

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

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

## **20 - Information & Communication Technology**

### **Marking Scheme**

ரஹஸ்யம்

அந்தரங்கமானது

# தீர்மான வினா தேர்வுகளை

இலங்கைப் பரீட்சைத் திணைக்களம்

## புதிதான அறிவு மற்றும் பரீட்சைத் திணைக்களம்

தேசிய மதிப்பீட்டிற்கும் பரீட்சைத் திணைக்களம் சேவை

அ.ப.க. (உ.ப.க.) வினா 2013

க.ப.க. (உ.ப.க.)ப் பரீட்சை 2013

வினா

பாடம்

ICT

வினா அளவு

பாட இலக்கம்

20

தேர்வு திணைக்களம் - I பகுதி  
புள்ளி வழங்கும் திட்டம் - பத்திரம் I

பிழை அளவு	பிழை அளவு	பிழை அளவு	பிழை அளவு	பிழை அளவு	பிழை அளவு				
வினா இல	விடை	வினா இல	விடை	வினா இல	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

வினா அளவு

வினா அறிவுறுத்தல்

ஒரு பிழை

ஒரு சரியான விடைக்கு

01

வினா

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> &lt;head&gt;   &lt;title&gt;Test Cricket&lt;/title&gt; &lt;/head&gt; &lt;body&gt;   &lt;h1&gt;Sri Lankan Test cricket records&lt;/h1&gt; (or h2)   &lt;hr/&gt;   &lt;p&gt;The &lt;a href = "team.html"&gt;     Sri Lankan national cricket team&lt;/a&gt;     played their first Test match on 17 February 1982 against     England.   &lt;/p&gt;   &lt;p&gt;&lt;b&gt;Record Groups&lt;/b&gt;&lt;/p&gt; (or h3/h4) (Strong)   &lt;ul&gt;     &lt;li&gt;Team records&lt;/li&gt;     &lt;li&gt;Individual records&lt;/li&gt;     &lt;li&gt;Partnership records&lt;/li&gt;   &lt;/ul&gt;    &lt;h2&gt;Partnership records&lt;/h2&gt; (or h3)    &lt;p&gt;&lt;img src = "cricket.jpg" alt = "Partnership"/&gt;     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.   &lt;/p&gt;    &lt;table border = "1"&gt; or "2"     &lt;caption&gt;Highest wicket partnerships&lt;/caption&gt;     &lt;tr&gt;       &lt;th&gt;Runs&lt;/th&gt;       &lt;th&gt;Wicket&lt;/th&gt;       &lt;th colspan = "2"&gt;Partners&lt;/th&gt;     &lt;/tr&gt;     &lt;tr&gt;       &lt;td&gt;335&lt;/td&gt;       &lt;td&gt;1st wicket&lt;/td&gt;       &lt;td&gt;Marvan Atapattu&lt;/td&gt;       &lt;td&gt;Sanath Jayasuriya&lt;/td&gt;     &lt;/tr&gt;           </pre>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	10

(Model Answers)

		<pre> &lt;tr&gt;   &lt;td&gt;576&lt;/td&gt;   &lt;td&gt;2nd wicket&lt;/td&gt;   &lt;td&gt;Sanath Jayasuriya&lt;/td&gt;   &lt;td&gt;Roshan Mahanama&lt;/td&gt; &lt;/tr&gt; &lt;/table&gt; &lt;/body&gt; &lt;/html&gt; </pre> <p>Notes:  &lt;hr/&gt; or &lt;hr&gt; is considered as correct answer.  &lt;img src = "cricket.jpg" alt = "Partnership"/&gt; or  &lt;img src = "cricket.jpg" alt = "Partnership"&gt; is considered as correct answer.</p>		
2	(a)	<p>Address space = <math>2^{32}</math>  Maximum usable size of memory = <math>2^{32}</math> bytes  = <math>2^2 \times 2^{30}</math> bytes  = 4GB</p> <p><i>data and all.</i>  <i>optional</i></p>	<p><math>2^{32}/2^{30} = 2^2 = 4GB</math></p> <p>1 1 1</p>	3
	(b)	<p>Process is a program in execution - <i>param</i>  Program can have multiple processes</p>	<p>1 1</p>	2
	(c)	<p>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.</p> <p>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.</p>	<p>1 1 1 1 1</p>	5

*memory full not swapped out*

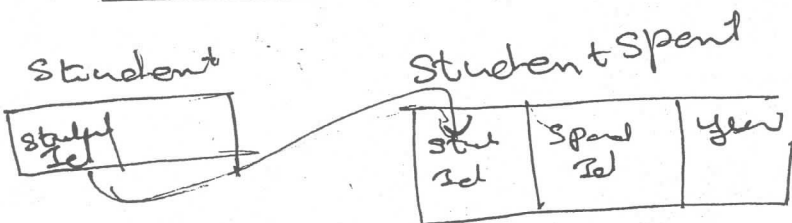
(Model Answers)

Q No	Section	Model Answer	Marks				
			Break down	Total			
3	(a) i	$13_{10} - 00001101$ $-19_{10} - 11101101$	1 2	3			
	(a) ii	$13_{10} - 19_{10} =$ <table style="margin-left: 100px;"> <tr><td>00001101</td></tr> <tr><td><u>11101101</u></td></tr> <tr><td>11111010</td></tr> </table>	00001101	<u>11101101</u>	11111010	1	1
00001101							
<u>11101101</u>							
11111010							
	(a) iii	<p style="text-align: center;"><i>negative or positive</i></p> <p>Identify the sign of the final decimal number by most significant bit (both positive and negative)</p> <p>Most significant digit is 0 → positive convert to decimal</p> <p>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</p> <p>Or</p> <p>Apply the reverse process of two's complement (explanation) Convert the number to decimal</p> <p style="text-align: right;"><i>explain with the example.</i></p>	1  1	2			
	(b)	<p>Examples having following features</p> <p>B2B: Purchase &amp; sale between 2 companies through Internet Mutual agreement Consumers are not involved</p> <p>B2C: Products and services sold through Internet Business to consumers <i>www.</i> Consumer to consumer (<u>Amazon.com</u>)</p> <p>C2C: Sale of goods across Internet Consumer to consumer</p> <p>C2B: Consumer acts as the seller and business as the buyer through Internet <del>Consumer is made payment for the service provided.</del></p>	1 each	4			

*site on 2nd explain. mod.*

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
4	(a)	<p>Primary key of a table and foreign key of another table establish the relationship in a database.</p> <p>Note:</p> <p>1. When only the foreign key definition is given: 1 mark only 2. Given the relationship: 2 marks</p> <p>Notes for teachers:</p> <p><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.</p>	2	2
	(b)	<p>1. student(studentId, name) 2. sport(sportId, name) 3. studentSport(studentId, sportId, year, capacity) <i>(studentId, sportId, year, capacity)</i></p> <p>Note:</p> <p>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</p>		3
	(c) i	<p>Select <u>distinct</u> sportId from studentSport where capacity &lt;&gt; "captain" <i>captain</i></p> <p>Note:</p> <p>Reduce 1 mark if <u>distinct</u> is not specified.</p>	3	3
	(c) ii	<p>Select student.studentId, student.name from student, studentSport Where student.studentId = studentSport.studentId and studentSport.capacity = "captain"</p>	2	2



was if there is no arrows 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	<p>Smoke detector: S1 Flame detector: S2 Heat detector: S3 Output: Q</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <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> <p style="margin-left: 200px;"><math>S1 = A = ?</math> etc.</p> <p>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</p>	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	<p> <math>Q = A.B.C. + A'.B.C + A.B.C'</math>                      = .....working                      = B.(A + C)                 </p> <p style="margin-left: 200px;"> <math>B.A.(A+A') + A.B.C'</math>  <math>B.C + A.B.C'</math>  <math>B(C + AC')</math>  <math>B(C + A)</math> </p> <p>Mention of <u>(at least two)</u> algebraic rules</p> <p>Note: If the simplification is stopped one step above or gone one more step further, only 3 marks out of 4</p>	1 4 2	7																																				

Select distinct name

from student spent A, spent B

where capacity  $\leftrightarrow$  'Captain'

not capacity  $\neq$  capt

and student - spent student id

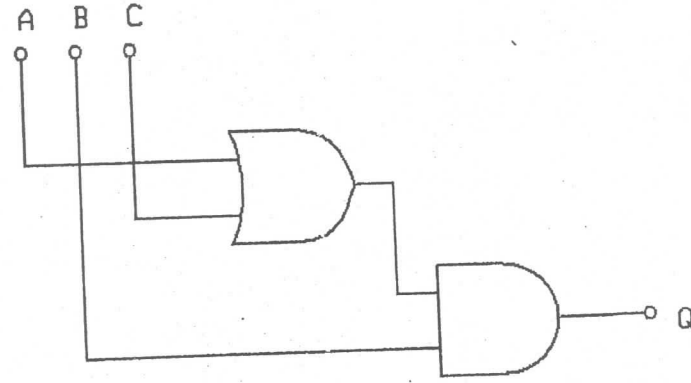
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=  $\frac{\text{spent} \cdot \text{spent id}}{B}$

order by name (optional)



(Model Answers)

Q No	Section	Model Answer	Marks																			
			Break down	Total																		
1.	(b) ii	 <p>Note:</p> <ol style="list-style-type: none"> <li>The 3 marks should be given only when the simplification has given at least 3 marks out of 4.</li> <li>The diagram is drawn to the final simplification expression.</li> </ol>	3 Or 0	3																		
2	(a) i	<table border="0"> <tr> <td>Speed:</td> <td>ISDN Upload and download are same</td> <td>ADSL faster download speeds than upload speeds.</td> </tr> <tr> <td>Connectivity:</td> <td>end-to-end</td> <td>point-to-point</td> </tr> <tr> <td></td> <td>Multiple access</td> <td>Single access</td> </tr> <tr> <td></td> <td>Synchronous</td> <td>Asynchronous</td> </tr> <tr> <td></td> <td>Low speed data</td> <td>High speed data</td> </tr> <tr> <td>Signal type:</td> <td>Both provide digital communication (data and voice)</td> <td></td> </tr> </table> <p>Notes for teachers:</p> <p>ISDN - Integrated Services Digital Network: provides end-to-end (circuit switched) connectivity through a 64 kbps digital circuit.</p> <p>ADSL – Asymmetric digital subscriber line: provides faster data transmission over copper telephone lines. The technology provides faster download speeds than upload speeds.</p>	Speed:	ISDN Upload and download are same	ADSL faster download speeds than upload speeds.	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)		1	2
Speed:	ISDN Upload and download are same	ADSL faster download speeds than upload speeds.																				
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)																					

*Handwritten notes:*  
= 1  
X  
not equal



(Model Answers)

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

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
2	(c) iii	<p>The diagram illustrates a network architecture. At the top is an oval labeled 'Internet'. A vertical line connects it to a horizontal box labeled 'switch'. To the left of this switch are two vertical boxes: 'Web server' and 'Email server', both connected to the switch by lines. Below this switch is another horizontal box labeled 'proxy server', connected by a vertical line. Below the proxy server is another horizontal box labeled 'switch', connected by a vertical line. To the left of this second switch are three lines representing network connections. To the right of this second switch is a horizontal box labeled 'DHCP server', connected by a horizontal line.</p>	3	3
		<p>Note:</p> <ol style="list-style-type: none"> <li>Without proxy: (network 2/1) no marks.</li> <li>Proxy without two network connections: 2 marks only</li> <li>Proxy server without two switches: 1 mark only (two network connections)</li> </ol> <p>proxy server switch 2/1</p>		

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) <i>history</i>	1. Privacy of patients Justification 2. Safety of patients Justification	1 1 1 1	4
	(c) <i>most history e saved.</i>	No. Discussion of 1. Saving of money – <i>slc cost is high</i> 2. Increase of efficiency 3. Increase of transparencies in state sector	1 1 1 1	4
	(d) <i>directly</i>	Not a good decision Reasons (b)	1 1 <i>if each</i>	3
4	(a)	a = 4 Acquires storage to store an <b>integer</b> value, assigns the label "a" and <b>store</b> (assign) the vale 4 at that location.  b = 4.7 Acquires storage to store a <b>floating point</b> value, assigns the label "b" and <b>store</b> (assign) the vale 4.7 at that location.  c = a + b <b>Retrieves</b> the value stored at the location (with the label) a, <b>converts</b> it to type float, retrieves the value stored at the location (with the label) b, <b>add</b> them together, Acquires storage to store a <b>floating point</b> value , assigns the label c, and <b>stores</b> (assigns) the result of the addition at that location.	1  1  2	4

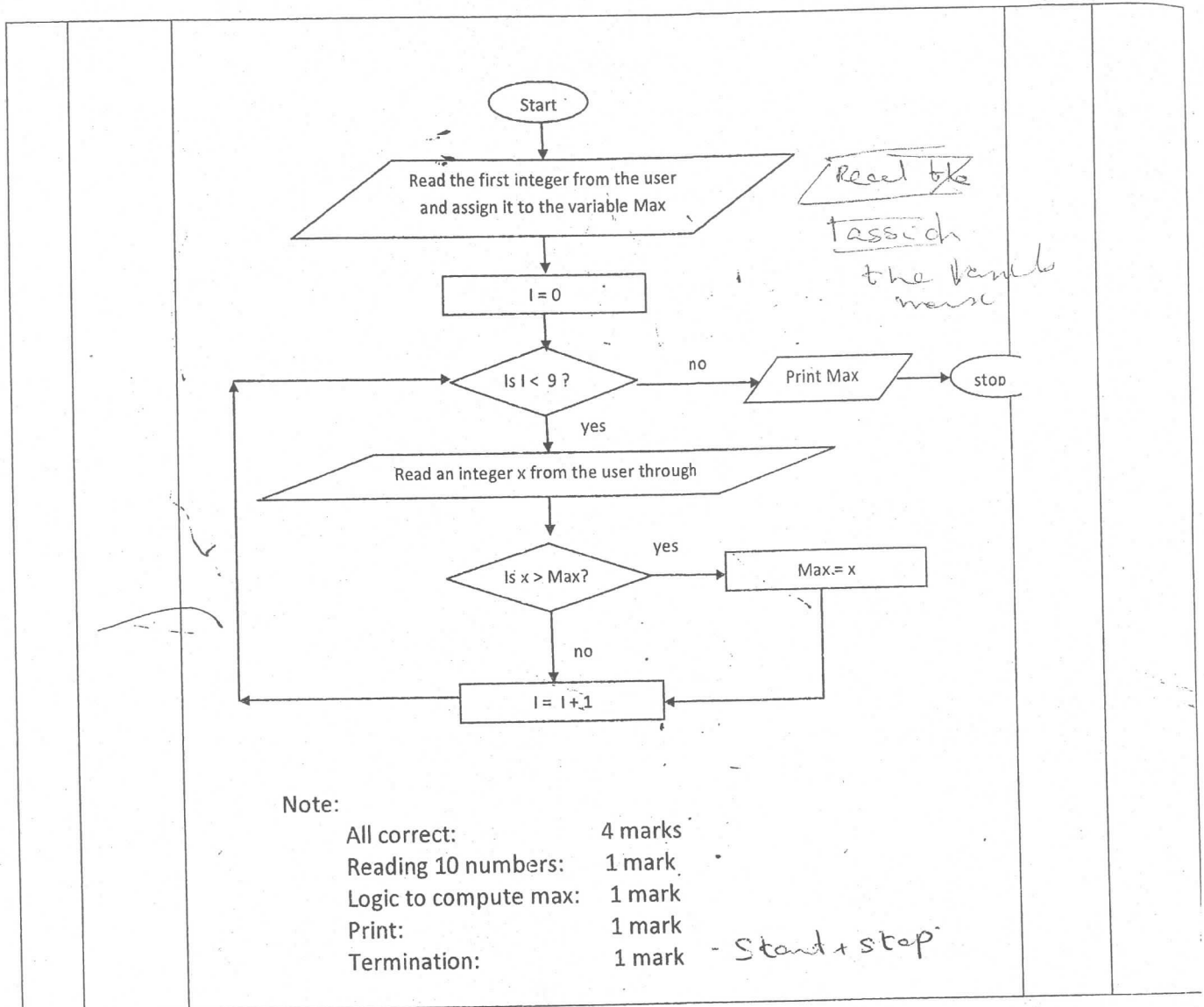
*Retrieve the value stored for a and b*

*menang dot dot process*

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
4	(b)	<p><i>w h e</i></p> <p><u>Reads a set of values</u> from the user through the keyboard/Console, <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>.</p> <p>Notes: (1 Marks for all 4 essential components) <i>1 for bold and underline</i>                      (1 additional Mark for each other component) <i>each</i>  <i>bold underline needs no marks</i></p>	4	4
4	(c) i	<p>Or</p> <pre>                     graph TD                         Start([Start]) --&gt; Init1[Max = very small value]                         Init1 --&gt; Init2[I = 0]                         Init2 --&gt; Loop{Is I &lt; 10?}                         Loop -- no --&gt; Print[/Print Max/]                         Print --&gt; Stop([stop])                         Loop -- yes --&gt; Read[/Read an integer x from the user through/]                         Read --&gt; Loop2{Is x &gt; Max?}                         Loop2 -- yes --&gt; Update[Max = x]                         Loop2 -- no --&gt; Inc[I = I + 1]                         Update --&gt; Inc                         Inc --&gt; Loop                     </pre>		4

(Model Answers)



if: max = 0 — logic X

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
4	(c) ii	<p>Essential parts are in bold typeface</p> <pre> <b>max = - 1000</b> # max should be assigned a value smaller than any value expected . <b>for i in range(0,10):</b> # range(x,y) should generate any list of 10 items   x = <b>int(input(str(i+1) + " Enter a value : " ))</b>   <b>if x &gt; max:</b>     <b>max = x</b> <b>print("Maximum value is : ",max)</b>  <b>or</b>  max = -1000 i = 0 while i &lt; 10:   x = int(input())   if x &gt; max:     max = x   i = i + 1 print (max)  <b>or</b>  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                     </pre>		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   --o{ Car Owner : OwnerID     Car   --o{ Car : carID     Driver   --o{ Driver : driverID     Customer   --o{ Customer : name     Customer   --o{ Customer : address     Customer   --o{ Customer : contactTP     Customer   --o{ Customer : custID             </pre>		

*Handwritten scribble*

(Model Answers)

Q No	Section	Model Answer	Marks	
			Break down	Total
		<p><u>Entities</u></p> <ol style="list-style-type: none"> <li>1. Car owner</li> <li>2. Car</li> <li>3. Driver</li> <li>4. Customer</li> <li>5. Company</li> </ol> <p><u>Relationship with degrees</u></p> <p>Rent Request Drives</p> <p>Note: No marks for the other relationships with Company entity.</p> <p>Primary keys</p> <p>Attributes of customer</p> <p><i>Cardinalities by - optional</i></p>	<p>1 each</p> <p>1 each</p> <p>1 each</p> <p>1 each</p>	<p>5</p> <p>3</p> <p>4</p> <p>3</p>
6	(a)	<p>1. System <u>shall</u> (should) be able to sort items</p> <p>2. System <u>shall</u> (should) be able to put items into the correct delivery van</p> <p>3. System <u>shall</u> (should) be able to read bar code</p> <p>Note: 1 mark for the function and 1 mark for the justification</p>	<p>2 each</p>	4
	(b)	<p>1. Accuracy</p> <p>2. Efficiency</p> <p>Justification <i>as above</i></p> <p>Note: Without justification 1 marks each.</p>	<p>2 2 2 each</p>	8
	(c)	<p>Correct</p> <p>Reasons (answer (b))</p>	<p>1 1 each</p>	3