REPUBLIQUE DU CAMEROUN

Paix-Travail-Patrie

MINISTERE DES ENSEIGNEMENTS SECONDAIRES

CELLULE D'APPUI A L'ACTION PEDAGOGIQUE

ANTENNE RÉGIONALE DU NORD OUEST

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ATVE

REPUBLIC OF CAMEROON

Peace-Work-Fatherland

MINISTRY OF SECONDARY EDUCATION

milestandentale, C., C.

TEACHERS' RESOURCE UNIT REGIONAL BRANCH FOR THE NORTH WEST

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The Teachers' Resource Unit and the Regional Inspectorate of Pedagogy in collaboration with

COSTA

SUBJECT CODE NUMBER 0795

PAPER NUMBER

2

GENERAL CERTIFICATE OF EDUCATION REGIONAL MOCK EXAMINATION

ADVANCED LEVEL

SUBJECT TITLE COMPUTER SCIENCE

Time Allowed: THREE HOURS INSTRUCTIONS TO CANDIDATES

Mobile phones are NOT ALLOWED in the examination room.

Answer any four questions

(2 mill) a) Briefly state the purpose of the arithmetic/logic unit (ALL) (b) Briefly state the purpose of the arithmetic/logic unit (ALL) (c) Speed mismatch is a problem that arises with the use of computer systems; justify why there is speed (c) Speed mismatch between user, peripheral and processor, mismatch between user, peripheral and processor, mismatch between user, peripheral and processor. (iii)(a) Differentiate between the following terms as used in computer system Interrupt and Polling (b) The CPU uses pipelining to improve efficiency. Briefly explain what is meant by the term 'pipelining'. (c) Identify one way that the Harvard architecture differs from the Von Neumann architecture. (d) Given the following Boolean expression: ABC+ABC+ABC (a) Simplify the above expression (b) Draw a logic circuit for the simplified expression in i(a) (c) Given the following denary number: 20.25 (a) Identify one reason why values stored using a floating point representation pulsable in normalized form. (iii) A RAM chip is designated by 512K by 8. (a) Determine the total number of addressable units (iii) A RAM chip is designated by 512K by 8. (2) Determine the total number of bits used for the address lates (b) Determine the total number of bits used for the address lates (c) Determine the total number of bits used for the address lates (c) Determine the total number of bits used for the address lates (d) Calculate the total capacity of this memory (d) Briefly state what is meant by deadlock (b)Briefly state what is meant by deadlock (c) Site three requirements of any solution to the critical sections problem? Why are the requirements of cocurs. (d) Multi-programming (or hulti-tasking) enables more than a single process to apparently execute simultaneously. Briefly (site) how this is achieved on a mono-processor? (e) Site three requirements of any	is in why that type of memory	is appropriate:
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The Regional Delegation stores information about the track exercises in class C (2 mark	(c)Briefly describe an ID. 4 at the start bit and stop hit in account	(3 mark)
The Regional Delegation stores information about the track exercises in class C (2 mark	and 11 17 4 address and state one example of	(1 mark)
track events	The Regional Deleast	(2 marks)
Athlete (AthleteNumber, Forename, Surname, Sol.	track events	(Z HIBLES)
Race (Pace) Wumber, Forename, Surname Sol	Athlete (Athlete)	
	Race (RecoNumber, Forename, Surname Sal	e details of the
Gender, Distance, Type Starte, DateOfRick	Race (RaceNur, ber, Gender, Distance, Type, StartTime). DateOfBirth)	The state of the s

Each athlete who takes part in a Race is given a unique AthleteNumber. Athletes can run in more than one Race. If good affect would be the boys' 100m, which is the second Rany Races are run throughout the day. An example Race would be the boys' 100m., which is the second Race of the day, and starts at 11:00. A sample entry in the Race table for this Race is shown in table below.

RaceNumber	Gender	Distance 7	Contraction of the same of the	The second secon
2	Boys	O.O.	уре	StartTime
	and the design of the constitution and the column of the c	or A contract of the contract	00m	11:00

Table I

(i)(a) Draw an Entity-Relationship (E-R) diagram for the relations Athlete and Race.

(2 marks)

(b) Briefly state why, the relationship drawn in (a) is impossible to implement with relational database software.

(c) Propose a solution to solve the problem identified in (b).

(2 marks)

(2 marks)

(d) State all the appropriate attribute name(s) and identify the correct primary key for this relation.

(2 marks)

(ii) A video streaming service uses a relational database. An extract of the data from two tables from this database is shown in table 2.

Username	FirstName	StartDate	PackageType
Oser001	Amaya	08/05/2016	Fremium
Cser002	Amit	06/06/2019	Easic
Umar003	Tom	17/08/2019	Free
User004	Kareen	08/08/2017	Basic
User005	Sarah	25/03/2020	Premium

Nembership

PackageType	CostPerMonth(f)	Adverts
Fremium	22.99	false
Basic	7.99	true
Free	0.00	true

Package

Table 2

(3 marks) State why or not the tables are in 1NF, and justify your answer.

(iii) Given the following relation: Vehicle (Number, Type, Seats)

(2 marks)

(a) Briefly state why this relation is NOT in 3NF? (b) Normalize this relation into 3NF.

(4 marks)

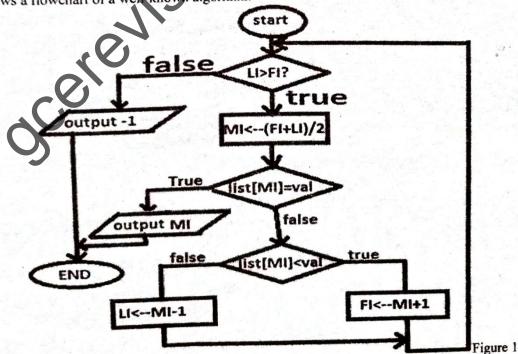
6. (i)(a)Identify two advantages on the use of iterative functions over recursive functions.

(2 mark)

(b) Briefly state and describe two characteristics of a recursive function.

(4 marks)

(ii) Figure 1 shows a flowchart of a well-known algorithm.



(a) Identify which algorithm is represented on the flowchart.	(2marks) (1mark)
(b) State the time complexity of the algorithm.	(1 mark)
(c) Which problem solving method is used in that algorithm?	
(d) State the base condition(s) found on this algorithm	(2marks)
(e) Produce the equivalent representation of this algorithm in natural language	(5 marks)
7. (i) Briefly State what is meant by each of the following	
a) a local variable	
b) a global variable	
c) a parameter passed by value	
d) a parameter passed by reference.	(2+2+2+2 marks)
(ii) Given the following code fragment:	
int k = 0, p;	
for $(k=0; k>p; k++)$ do	
Print "Some text";	No. of the second
Print "***";	
Endfor	
(a) State the output upon running the instructions. Justify your answer	(2 marks)
(h) You intend to display the Print statements 8 since Print the forment of code in order t	
(b) You intend to display the Print statements 8 times. Rewrite the fragment of code in order to the result(s) as required.	
	(2 marks)
(c) Evaluate the time complexity for this algorithm, after your adjustments in (b).	(2 marks)
(iii) Design a suitable hashing function such that, the results of the hashing function should be	such that every
index of the array can be addressed directly. The simplest hashing function gives us addresses	between 0 and n
(For illustrative purpose, choose n to be 9)	
function hash (key)	
address < -key mod(n+1)	
return address	
endfunction	
(b) Using a trace table demonstrate how you could store records with the following customer II 95312, 64636, 23467. (2 marks)	Ds: 45876, 32390,
(c) Is there any problem encountered in inserting the keys? Justify your answer.	
	(1 mark)
(i) A company specializes in creating web sites for customers. As part of the process of designing company will use diagrams in order to make understanding easier	
company will use diagrams in order to make understanding easier.	ig a site the
(a) State and describe two types of diagrams that may be used to	
10) If will be important to produce used documentation for your	(2 marks)
types of users of the new system, describe the documentation(s) which will be produced.	different
(ii) A systems analyst is commissioned by a company to produce a computerized system in its o	(2 marks)
(a) State the importance to the end user	ffices.
b) State three things which would need to be considered for the	(1 mark)
b) State three things which would need to be considered for the implementation (installation) of	new software
(iii) Briefly define the following terms as used in Object oriented programming:	(3 marks)
(a) Class (a) Class	(5 marks)
(b)Polymorphism	(2 mortes)
(iv) Evaluate the following arithmetic operations:	(2 marks)
(a) 3 10 5 + *	(2 marks)
(b) 9 8 7 9 3 - * + -	(11)
(c) 5 1 2 + 4 * + 3	(1 mark)
경기 있는 사람들은 사람들이 살아가면 하는 사람들이 하는 사람들이 살아지고 있다.	(2 marks)
생물하게 되고 하다. 그런 경에 하는 사람들은 생활하다면 내가 없는 사람이 하는 점이 되었다. 그리고 있다.	(2 marks)

END