



GCSE (9–1) Computer Science J276/01 Computer Systems

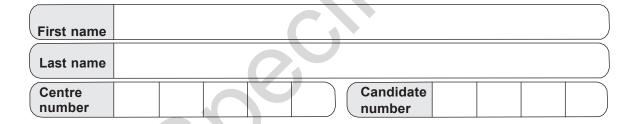
Sample Question Paper

Date - Morning/Afternoon

Time allowed: 1 hour 30 minutes

You may not use:
• a calculator





INSTRUCTIONS

- Use black ink.
- Complete the boxes above with your name, centre number and candidate number.
- Answer all the questions.
- · Write your answer to each question in the space provided.
- If additional space is required, use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.
- · Do not write in the bar codes.

INFORMATION

- The total mark for this paper is **80**.
- The marks for each question are shown in brackets [].
- Quality of extended responses will be assessed in this paper in questions marked with an *.
- · This document consists of 12 pages.



[4]

1 Ann wants to purchase a new computer and is looking at two models. The specification of the CPU in each computer is shown in **Fig. 1**.

Fig. 1

Computer 1	Computer 2
Clock Speed: 1 GHz	Clock Speed: 1.4 GHz
Cache size: 2 MB	Cache size: 2 MB
Number of Cores: 4	Number of Cores: 2

(a)	when running a 3D flight simulator, Computer 1 is likely to run faster than Computer 2.	
	Using the information in Fig. 1, identify one reason for this.	
		[1]
(b)	Identify two internal components that are not in Fig. 1 , which could improve the performance of the computers.	!
		2]
(c)	Explain one reason why the cache size affects the performance of the CPU.	
••••		
		21
(d)	Identify four events that take place during the fetch-execute cycle.	-1

	ky has been on holiday and has taken lots of photos. The memory in her camera is now full needs to transfer her photos to an external secondary storage device.	and
(a)	Define what is meant by 'secondary storage'.	
(b)	Identify the three common storage technologies Vicky can choose from.	[1]
		 [3]
(c)	State four characteristics of secondary storage devices that Vicky should consider when choosing a device.	
••••		•••
		[4]

- 3 Gareth has a satellite navigation system (Sat Nav) in his car that uses RAM and ROM.
 - (a) Fig. 2 lists some characteristics of computer memory. Tick (✓) one box in each row to show whether each of the statements is **true** for the RAM or ROM in Gareth's Sat Nav.

Fig. 2

	RAM	ROM
Stores the boot up		
sequence of the		
Sat Nav.		
The contents are		
lost when the Sat		
Nav is turned off.		
Holds copies of		
open maps and		
routes.		

	Gareth's Sat Nav contains an embedded system. Define what is meant by an system'.	omboddo
(c)	Identify three devices, other than a Sat Nav, that contain embedded systems.	
	needs to send a document across a network to Ben. Write an algorithm to show used to send the document, starting from when Bill clicks send (sending), and n reads the document (receiving).	
	used to send the document, starting from when Bill clicks send (sending), and	
	used to send the document, starting from when Bill clicks send (sending), and	
	used to send the document, starting from when Bill clicks send (sending), and	
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their	owners of a large bakery have a Local Area Network (LAN) with a star topology. They order supplies over the Internet. When data is transmitted from the bakery to the supplier, netwo ocols are used.
(a)	Define what is meant by a 'network protocol'.
(I- \	TOD/ID is a set of weeks sels have does become
(D)	TCP/IP is a set of protocols based on layers.
	(i) With regards to network protocols, define what is meant by a 'layer'.
	(ii) Describe one advantage of using layers to construct network protocols.
(c)	Explain four reasons why the bakery may use a star network topology for their LAN.
(0)	Explain lour reasons willy the bakery may use a star network topology for their EAN.
	octor's surgery stores hundreds of patients' details on its computer network. The surgery is cerned about the security of its patients' sensitive medical data.
	Staff are already required to use strong passwords to protect systems. Explain, with refere to system security, three other ways that the surgery could protect the system.

[6]
[6]
(b) Identify three errors that the surgery's staff could make, that may endanger the security of the network and outline a procedure that could be put in place to prevent each error.
rea.
[6]
A restaurant has a computer-based ordering system which is running slowly. A technician has said that the hard disc drive is fragmented. The technician has suggested using utility software to defragment the drive.
(a) Explain how the restaurant's hard disc could have become fragmented.

[4]

7

[3]

(b)	Explain how defragmentation software could overcome the issue of the slow computer system.

[4]

(a) [ise cloud storag	e.	
-	Define what is	meant by a Wid	e Area Network		
(b) E	Explain two ad	vantages to the	law firm of stori	ng their data in the cloud.	
(c) E				oring their data in the cloud.	
				>	
		c) Explain two dis	c) Explain two disadvantages to t		c) Explain two disadvantages to the law firm of storing their data in the cloud.

(d) Fig. 3 lists some actions that may take place in the law firm's office. Tick (✓) one box in each row to show which legislation applies to each action.

Fig. 3

Action	Data Protection Act 1998	Computer Misuse Act 1990	Copyright Designs and Patents Act 1988
Using a picture for the law firm's new logo without the original creators permission.			
A secretary accessing a lawyer's personal email account without permission.			
Making a copy of the latest Hollywood blockbuster movie and sharing it with a client.			
Storing customer data insecurely.			
A lawyer installing a key logger on the secretary's computer.			
Selling clients personal legal data to a marketing company without their permission.			

[6]

9 * Even though the computer devices they own still work, people often want to buy the most up-to-date models, such as the latest smartphone.

Discuss the impact of people wanting to upgrade to the latest smartphone.

In your answer you might consider the impact on:

- stakeholders
- technology
- ethical issues
- environmental issues

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[8]

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