NEW

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

NATIONAL EVALUATION & TESTING SERVICE
DEPARTMENT OF EXAMINATION - SRI LANKA

20 - Information & Communication Technology

Marking Scheme

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3423

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.

රහස්‍යයි
அந்தரங்கமானது

ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව
இலங்கைப் பரீட்சைத் திணைக்களம்

ජාතික ඇගයීම් හා පරීක්ෂණ සේවාව
தேசிய மதிப்பீட்டிற்கும் பரீட்சித்தலுக்குமான சேவை

අ.පො.ස. (උ.පෙළ) විභාගය 2013
க.பொ.த.(உ.தர)ப் பரீட்சை 2013

විෂයය பாடம் } ICT විෂයය අංකය பாட இலக்கம் } 20

ලකුණු දීමේ පටිපාටිය - I පත්‍රය
புள்ளி வழங்கும் திட்டம் - பத்திரம் I

පිළිතුර අංකය வினா இல	ප්‍රශ්න අංකය விடை	පිළිතුර අංකය வினா இல	ප්‍රශ්න අංකය விடை	පිළිතුර අංකය வினா இல	ප්‍රශ්න අංකය விடை	පිළිතුර අංකය வினா இல	ප්‍රශ්න අංකය விடை	පිළිතුර අංකය வினா இல	ප්‍රශ්න අංකය விடை
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

විශේෂ උපදෙස් விசேட அறிவுறுத்தல் } එක් පිළිතුරකට ஒரு சரியான விடைக்கு **01** බැගින් புள்ளி வீதம்

මුළු ලකුණු 01 X 50 = **50**

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

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

(Model Answers)

Q No	Section	Model Answer	Marks Break down	Marks Total
1		<head>		10
		<title>Test Cricket</title>	1	
		</head>		
		<body>		
		Sri Lankan Test cricket records (or h2)	1	
			1	
		The 	1	
		Sri Lankan national cricket team		
		played their first Test match on 17 February 1982 against England.		
		Record Groups ()	1	
			1	
		Team records		
		Individual records		
		Partnership records		
		Partnership records (or h3) (If h2)	1	
			1	
		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.		
		<table border = "1"> (or "2")	1	
		<caption>Highest wicket partnerships</caption>	1	
		<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>		

		<tr> <td>576</td> <td>2nd wicket</td> <td>Sanath Jayasuriya</td> <td>Roshan Mahanama</td> </tr> </table> </body> </html> Notes: or <hr> is considered as correct answer. or <img src = "cricket.jpg" alt = "Cricket."> is considered as correct answer.		
2	(a)	Address space = 2^{32} Maximum usable size of memory = 2^{32} bytes = $2^2 \times 2^{30}$ bytes = $2^{32}/2^{20}$ GB = 4 GB = 4 GB only one units consider bytes / GB (at least one unit GB/Byte)	1 1 1	3
	(b)	Process is a program in execution – ක්‍රියාත්මක වන Program එකක් Process කරි. Program can have multiple processes	1 1	2
	(c)	To suspend a process temporary to the hard disk in order to free the memory (memory full), to place another process in the main memory. (virtual memory) Note: 1. suspend a process 2. temporary 3. hard disk or Virtual memory 4. free the memory (memory full) 5. to place another process in the main memory.	1 1 1 1 1	5

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

(Model Answers)

Q No	Section	Model Answer	Marks Break down	Marks Total
3	(a) i	13_{10} - 00001101 -19_{10} - 11101101 Consider 8 bits	1 2	3
	(a) ii	$13_{10} - 19_{10}$ = 00001101 11101101 11111010	1	1
	(a) iii	Identify the sign of the final decimal number by most significant bit (both positive and negative) and Most significant digit is 0 → positive convert to decimal Most significant digit is 1 → negative 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 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 Consumer to consumed (Amazon.com) 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

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

(Model Answers)

Q No	Section	Model Answer	Marks Break down	Marks 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: Primary Key: Identify each record in a database table uniquely. (This removes data duplication.) Foreign key: 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) 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: with primary key identified 1 mark		3
	(c) i	Select distinct sportId from studentSport where capacity <> "captain" Note: Reduce 1 mark if distinct 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

(c)(i) – Select distinct name
from studentsport A, Sport B
where capacity <> 'captain' AND
– trip – A.sportId = B.sportId
order by name

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

(Model Answers)

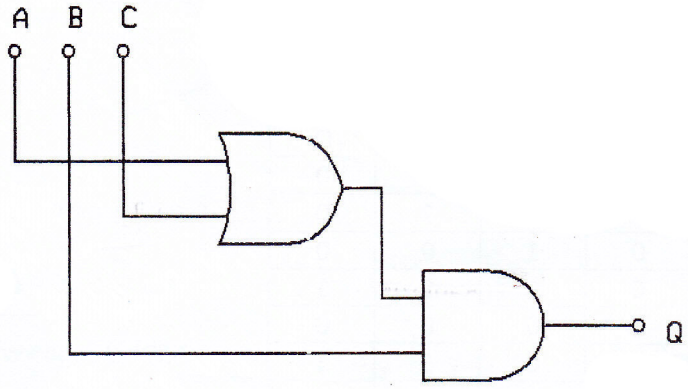
<table>
<tr><th rowspan="2">Q No</th><th rowspan="2">Section</th><th rowspan="2">Model Answer</th><th colspan="2">Marks</th></tr>
<tr><th>Break down</th><th>Total</th></tr>
<tr><td>1</td><td>(a) i</td><td>Smoke detector: S1
Flame detector: S2
Heat detector: S3
Output: Q
A B C F
<table><tr><th>S1</th><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
$F = \bar{A}BC + A\bar{B}C + AB\bar{C} + ABC$
$F = AB + BC + CA$</td><td>4</td><td>4</td></tr>
<tr><td></td><td>(a) ii</td><td>$Q = S1'.S2.S3 + S1.S2'.S3 + S1.S2.S3' + S1.S2.S3$
$Q = S1.S2 + S2S3 + S3S1$ ⇐ (K-map)</td><td>1</td><td>1</td></tr>
<tr><td></td><td>(b) i</td><td>$Q = A.B.C. + A'.B.C + A.B.C'$
= .....working
= B.[A + C]
} K-map uses for 2 marks
Mention of at least two algebraic rules
Note:
If the simplification is stopped one step above or gone one more step further, only 3 marks out of 4</td><td>1
4
2</td><td>7</td></tr>
</table>

$Q = (A+\bar{A})BC + AB\bar{C}$
$= 1 \cdot BC + AB\bar{C}$
$= B(C + A\bar{C})$
$= B.(C+A).(C+\bar{C})$
$= B.(C+A).1$
$= B(A+C)$

$Q = ABC + \bar{A}BC + AB\bar{C}$ (Idempotent Law)
$= ABC + \bar{A}BC + AB\bar{C} + ABC$
$= BC(A+\bar{A}) + A.(C+\bar{C})]$ (Distributive Law)
$= B(C.1 + A.1)$ (Inverse Element Law)
$= B(A+C)$ (Identity Law)

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

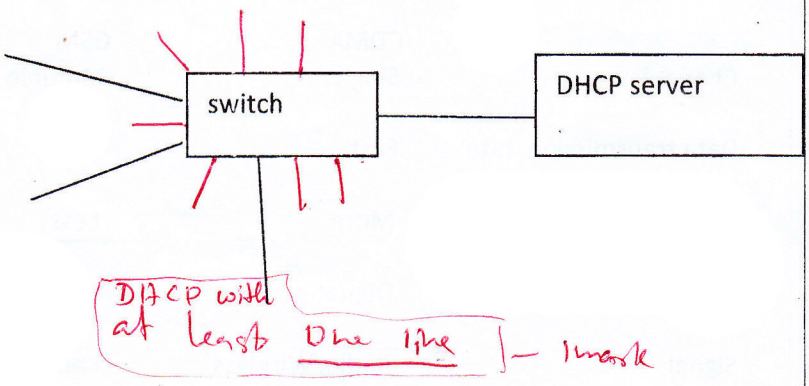
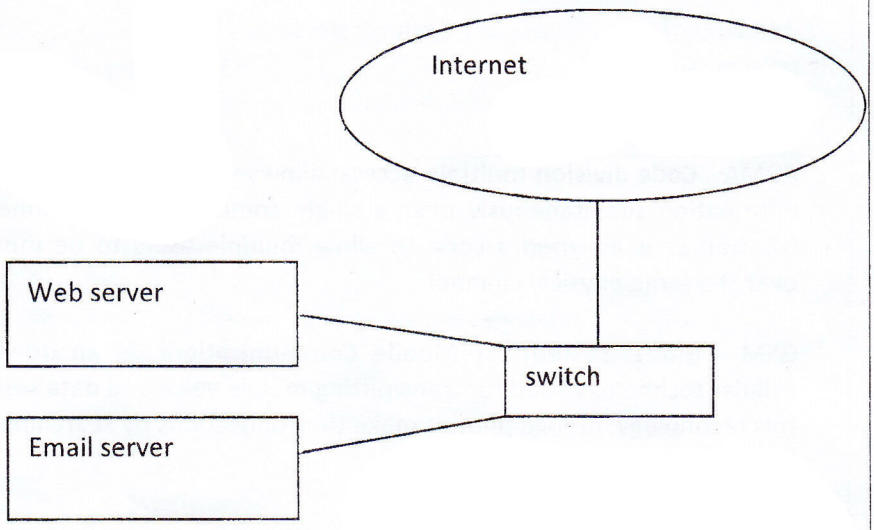
(Model Answers)

Q No	Section	Model Answer	Marks Break down	Marks Total
1.	(b) ii	 Note: 1. The 3 marks should be given only when the simplification has given at least 3 marks out of 4. 2. The diagram is drawn to the final simplification expression.	3 Or 0	3
2	(a) i	ISDN / ADSL Speed: Upload and download are same / faster download speeds than upload speeds. (Contrast) Connectivity: end-to-end / point-to-point Multiple access / Single access Synchronous / Asynchronous Low speed data / High speed data Signal type: Both provide digital communication (data and voice) (Similarity) Notes for teachers: ISDN - Integrated Services Digital Network: provides end-to-end (circuit switched) connectivity through a 64 kbps digital circuit. ADSL – Asymmetric digital subscriber line: provides faster data transmission over copper telephone lines. The technology provides faster download speeds than upload speeds.	1 1	2

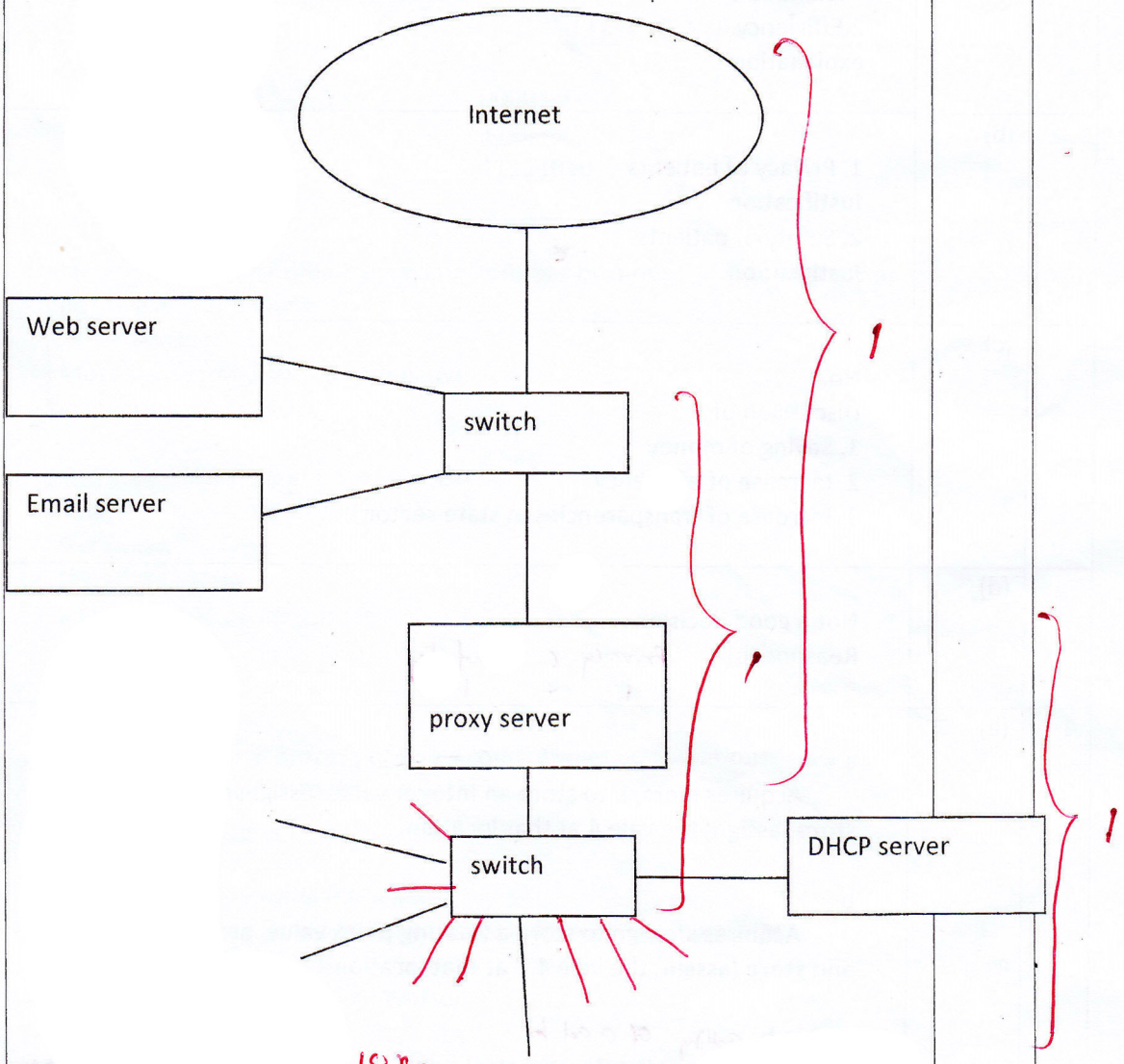
(Model Answers)

Q No	Section	Model Answer	Marks Break down	Marks Total
2	(a) ii			2
			CDMA / GSM	
		Channels:	Single / Multiple	1
		Data transmission rate	Fast / Slow	
		Security of data	More / Less	
		Encoding	Digital / Digital	1
		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.		
	(b) i	Web server – serves web pages stored in the server to client computers handles / manages	1	1
	(b) ii	Mail server – provides email facilities to client computers	1	1
	(b) iii	Proxy server – allows a local network to access the Internet through a single public IP address (sharing a single Internet connection)	1	1
	(b) iv	DHCP server – assigns IP addresses dynamically to computers connected to the network	1	1

(Model Answers)

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

(Model Answers)

Q No	Section	Model Answer	Marks Break down	Marks Total
2	(c) iii		3	3

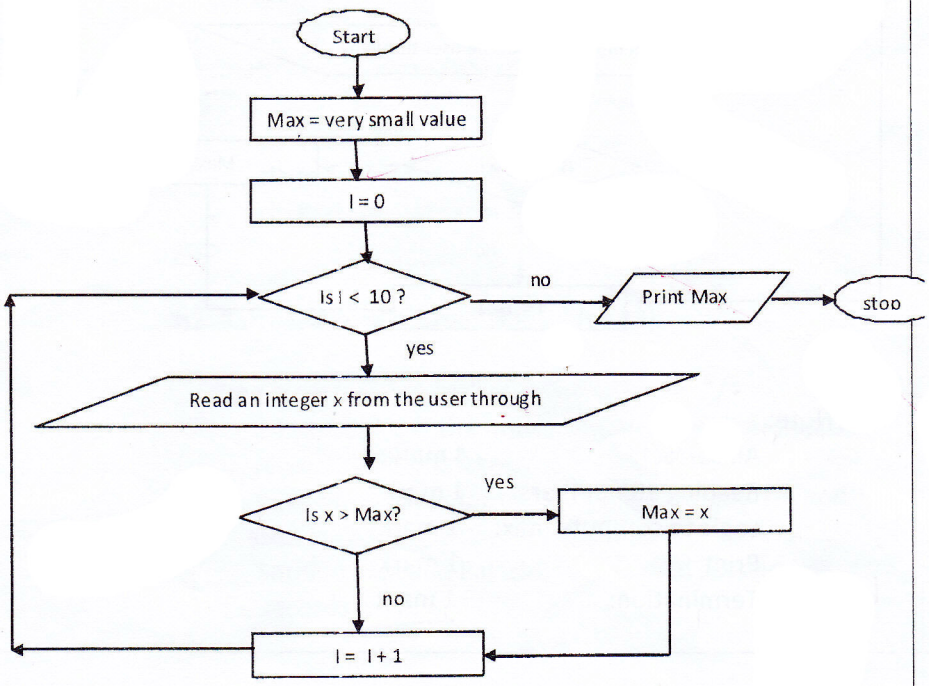
Note:

1. Without proxy: no marks.
2. Proxy without two network connections: 2 marks only
3. Proxy server without two switches: 1 mark only
   (two network connections)

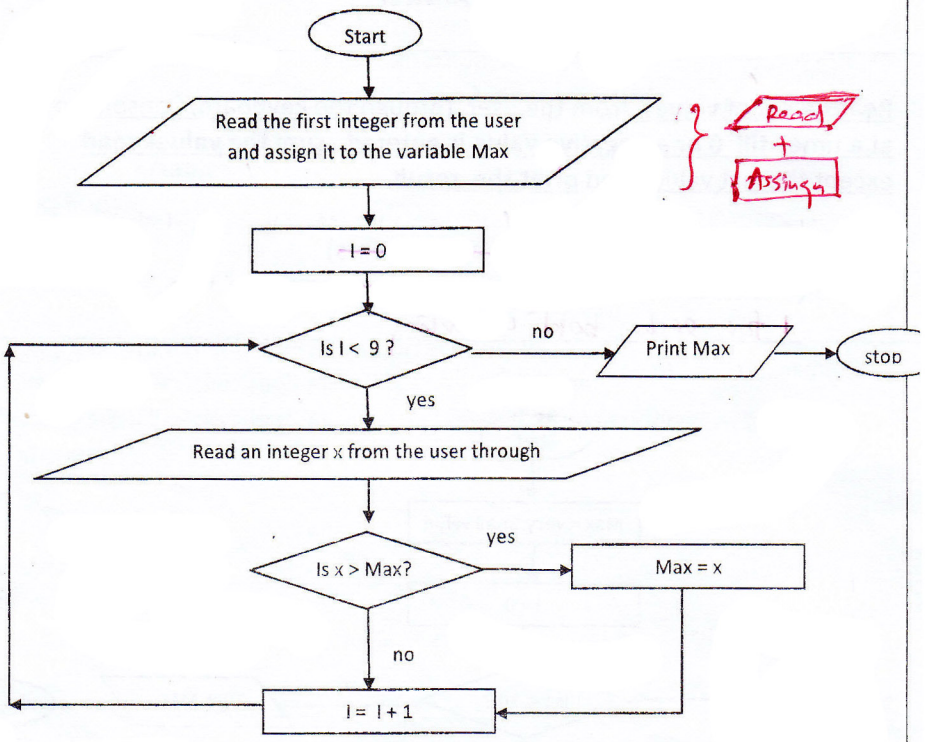
(Model Answers)

Q No	Section	Model Answer	Marks Break down	Marks Total
3	(a)			4
		1. Accuracy (data duplication)	1	
		explanation	1	
		2.Efficiency	1	
		explanation	1	
	(b)			4
		1. Privacy of patients	1	
		Justification	1	
		2. Safety of patients	1	
		Justification	1	
	(c)			4
		No.	1	
		Discussion of		
		1. Saving of money	1	
		2. Increase of efficiency	1	
		3. Increase of transparencies in state sector	1	
	(d)			3
		Not a good decision	1	
		Reasons (b) Privacy & Safety 1 + 1	1 (each)	
4	(a)			4
		a = 4 Acquires storage to store an **integer** value, assigns the label "a" and **store** (assign) the vale 4 at that location.	1	
		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.	1	
		c = a + b adding of a and 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.	2	

(Model Answers)

Q No	Section	Model Answer	Marks Break down	Marks Total
4	(b)	**Reads a set of values** from the user through the keyboard/Console, one at a time, **till 0 or a negative value is entered**, **sum the values read** except the last value, and **print the result**. Notes: ~~**(1 Marks for all 4 essential components)**~~ ~~**(1 additional Mark for each other component)**~~ 1 for each bold & underling	4	4
4	(c) i	 Or		4

(Model Answers)



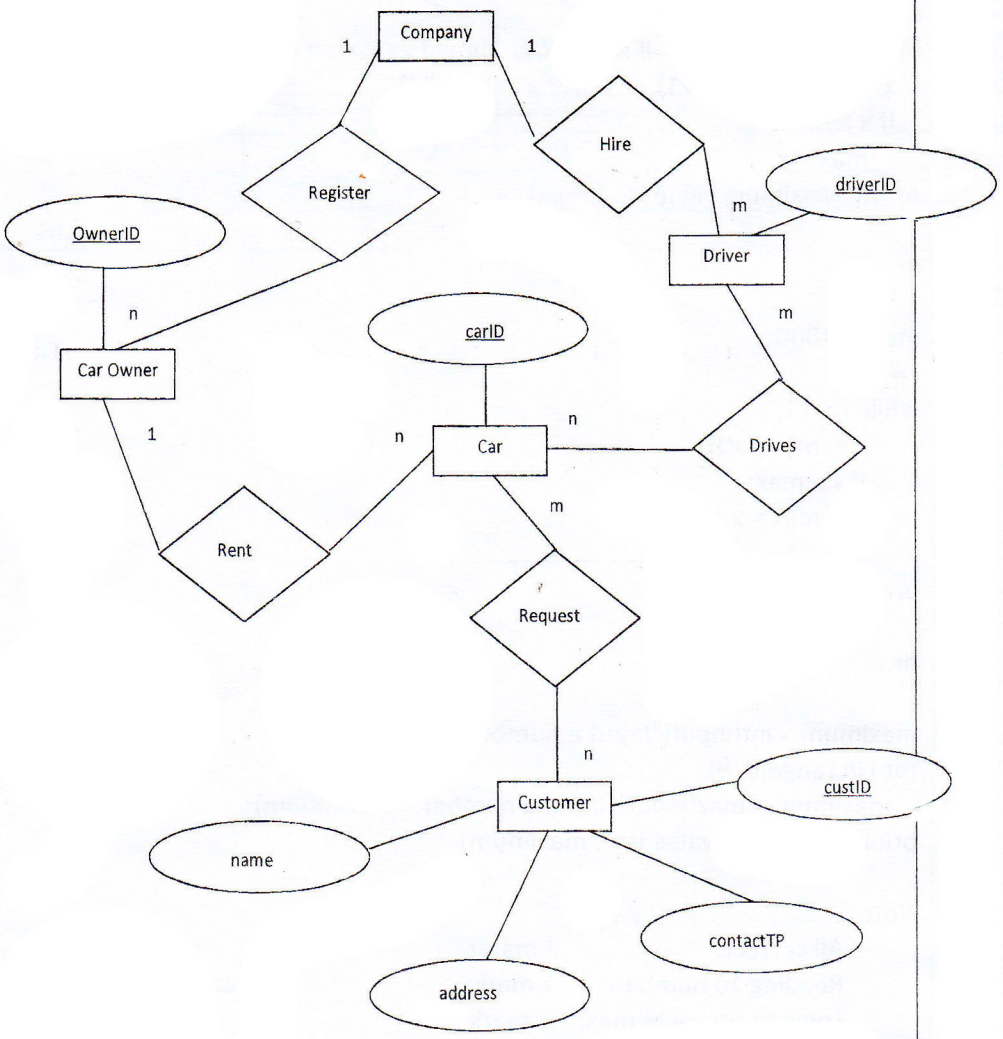
Note:

All correct:	4 marks
Reading 10 numbers:	1 mark
Logic to compute max:	1 mark
Print:	1 mark
Termination:	1 mark

(Model Answers)

Q No	Section	Model Answer	Marks Break down	Marks 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
		Case sensitie is not consider, but indentation is essential
		print(max) within while loop or outside loop consider
				3

Q No	Section	Model Answer	Marks	
			Break down	Total
5				

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

(Model Answers)

Q No	Section	Model Answer	Marks Break down	Marks Total
		Entities 1. Car owner 2. Car 3. Driver 4. Customer 5. Company	1 each	5
		Relationship with degrees Rent Request Drives Note: No marks for the other relationships with Company entity.	1 each	3
		Primary keys	1 each	4
		Attributes of customer x. Consider customer attributes x. Cardinality is not Consider	1 each	3
6	(a)	1. System shall (should) be able to sort items 2. System shall (should) be able to put items into the correct delivery van 3. System shall (should) be able to read bar code Note: 1 mark for the function and 1 mark for the justification	2 each (2+2)	4
	(b)	1. Accuracy 2. Efficiency Justification Note: Without justification 1 marks each.	2 2 2 each (2+2)	8
	(c)	Correct Reasons (answer (b))	1 1 each (1+1)	3