

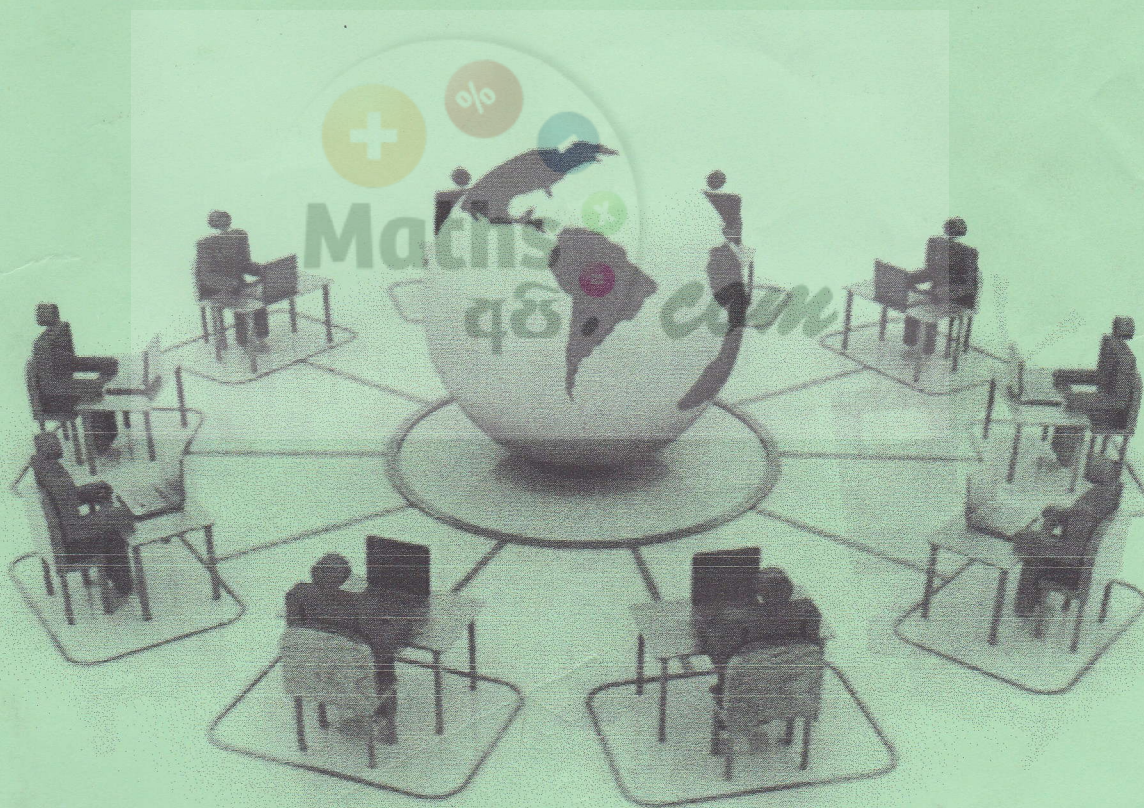


Department of Examinations - Sri Lanka

G.C.E. (A/L) Examination - 2017

20 - Information and Communication Technology

Marking Scheme



This has been prepared for the use of marking examiners. Changes would be made according to the views presented at the Chief/Assistant Examiners' meeting.

Amendments to be included.

20 - Information and Communication Technology

Distribution of marks

Paper I

Time Duration 02 hours

Number of Questions 50

Total Marks $50 \times 2 = 100$

Paper II

Time Duration 03 hours

Paper A - Structured Questions

Number of Questions 04

$$04 \times 10 = 40$$

Paper B - Essay Questions

Number of Questions 04

$$04 \times 15 = 60$$

Paper II Total marks = $40 + 60 = 100$

$$\begin{aligned}\text{Final marks} &= \frac{\text{pape I} + \text{Paper II}}{2} \\ &= \frac{100 + 100}{2} = 100\end{aligned}$$

ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව
இலங்கைப் பரீட்சைத் திணைக்களம்

අ.පො.ස. (උ.පෙළ) විභාගය/ க.பொ.த. (உயர் தர)ப் பரீட்சை - 2017

විෂය අංකය
பாட இலக்கம்

20

විෂය
பாடம்

තොරතුරු හා සන්නිවේදන තාක්ෂණය

ලකුණු දීමේ පටිපාටිය/புள்ளி வழங்கும் திட்டம்
[පත්‍රය/பத்திரம் I

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

❖ විශේෂ උපදෙස්/ விசேட அறிவுறுத்தல் :

එක් පිළිතුරකට/ ஒரு சரியான விடைக்கு 02 ලකුණු වැට්ටි/புள்ளி வீதம்

මුළු ලකුණු/மொத்தப் புள்ளிகள் $2 \times 50 = 100$

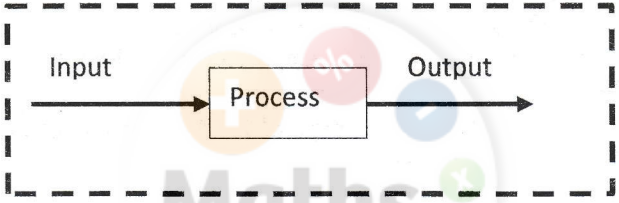
Information and Communication Technology (20)

Paper II Part A

2017

Q. No.	Model Answer	Marks
1.	<p data-bbox="299 846 326 1458">L1 DED of Sales Information System of Bookland</p> <p data-bbox="1136 1518 1208 1848">Each blank filled in with the correct answer 1 mark</p>	<div data-bbox="1372 1771 1486 1877" style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">10</div>

2.(a)	<ul style="list-style-type: none"> Termination (end) of the process Time out (end of the time slice) Blocked for input/output operation 	1 x 3 3
2.(b)	<ul style="list-style-type: none"> Store the current state of the running process in the PCB. Load the state of the process to be continued to the <u>CPU from the PCB</u>. Transfer the control to the process to be continued. <p>Note: Deduct 1 mark from the total if any one or both of <u>PCB</u> is missing)</p>	1 2 or 0 1 4
2.(c)	<ul style="list-style-type: none"> Power on self test (POST)/Executing or running BIOS Run the bootstrap program to load the O/S to the main memory. Transfer the control to the O/S. 	1 x 3 3
3.(a).(i)	<p>A transaction between two persons can be classified as B2B if following conditions are satisfied</p> <p><i>internet ✓</i></p> <ol style="list-style-type: none"> It should be an <u>online</u> service/transaction. The buyer should be a business user The seller should be a business user 	1 x 3 3
3.(a).(ii)	<p>If the seller is replaced by a software agent, then agent represents a business user. Therefore, main proactive behavior is to take actions that makes high (Increase) business profit.</p>	1 1
3.(b).(i)	<p>insert into student] A values('10001', 'Saman Kumara', '78, Mahara road, Maharagama')</p> <p><u>B</u> <u>C</u></p> <p>Or</p> <p>insert into student (student_no, name, address) values('10001', 'Saman Kumara', '78, Mahara road, Maharagama')</p> <p>The order of the values in the values statement should be same as the order of attributes in insert statement.</p> <p>Note: All names should be as in the table definition.</p> <p><i>[A only]</i> <i>[A and B only]</i> <i>[A, B and C]</i></p> <p><i>- 'insert set x' - if A incorrect no marks</i></p>	1 2 3 3

3.(b).(ii)	<div style="border: 1px solid red; padding: 5px; display: inline-block;"> update student set address = '13, School Lane, Jaffna' } A where student_no like '10001%' } B </div> <p>or</p> <div style="display: inline-block; vertical-align: top;"> update student set address = '13, School Lane, Jaffna' } A where student_no like '10001' } B </div> <p>or</p> <div style="display: inline-block; vertical-align: top;"> update student set address = '13, School Lane, Jaffna' } A where student_no = '10001' } B </div> <p>(Note: The = sign only works for varchar type attributes)</p> <p>Or</p> <div style="display: inline-block; vertical-align: top;"> update student set address = '13, School Lane, Jaffna' } A (Assumption: Only one student record in the database) } B </div>	<div style="text-align: right;"> [A only] [A and B] </div> <div style="text-align: right;"> 2 or 0 3 </div> <div style="text-align: right; border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-top: 20px;">3</div>
4.(a).(i)	 <p style="color: blue; margin-top: 10px;">Rectangle not System boundary</p> <p style="color: blue; margin-top: 10px;">Rectangle shape not system boundary</p>	<div style="text-align: right;">1</div> <div style="text-align: right; border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-top: 20px;">1</div>
4.(a).(ii)	<p>In closed system both input and output are available within the system.</p> <p>Or</p> <p>A sentence with the same meaning</p>	<div style="text-align: right;">4 or 0</div> <div style="text-align: right; border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-top: 20px;">4</div>
4.(b)	<p>person(NICNo) mobilePhone(TelephoneNo, NICNo)</p> <p>Each correct relation with attributes 1 mark Each primary key 1 mark (only if the relation is correct) 1 : M relationship (No more than two relations)</p> <p>Note: 1. If tables are drawn 1 mark for both correct tables. 2. <u>Any form</u> of words given in the question is acceptable</p>	<div style="text-align: right;">2 2 1</div> <div style="text-align: right; border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-top: 20px;">5</div>

Information and Communication Technology (20)

Paper II Part B

2017

Q. No.	Model Answer	Marks																																			
1.(a)	<div><div>Air-conditioner (Q)</div><div><div><table><tr><th>A</th><th>B</th><th>C</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>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</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>0</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>0</td></tr></table></div><div><div>[Correct input columns + 8 combinations]</div><div>A, B, C</div><div>[Correct output column]</div></div></div><div><div>$Q = A'.B.C' + A.B.C'$$= B.C'.(A'+A)$$= B.C'$</div><div><div>distributive law</div><div>complement law</div></div></div><div><div>[Boolean expression]</div><div>[At least one correct rule]</div><div>[Solution]</div></div><div><div><div>Optional</div></div><div>[Circuit]</div></div></div> <div>1</div> <div>1+1</div> <div>2 or 0 (No Partial Marks)</div>	A	B	C	Q	0	0	0	0	0	0	1	0	0	1	0	1	0	1	1	0	1	0	0	0	1	0	1	0	1	1	0	1	1	1	1	0
A	B	C	Q																																		
0	0	0	0																																		
0	0	1	0																																		
0	1	0	1																																		
0	1	1	0																																		
1	0	0	0																																		
1	0	1	0																																		
1	1	0	1																																		
1	1	1	0																																		
1.(b)	<div>Yes.</div> <div>Input that represents Switch (A) is not in the Boolean expression/circuit/solution.</div> <div>Therefore, it is not required for the operation of the air-conditioner.</div> <div>Agree 2 marks</div>	<div>1</div> <div>1</div> <div>2</div>																																			

2. Assume that the entire private address range is used (it can be any range)

Since there are 4 subnets, it is required to divide the address range into 4 segments.

For this, add two more bits to the subnet mask.

Subnet mask length becomes 10.

11111111.11000000.00000000.00000000

Therefore, the 4 subnets would be:

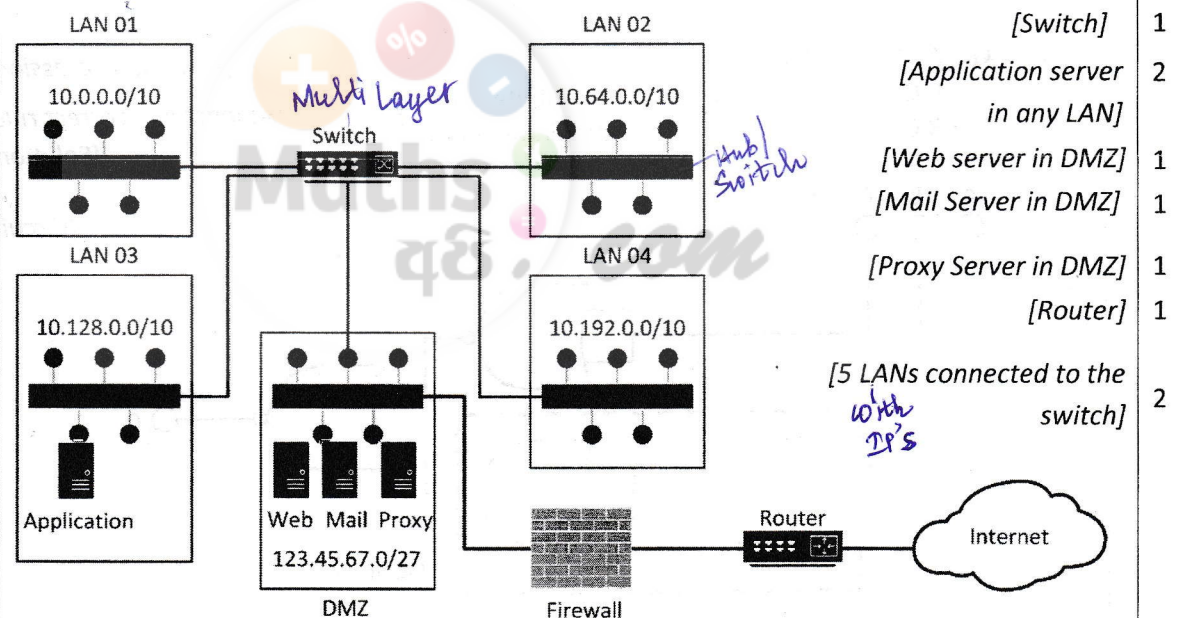
1. 00001010.00000000.00000000.00000000 = 10.0.0.0/10
2. 00001010.01000000.00000000.00000000 = 10.64.0.0/10
3. 00001010.10000000.00000000.00000000 = 10.128.0.0/10
4. 00001010.11000000.00000000.00000000 = 10.192.0.0/10

[1 x 4] 4

(if they decide to use /24 ranges, they should assume that 255 addresses are enough for each subnet. Then they should show the selection of /24 ranges.)

Note: If the selected ranges are shown in the diagram these 4 marks can be given

Needed Devices: **05 Hubs, Switch, Router, Firewall, Web Server, Mail Server, Proxy server, Application Server.**



Since any computer in any subnetwork can access resources in all subnetworks, the application server can be established in any subnetwork. Since it is for internal clients, it should not be located in the DMZ.

Note: 1.Proxy Server could be directly connect to the Switch

When the packet goes to the proxy server, its source IP address is rewritten with the public IP address of proxy server.

2

3.(a)	G2C or Government to Consumer Note: Government to Citizen only 2 marks	3 3
3.(b)	G2B or G2E, It is a service provided in online by the Government to Business or Employees.	1 1 2
3.(c)	Because it is a service provided by business to government . Therefore it is B2G.	4 1 5
3.(d)	Law: To prepare fine calculations mechanism according to the (<i>criticality of the identified place</i>). Epidemic Control Division: (To develop formula to measure the <i>criticality of the identified place related to dengue breeding</i>).	3 2 5



4.(a)	<pre> graph TD Start([start]) --> Read[/Read house hold no (hno) Past Reading (rpast) Present Reading (rpresent)/] Read --> Calc1[unitsUsed = rpresent - rpast payment = 0] Calc1 --> Dec{unitUsed > 64?} Dec -- no --> Calc2[payment = unitsUsed * 5.00] Dec -- yes --> Calc3[payment = 64 * 5.00 + (unitUsed - 64) * 10.00] Calc2 --> Print[/print payment/] Calc3 --> Print Print --> End([end]) </pre>	<div>[Input] 1</div> <div>[Calculation] 1</div> <div>[Condition] 1</div> <div>[Calculation] 1</div> <div>[Calculation] 1</div> <div>[Print] 1</div> <div>Overall (start/end) 1</div> <div>7</div>
4.(b)	<pre> hno = input("Enter house hold number ->") rpast = int(input("Last meter reading ->")) rpresent = int(input("Present meter reading ->")) unitsUsed = rpresent - rpast if unitsUsed > 64: payment = 64 * 5.00 + (unitsUsed - 64) * 10.00 else: payment = unitsUsed * 5.00 print(payment) </pre> <p>Assumptions : The assumptions are based on the programme</p> <ul style="list-style-type: none"> The present meter reading is higher than the past meter reading Integer values should be entered for present and past meter readings 	<div>[Input] 1</div> <div>[if with correct computation] 1</div> <div>[else with correct computation] 1</div> <div>[Print] 1</div> <div>4</div>
4.(c)	<pre> def writetofile(houseNo,rpast,rpresent,charge): f = open("deb.txt","a") print(houseNo,rpast,rpresent,charge,file=f,sep=",") f.close() </pre> <p>Note: f.write(str(houseNo)+ " " + str(rpast)+ " " + str(rpresent) + " " + str(charge)) f.write("%s %s %s %s" % (houseNo,rpast,rpresent,charge))</p>	<div>1</div> <div>1</div> <div>1</div> <div>1</div> <div>4</div>

6.(a)	<pre> <html > <head> <meta charset="utf-8"> <title>Information</title> <style> OR <style type="text/css"> li{ font-family: calibri; font-size: 14pt; color: red; list-style: square; } </style> OR <link rel="stylesheet" type="text/css" href="def.css"> </head> <body> <h1>Student Art Competition</h1> <h2>Theme: Litter on the environment </h2> <h3>PRIZES</h3> 1st place Rs. 10,000/= 2nd place Rs. 7,500/= 3rd place Rs. 5,000/= <h3>ENTRY FORM</h3> <p>Please fill and submit this online entry form to enter the competition. </P> </body> </html> </pre>	<p>(1)</p> <p>(3) 4</p> <p>[or "calibri"]</p> <p>[or list-style-type]</p> <p>[At least 2 different levels] 2</p> <p>1</p> <p>2</p> <p>9</p>
-------	--	--

6.(b)	<pre> <html > <head> <meta charset="utf-8"> <title>Entry Form</title> </head> <body> <h1>Art Competition Online Entry Form 2017</h1> <h3>Theme: Litter on the environment</h3> <form method = "get" action = "script.php"> Name: <input type="text" name="name" > <p>Gender: <input type="radio" name="sex" value="male" > Male <input type="radio" name="sex" value="female" > Female </p> <p>Grade Category <select name="ageGroup"> <option value="g1">Grade 1 - 2</option> <option value="g2">Grade 3 - 6</option> <option value="g3">Grade 7 - 10</option> <option value="g4">Grade 11 - 13</option> </select></p> <p>Art media: </p> <input type="checkbox" name="media1" value="Colour" > Water Colours
 <input type="checkbox" name="media2" value="Pencils" > Colour Pencils
 <input type="checkbox" name="media3" value="Crayon" > Crayon
 <input type="checkbox" name="media4" value="Chalk" > Chalk <p><input type = "reset" value = "Clear your Entries"></p> <p><input type="submit" value="Submit" ></p> </form> </body> </html> </pre>	<p>[<form> and </form>] 1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
-------	--	---