



CANDIDATE

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS General Certificate of Education Advanced Level

Addie Con

NAME
 CENTE
СОМР
Paper :

CENTRE CANDIDATE NUMBER

COMPUTING 9691/33

Paper 3 May/June 2011

2 hours

Candidates answer on the Question Paper.

No additional materials are required.

No calculators allowed.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer all questions.

No marks will be awarded for using brand names for software packages or hardware.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

International Examinations

	4
	e the following types of processor: Parallel processor
Describ	e the following types of processor:
(i)	Parallel processor
	[2]
(ii)	Maths co-processor
	[2]
(iii)	Array processor
	[2]
	rogram is to be run on a computer system. Isolain the purpose of the following in preparing the program to be run.
(i)	linkers

	(ii)	loaders
		[4]
(b)	This	e address part of a low-level instruction can be the address of the data to be used. is a direct address. Scribe the following types of addressing. In each case give a reason why it may be d.
	(i)	Indirect addressing
		[3]
	(ii)	Indexed addressing
		101
		[3]

For iner's

Discuss the problem of maintaining confidentiality of data on an open network and address this problem.

For iner's

[8]

(a)	Explain why a computer-controlled door into a hotel is an example of a reapplication.
	[2]
(b)	Explain how sensors and actuators are used to control the automatic door.
	[[5]

For iner's

(a)	Describe what is meant by virtual memory.
	[2]
(b)	Describe how segmentation can be used to manage the memory in a typical modern computer system. (You may use a diagram to illustrate your answer.)

For iner's

[5]

Describe the purpose of the following parts of a database management system (DBM

6

·6	-	For	
3	1	ine	r's
	OA.		
	0		
- 7	1	3	

		(i)	Data dictionary
			[2]
		(ii)	Data Manipulation Language (DML)
			[3]
7	(a)	Exp	ress the denary number -95 as a two's complement integer in an eight-bit byte.
		•••••	[2]
	(b)	Add	I together the following binary numbers. Show your working.
			01100110
			+ 00100101

	8 Explain the difference between static and dynamic implementation structures.	
(a) (i)	Explain the difference between static and dynamic implementation structures.	Brid
		96
	[2]	
(ii)	Give two advantages of storing a stack in a linked list rather than in an array. Advantage 1	
	Advantage 2	
	[2]	
b) (i)	Draw a diagram to show the following members of a Computing class sorted into alphabetic order in a binary tree. You must use the names in the order given.	
	FRO TSI BEV ROS AMB WII JAM	

	4	
	9	
(ii)	Describe an algorithm to insert a new member of the class into the correct print the tree.	For iner's
	Describe an algorithm to insert a new member of the class into the correct part in the tree.	Tideco
		ATT.
	[4]	
(iii)	State a problem that arises when a member of the class needs to be removed from the tree.	
	Explain how this problem can be overcome.	
	[4]	1

9	(a)	Exp	plain why reverse Polish notation is used in computer processing.	Can
				[2]
	(b)	(i)	Show how the following infix expression can be represented as a binary tree. $(a+b)-c^{\star}(d-e)$	
		(ii)	Use the tree to write down the reverse Polish form of the expression.	

[6]

10 A farm has a number of FIELDs. A number of CROPs are grown on the farm.

	The state of the s	
	11	
Each CF A numb	nas a number of FIELDs. A number of CROPs are grown on the farm. ROP is grown in a number of FIELDs but each FIELD only grows one CROP. er of different FERTILISERs are used on each FIELD and each FERTILISER can on many FIELDs. State the relationship between FIELD and CROP.	For iner's
(i)	State the relationship between FIELD and CROP.	COM
	Draw the entity-relationship (E-R) diagram to show this relationship.	`
	[2]	
(ii)	State the relationship between FERTILISER and FIELD.	
	Draw the E-R diagram to show this relationship.	
	[2]	
(iii)	Explain how the relationship between FERTILISER and FIELD can be designed in third normal form.	

(a)	Describe the differences between interpretation and compilation of a highlanguage program.
	[3]
	[0]
(b)	When a program is run the processor uses special purpose registers. One of these registers is the Program Counter (PC). Describe how the content of the PC changes during the fetch-execute cycle.
	[A]

	The state of the s
	13 A. D.
12	A business uses the Internet to communicate with suppliers and to pay bills electro. The business has an accounts department and a sales department, each of which has own network. These two departments are in different buildings on the same site but the networks are connected. Discuss different components and types of communications media available for transmitting data around the network.
	[6]

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