developers will be able to work faster.• SSDs are substantially faster than HDDs and so the software development tools can be loaded into main memory faster.• SSDs consume less power than HDDs so this will save the company money in the long term.• SSDs contain fewer moving parts and so are likely to be more reliable in the long term.• SSDs only have a finite number of read / write operations so at some point all SSD drives will fail, meaning the business will need to replace these systems.• SSDs are more expensive than HDD, so the new computer systems will cost the business a lot of money initially.• SSDs have smaller capacity than HDDs, so any development data will either need to be stored on the network or on the cloud.	(6)

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	<ul style="list-style-type: none">• Demonstrates a basic analysis of the situation by superficially breaking down the different aspects into component parts (AO3)• Demonstrates basic application of knowledge and understanding that is partially relevant to the context of the question (AO2)
Level 2	3-4	<ul style="list-style-type: none">• Demonstrates a good analysis of the situation by breaking down the different aspects into component parts (AO3)• Demonstrates good application of knowledge and understanding that is relevant to the context of the question (AO2)
Level 3	5-6	<ul style="list-style-type: none">• Demonstrates a thorough analysis of the situation by comprehensively breaking down the different aspects into their component parts (AO3)• Demonstrates comprehensive application of knowledge and understanding that is consistently relevant to the context of the question (AO2)



Question 4

East Berkshire Computers are considering using Dual Processor Computers for their development servers. Their development servers will be running a range of complex software applications at the same time.

4.1 Explain **one** advantage of using Dual Processor Computers. (2 marks)

Answer	Mark
Award one mark for identification and one mark for an appropriate linked explanation/expansion up to a maximum of two marks . Two processors will speed up development (1) as one processor can be used for each application (1) Two processors will speed up development (1) as both processors can be used for a single application (1) Accept any other appropriate responses.	(2)

4.2 Explain **two** disadvantages of using Dual Processor Computers (4 marks)

Answer	Mark
Award one mark for identification and one mark for an appropriate linked explanation/expansion up to a maximum of four marks . Dual processors will consume twice as much power as a single processor (1) and so will be more expensive to run (1) Dual processors will produce twice as much heat as a single processor (1) and so will need more effective cooling (1) Dual processors will operate faster than single processors (1) and so will need more RAM for them to operate efficiently (1) Dual processors will need a larger motherboard (1) and so will need a large form factor mainboard / case (1) Accept any other appropriate responses.	(4)



Question 5

Explain **two** advantages of having more RAM in a computer system. (**4 marks**)

Answer	Mark
<p>Award one mark for identification and one mark for an appropriate linked explanation/expansion up to a maximum of four marks.</p> <p>More RAM will speed up the computer (1) as entire programs can be loaded into main memory (1)</p> <p>More RAM will speed up the computer (1) as multiple programs can be loaded into main memory (1)</p> <p>More RAM will speed up the computer (1) as it reduces the number of times program instructions and data needs to be loaded from the hard drive (1)</p> <p>More RAM will speed up the computer (1) as it means program instructions and data can be loaded into the CPU faster (1)</p> <p>Accept any other appropriate responses.</p>	<p>(4)</p>



Question 6

Describe how a client / server interaction works. (3 marks)

Answer	Mark
<p>Award one mark for each of the following linked points, up to a maximum of three marks.</p> <p>A client will make a request to a server (1)</p> <p>The server will put the client request into a queue (1)</p> <p>The server will attempt to carry out the client request (1)</p> <p>If the server fails to carry out the request, the client will be notified with a response (1)</p> <p>The server may or may not give a response that the request has been carried out (1)</p> <p>Accept any other appropriate responses.</p>	<p>(3)</p>



Question 7

Describe how a client device communicates with a Smart Device over the internet. (4 marks)

Answer	Mark
<p>Award one mark for each of the following linked points, up to a maximum of four marks.</p> <p>A client will send an HTTP request to the smart device (1)</p> <p>The HTTP request will be sent over the internet (1)</p> <p>The smart device will receive the HTTP request (1)</p> <p>The smart device will carry out the request and send an HTTP response (1)</p> <p>The HTTP response will be sent over the internet (1)</p> <p>The Client will receive the HTTP response (1)</p> <p>Accept any other appropriate responses.</p>	<p>(4)</p>



Question 8

Explain **one** way a smart device can be a security risk? (2 marks)

Answer	Mark
<p>Award one mark for identification and one mark for an appropriate linked explanation/expansion up to a maximum of two marks.</p> <p>default username and passwords set by the manufacturer (1) have been made available to hackers (1)</p> <p>users do not change the default usernames and passwords (1) so the devices can be compromised by hackers (1)</p> <p>Attackers log into the device using default usernames and passwords (1) to attack other devices on the network (1)</p> <p>Accept any other appropriate responses.</p>	(2)



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