Name:	Index No:	
2920/203	Signature:	
OBJECT ORIENTED PROGRAMMING		
November 2012	Date:	
Time: 3 hours	155.40 W.	



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

MODULE II

OBJECT ORIENTED PROGRAMMING

3 hours

INSTRUCTIONS TO CANDIDATES:

Write your name and index number in the spaces provided above.

Sign and write the date of examination in the spaces provided above.

Answer any FIVE of the EIGHT questions in the spaces provided.

ALL questions carry equal marks.

For Examiner's Use Only

Question	1	2	3	4	5	6	7	8	Total
Marks									

This paper consist of 16 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

1.	(a)	Outline four advantages of encapsulation as used in C++ programs. (4 marks)
	(b)	Explain two features of pure Object Oriented Databases (OODBs). (4 marks)
		ALERSON FOR THE SAME TAKEN AND THE SAME OF
		A THE REPORT OF THE PARTY OF TH
	(c)	Differentiate between call-by-value and call-by-reference as used in C++ programs. (4 marks)
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		STORE
		<u>e</u>
	(d)	Write a C++ program that will implement a class named LecRoom containing two variables and two constructors (unparameterised and parameterised). The constructors are used to initialize two objects A (12, 15) and B (21, 24) respectively. In addition, the class contains a method named Area used to determine the area of the objects. (8 marks)

2	(a)	Interpret the following C++ program.	(4 marks)
		#include <cassert></cassert>	
		(
		private:	
		int m_anList[10]) public:	
		int operator() (constint nIndex);	
); int IntList::operator[] (const int nIndex)	
		(
		<pre>assert(nIndex >= 0 && nIndex < 10); returnm_anList(nIndex);</pre>	
		}	

LAPI	am each of the following terms as used in C	++ programs;
(i)	free store;	(2 marks
	-	
(ii)	typedef.	(2 marks
Write	e a C++ program that will implement a neste edded in a class named Nest with the follow	ed class named Displaying properties:
• a	private data member named S;	
• p	public method named Add used to determine	the sum of 12, 10 and 51;
• 11	nethods named Show used to display the sur	n of the three numbers. (5 mark)
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-	.0)	
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-		1-12

(d) Figure 1 shows an open cuboid. Write a C++ program that will implement two classes named Wall1 and Wall2 derived from a base class named Pool. The base class contains the dimensions of two sides and a method used to set the values appropriately. The program should determine and output the surface area of the walls of the cuboid. Each derived class contains a method used to calculate the area for the two similar walls. (7 marks) 10 Figure 1

3.	(a)	Outline three advantages of modular programming. (3 marks)
	(b)	Daniela was revising for an examination when she came across the term function prototype. Outline four functions of the feature during compilation of a C++ program. (4 marks)
	(c)	Distinguish between static and dynamic binding as used in C++ programs. (4 marks)
		Met.co.
		easy.
	(d)	The following are properties of a class named Circle:
		 a data member named radius; a function member named set_values used to initialize the data members; pure virtual method named area.
		Write a C++ program that will implement two derived classes of the class. The derived classes should determine and output area and circumference of a circle with radius 21 units respectively. Use pointers. (9 marks)

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				^	
i 8	(a)	Defir	e each of the following	as used in CP programs:	
	147	(i)	destructor;	as used in Cy - programs.	(2 marks)
		(1)	destructor,	Ne	(2 marks)
				5)	
			0	2	
		(ii)	abstract class.	ENGREPS	(2 marks)
	(b)	Desc	ribe each of the following	ng data structures as used	in C++ programs
	(0)		stack;	ag same an actua co ao anca	(2 marks)
		(i)	Stack,		(2 marks)
		(ii)	queue.		(2 marks)
			_		

Client2 200 100 3000 850 1200 74 Client3 300 4000 250 700 800 90 Table 1 Write a C++ program that will create an object to store the numeric data table using an array. The program should determine the total stocks at company through the use of a friend function and output the result. Use	appropriate	e message	Use the if	statement.			(4 r
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Client2 200 100 3000 850 1200 74 Client3 300 4000 250 400 800 90 Table 1 Write a C++ program that will create an object to store the numeric data table using an array. The program should determine the total stocks at a company through the use of a friend function and output the result. Use							
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	Client1 Client2 Client3 Table 1 Write a C table using	200 300 ++ progra g an array through th	100 4000 m that will on The programe use of a fr	3000 250 create an ob am should diend function	950 100 ject to store letermine the	1200 800 the numeric total stoc	90 get data
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	Client1 Client2 Client3 Table 1 Write a C table using company constructor	200 300 ++ progra g an array through the	m that will c The progra	250 250 create an ob am should of iend functions.	950 100 ject to store determine the on and outpu	1200 800 the numeri e total stoc at the result	90 sic data ks at t t. Use (8
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5.	(a)	Explain two challenges of emerging trends in Object Oriented Databases (OODBs). (4 marks)
		7.60
		Mer
	(b)	Distinguish between overloading unary and overloading binary operators in C++ programs. (4 marks)
	(c)	Write a C++ program that would accept the radius and determine the volume
		through the use of an inline function. The program should then output the volume. Use pie as 3.142.
		Hint volume = $4/3 \pi r^3$. (4 marks)

two data m The progra	+ program that will implement a class named Number embers and a function member named read to input the m then uses a friend class named Mean to determine t es through the use of a function.	e variab
	CONT	
	Met.	
-	6000	
Outline the	ree advantages of operator overloading in C++ progra	ms. (3 t

(0)	(1)	encapsulation requirements in C++ programs.	vould violate (2 marks)
	(ii)	Interpret the following code C++ program segment.	(2 marks)
		int x = 0; int *pointer_to_x = &x (*pointer_to_x) = 1;	
(c)	the fo	e a C++ program that would use the bubble sorting algorith ollowing list of numbers in ascending order. The program and noted and sorted list.	m to arrange should output
	84, 3	6, 68, 10, 53, 79, 38, 45, 90, 28	(6 marks)
		X.CO.	
		Me	
	_	200	
	-		

(d) Figure 2 represents a standard stream class hierarchy. Use it to answer the questions that follow.

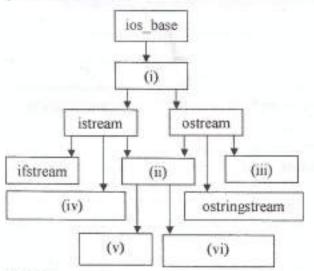


Figure 2

(i) Identify the standard streams labelled (i), (ii), (iii), (iv), (v) and (vi) in figure 2.
 (3 marks)

easylet.com

(ii) Explain one function of each of the streams (v) and (vi) identified in (i). (4 marks)

(a) (i) Outline two limitations of identifiers as used in C++ programs.

(2 marks)

(ii)	Outline two dis- programs.	advantages of implicitly dereferencing	g a pointer in C+ (2 marks
		1	
Expla	in two advantages	s of linked lists as used in OOP.	(4 marks
Distir C++	nguish between bit programs.	twise copy and logical copy construct	tors as used in (4 marks
_		off	
		, ax.	
		200	
(200,	ata members, a fu 4); and a derived d velocity which r	nat would define a base class named set notion member named set_value having class named Vehicle containing a function eturns a value. The program should	ing the values
Hint:	velocity = distanc	e / time.	(8 marks)
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		_				
8.	(a)	(i)	State four examples of object oriented languages.	(2 marks)		
			et.			
			The same of the sa			
		(ii)	Outline two disadvantages of OOP.	(2 marks)		
	(b)					
			rams:	(2 made)		
		(i)	dynamic object;	(2 marks)		
		VIII.	to and a bloom	(2 marks)		
		(ii)	local object,	(2 marks)		

15 25 Figure 3				
Write a C++ program that will implement a class named Wedge with appropriate dimensions only. The program should determine and output volume of the shape in figure 3. Include a constructor and a destructor. Hint: ½ base * height (6				
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Hint: ½ base * height (6 15 25 Figure 3	annonriate dimensione	only The program ch	ould determine	and output
15 Ready Not 15 8 Figure 3	volume of the shape in fi	igure 3. Include a con	structor and a	destructor
15 25 Figure 3	volume of the shape in fi	igure 3. Include a con	structor and a	destructor.
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