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NEW

G.C.E.(A/L) Examination - 2013

**NATIONAL EVALUATION & TESTING SERVICE
DEPARTMENT OF EXAMINATION - SRI LANKA**

20 - Information & Communication Technology

Marking Scheme

This has been prepared for the use of marking-examiners. Some changes would be made according to the views presented at the chief examiner's meeting. This could be used as a teaching aid in the classroom.

ரஹஸ்யம்

அந்தரங்கமானது

ஸ்ரீ லக்ஷ்மி விநாயக டேவாரவலி

இலங்கைப் பரீட்சைத் திணைக்களம்

சுதிக அகாடமி ஸ்ரீ லக்ஷ்மி விநாயக டேவாரவலி

தேசிய மதிப்பீட்டிற்கும் பரீட்சித்தலுக்குமான சேவை

அ.பா.க. (உ.பா.க) விநாயக 2013

க.பா.க. (உ.பா.க)ப் பரீட்சை 2013

வினா எண் } பாடம் } ICT வினா எண் } பாட இலக்கம் } 20

தேவாரவலி பரீட்சை - I பருவம்
புள்ளி வழங்கும் திட்டம் - பத்திரம் I

பிரச்சனை எண்	வினா	பிரச்சனை எண்	வினா	பிரச்சனை எண்	வினா	பிரச்சனை எண்	வினா	பிரச்சனை எண்	வினா
01.	4	11.	3	21.	4	31.	2	41.	5
02.	1	12.	2	22.	4	32.	5	42.	2
03.	1	13.	4	23.	3	33.	1	43.	3
04.	4	14.	4	24.	4	34.	3	44.	2
05.	4	15.	3	25.	2	35.	5	45.	3
06.	2	16.	4	26.	5	36.	1	46.	4
07.	1	17.	2	27.	5	37.	2	47.	3
08.	2	18.	1	28.	2	38.	1	48.	2
09.	3	19.	2	29.	5	39.	2	49.	1
10.	2	20.	3	30.	2	40.	4	50.	4

வினா எண் } வினா அறிவுறுத்தல்

பிரச்சனை எண் } ஒரு சரியான விடைக்கு

01

புள்ளி வீதம்

GCE AL Examination, August 2013 (AL/2013/20/E-II) – MCQ

(Model Answers)

Q No.	Answer	Q No.	Answer	Q No.	Answer	Q No.	Answer	Q No.	Answer
1.	4	11.	3	21.	4	31.	2	41.	5
2.	1	12.	2	22.	4	32.	5	42.	2
3.	1	13.	4	23.	3	33.	1	43.	3
4.	4	14.	4	24.	4	34.	3	44.	2
5.	4	15.	3	25.	2	35.	5	45.	3
6.	2	16.	4	26.	5	36.	1	46.	4
7.	1	17.	2	27.	5	37.	2	47.	3
8.	2	18.	1	28.	2	38.	1	48.	2
9.	3	19.	2	29.	5	39.	2	49.	1
10.	2	20.	3	30.	2	40.	4	50.	4

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
1		<pre> <head> <title>Test Cricket</title> </head> <body> <h1>Sri Lankan Test cricket records</h1> (or h2) <hr/> <p>The Sri Lankan national cricket team played their first Test match on 17 February 1982 against England. </p> <p>Record Groups</p> (or h3/h4) (Strong) Team records Individual records Partnership records <h2>Partnership records</h2> (or h3) <p> Sri Lanka holds the most number of partnership records in Test cricket, with the records for the second, third, fourth, and sixth wickets. South Africa and Pakistan are ranked second with two records each. </p> <table border = "1"> or "2" <caption>Highest wicket partnerships</caption> <tr> <th>Runs</th> <th>Wicket</th> <th colspan = "2">Partners</th> </tr> <tr> <td>335</td> <td>1st wicket</td> <td>Marvan Atapattu</td> <td>Sanath Jayasuriya</td> </tr> </pre>	1 1 1 1 1 1 1 1 1 1	10

(Model Answers)

		<pre> <tr> <td>576</td> <td>2nd wicket</td> <td>Sanath Jayasuriya</td> <td>Roshan Mahanama</td> </tr> </table> </body> </html> Notes: <hr/> or <hr> is considered as correct answer. or is considered as correct answer. </pre>		
2	(a)	Address space = 2^{32} Maximum usable size of memory = 2^{32} bytes $= 2^2 \times 2^{30}$ bytes $= 4 \text{ GB}$ $2^{32}/2^{30} = 2^2 = 4 \text{ GB}$ <i>data and all</i> <i>optional</i>	1 1 1	3
	(b)	Process is a program in execution - <i>program</i> Program can have multiple processes	1 1	2
	(c)	To suspend a process temporary to the hard disk <i>or virtual memory</i> in order to free the memory (memory full), to place another process in the main memory. Note: 1. suspend a process 2. temporary 3. hard disk 4. free the memory (memory full) 5. to place another process in the main memory.	1 1 1 1 1	5

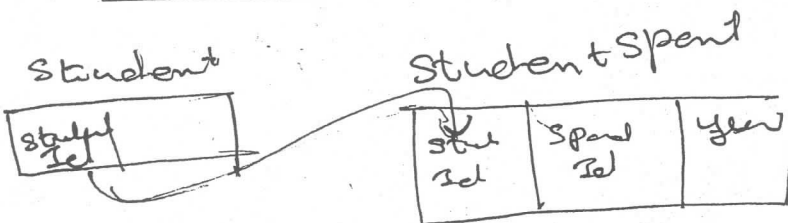
memory full no swapped out

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
3	(a) i	$13_{10} - 00001101$ $-19_{10} - 11101101$	1 2	3
	(a) ii	$13_{10} - 19_{10} =$ <u>00001101</u> <u>11101101</u> 11111010	1	1
	(a) iii	<i>negative or positive</i> Identify the sign of the final decimal number by most significant bit (both positive and negative) Most significant digit is 0 → positive convert to decimal Most significant digit is 1 → negative <i>explain with the example.</i> Take the sign as negative Get binary number Invert bit values Add 1 to least significant bit Convert the number to decimal Or Apply the reverse process of two's complement (explanation) Convert the number to decimal	1 1	2
	(b)	Examples having following features B2B: Purchase & sale between 2 companies through Internet Mutual agreement Consumers are not involved B2C: Products and services sold through Internet Business to consumers <i>www.</i> Consumer to consumed <u>(Amazon.com)</u> C2C: Sale of goods across Internet Consumer to consumer C2B: Consumer acts as the seller and business as the buyer through Internet Consumer is made payment for the service provided	1 each	4

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
4	(a)	Primary key of a table and foreign key of another table establish the relationship in a database. Note: 1. When only the foreign key definition is given: 1 mark only 2. Given the relationship: 2 marks Notes for teachers: <u>Primary Key</u>: Identify each record in a database table uniquely. (This removes data duplication.) <u>Foreign key</u>: Foreign key of a table is a primary key of another table.	2	2
	(b)	1. student(studentId, name) 2. sport(sportId, name) 3. studentSport(studentId, sportId, year, capacity) <i>(studentId, sportId, year, capacity)</i> Note: 1. Three tables to represent student, sport and participate: 1 mark 2. Relating participate relation with other two tables: 1 mark 3. Proper attributes in each table: <i>primary key identify</i> 1 mark		3
	(c) i	<i>or name or id</i> Select distinct sportId from studentSport where capacity <> "captain" <i>captain</i> <i>dist</i> Note: Reduce 1 mark if <u>distinct</u> is not specified.	3	3
	(c) ii	Select student.studentId, student.name from student, studentSport Where student.studentId = studentSport.studentId and studentSport.capacity = "captain"	2	2



use if there is no arrow underline

Costs minimize - Cost +

GCE AL Examination, August 2013 (AL/2013/20/E-II) – PART B

(Model Answers)

Q No	Section	Model Answer	Marks																																					
			Break down	Total																																				
1	(a) i	Smoke detector: S1 Flame detector: S2 Heat detector: S3 Output: Q <table><tr><th>S1</th><th>S2</th><th>S3</th><th>Q</th></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td></tr></table> Note: 8 correct rows: 4 marks 7 or 6 correct rows: 3 marks 5 or 4 correct rows: 2 marks 3 or 2 correct rows: 1 mark	S1	S2	S3	Q	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	1	1	0	0	0	1	0	1	1	1	1	0	1	1	1	1	1	4	4
S1	S2	S3	Q																																					
0	0	0	0																																					
0	0	1	0																																					
0	1	0	0																																					
0	1	1	1																																					
1	0	0	0																																					
1	0	1	1																																					
1	1	0	1																																					
1	1	1	1																																					
	(a) ii	$Q = S1'.S2.S3 + S1.S2'.S3 + S1.S2.S3' + S1.S2.S3$	1	1																																				
	(b) i	$Q = A.B.C. + A'.B.C + A.B.C'$ =working = $B.[A + C]$ Mention of <u>(at least two)</u> algebraic rules $B.A.(A+A') + A.B.C'$ $B.C + A.B.C'$ $B(C+A.C')$ $B(C+A)$ Note: If the simplification is stopped one step above or gone one more step further, only 3 marks out of 4	1 4 2	7																																				

Select distinct name

from student spent A, spent B

where capacity <> 'Captain'

not capacity <= capt

and student - sport student id

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= spent.spent id
B

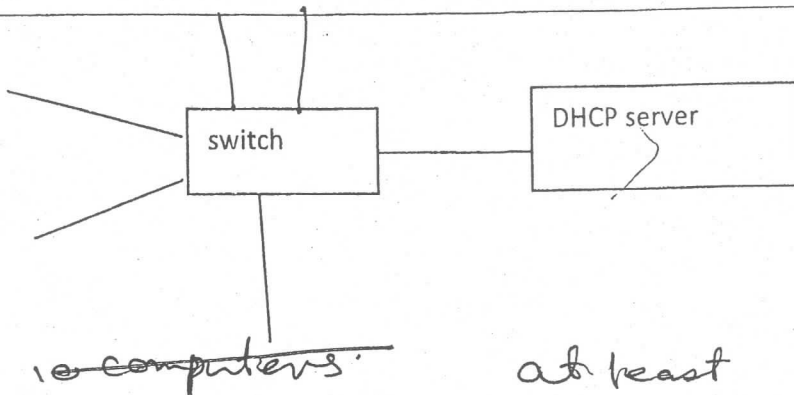
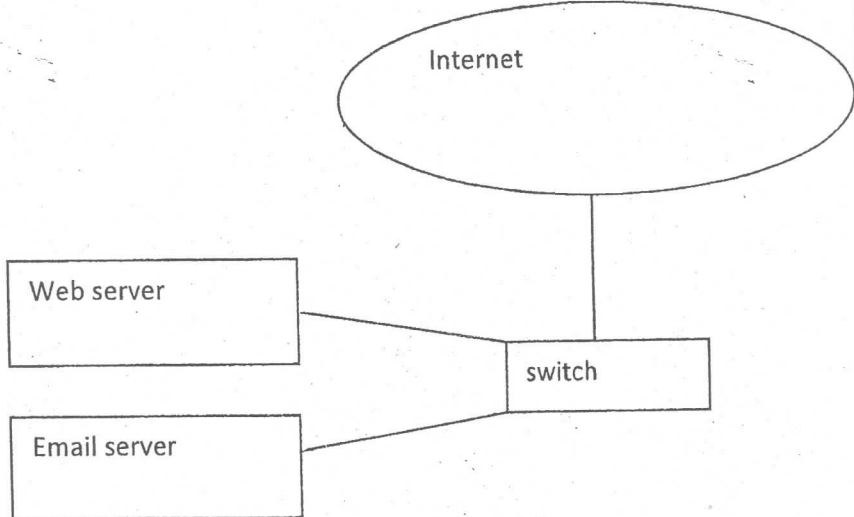
order by name (optional)

$\neq 1$
K
not equal!

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
2	(a) ii	Channels: CDMA Single GSM Multiple Data transmission rate Fast Slow Security of data More Less Encoding Digital Digital Signal Radio/Wireless Radio/wireless 3G 3G Voice and data both Medium of transmission Both wireless Notes for teachers: CDMA - Code division multiple access: allows several transmitters to send information simultaneously over a single communication channel. Each transmitter is assigned a code to allow multiple users to be multiplexed over the same physical channel. GSM - Global System for Mobile Communications: is an open, digital cellular technology used for transmitting mobile voice and data services. In this technology, mobile phones make the connections by searching for cells in the immediate vicinity.	1 1	2
	(b) i	Web server – <u>serves web pages</u> stored in the server to client computers	1	1
	(b) ii	Mail server – <u>provides email facilities</u> to client computers <i>handle emails</i>	1	1
	(b) iii	Proxy server – <u>allows a local network to access the Internet through a single public IP address</u> (<i>sharing a single Internet connection</i>) <i>* sharing important</i>	1	1
	(b) iv	DHCP server – <u>assigns IP addresses dynamically</u> to computers connected to the network	1	1

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
2	(c) i	 10 computers at least 1 mark Note: Without DHCP 1 mark 10 computers with switch	2	2
	(c) ii	 Note: Without internet 1 mark	2	2

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
2	(c) iii	<pre> graph TD Internet([Internet]) --- S1[switch] S1 --- WS[Web server] S1 --- ES[Email server] S1 --- PS[proxy server] PS --- S2[switch] S2 --- DHCP[DHCP server] S2 --- U1[] S2 --- U2[] </pre> Note: - Without proxy: (network 2/4) no marks. - Proxy without two network connections: 2 marks only - Proxy server without two switches: 1 mark only (two network connections) proxy 2/4 switch 2/4 ①	3	3

Q No	Section	Model Answer	Marks	
			Break down	Total
3	(a)	1. Accuracy (data duplication) explanation 2. Efficiency explanation	1 1 1 1	4
	(b) history	1. Privacy of patients Justification 2. Safety of patients Justification	1 1 1 1	4
	(c) must history a service	No. Discussion of 1. Saving of money — s/c cost is high } and 2. Increase of efficiency } all 3. Increase of transparencies in state sector } must be	1 1 1 1	4
	(d) directly compare	Not a good decision Reasons (b) if reach	12 1+1	3
4	(a)	a = 4 Acquires storage to store an integer value, assigns the label "a" and store (assign) the vale 4 at that location. b = 4.7 Acquires storage to store a floating point value, assigns the label "b" and store (assign) the vale 4.7 at that location. c = a + b Retrieves the value stored at the location (with the label) a, converts it to type float, retrieves the value stored at the location (with the label) b, add them together, Acquires storage to store a floating point value , assigns the label c, and stores (assigns) the result of the addition at that location.	1 1 2 or 0	4

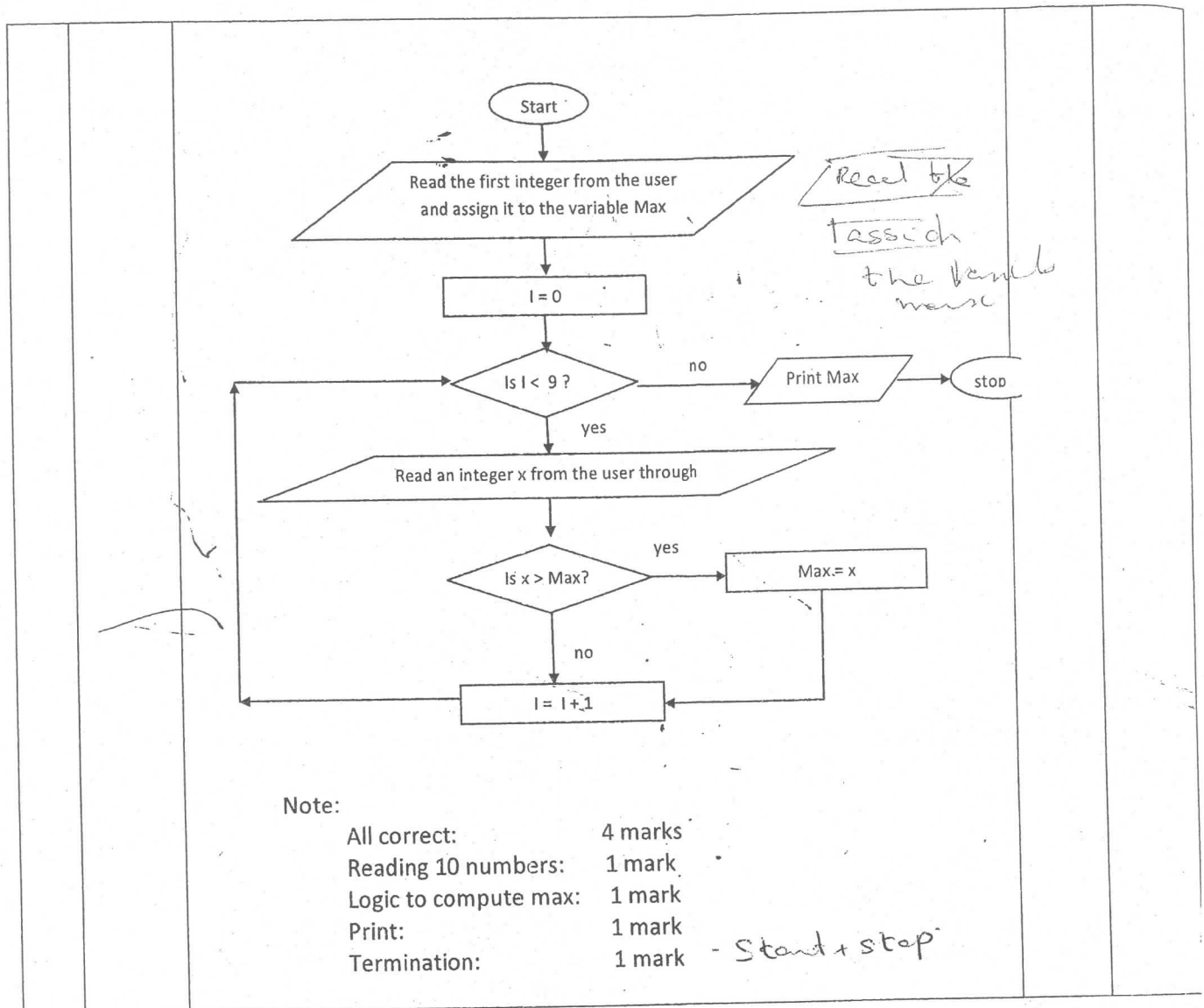
Retrieve the value stored for a and b

menang dot: 408 process

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
4	(b)	<i>whole</i> <u>Reads a set of values</u> from the user <u>through the keyboard/Console</u>, <u>one at a time</u>, <u>till 0 or a negative value is entered</u>, <u>sum the values read except the last value</u>, and <u>print the result</u>. Notes: (1 Marks for all 4 essential components) <i>each</i> <u>1 for bold and underline</u> (1 additional Mark for each other component) <i>bold underline needs no marks</i>	4	4
4	(c) i	Or <pre> graph TD Start([Start]) --> Init[Max = very small value] Init --> I0[I = 0] I0 --> IsI10{Is I < 10?} IsI10 -- no --> PrintMax[/Print Max/] PrintMax --> stop([stop]) IsI10 -- yes --> ReadX[/Read an integer x from the user through/] ReadX --> IsxMax{Is x > Max?} IsxMax -- yes --> Maxx[Max = x] IsxMax -- no --> Iplus1[I = I + 1] Maxx --> IsI10 Iplus1 --> IsI10 </pre>		4

(Model Answers)



if max = 0 — logic X

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
4	(c) ii	Essential parts are in bold typeface max = - 1000 # max should be assigned a value smaller than any value expected . for i in range(0,10): # range(x,y) should generate any list of 10 items x = int(input(str(i+1) + " Enter a value : ")) if x > max: max = x print("Maximum value is : ",max) or max = -1000 i = 0 while i < 10: x = int(input()) if x > max: max = x i = i + 1 print (max) or maximum = int(input("Input a number: ")) for i in range(0, 9): maximum = max(input("Input a number: ", maximum) print("Maximum value is: ", maximum) Note: All correct: 3 marks Reading 10 numbers: 1 mark Logic to compute max: 1 mark Print: 1 mark		3

Case sensitive -

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
5		<pre> erDiagram Company --o{ Car Owner : Register Company --o{ Driver : Hire Car Owner --o{ Car : Rent Car --o{ Customer : Request Car --o{ Driver : Drives Car Owner { string OwnerID PK } Car { string carID PK } Driver { string driverID PK } Customer { string custID PK string name string address string contactTP } </pre>		

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
		<u>Entities</u> 1. Car owner 2. Car 3. Driver 4. Customer 5. Company <u>Relationship with degrees</u> Rent Request Drives Note: No marks for the other relationships with Company entity. Primary keys Attributes of customer <i>Cardinality by - optional</i>	1 each 1 each 1 each	5 3 4 3
6	(a)	1. System <u>shall</u> (should) be able to sort items 2. System <u>shall</u> (should) be able to put items into the correct delivery van 3. System <u>shall</u> (should) be able to read bar code Note: 1 mark for the function and 1 mark for the justification	2 each	4
	(b)	1. Accuracy 2. Efficiency Justification <i>reasons</i> Note: Without justification 1 marks each.	2 2 2 each	8
	(c)	Correct Reasons (answer (b))	1 1 each	3

