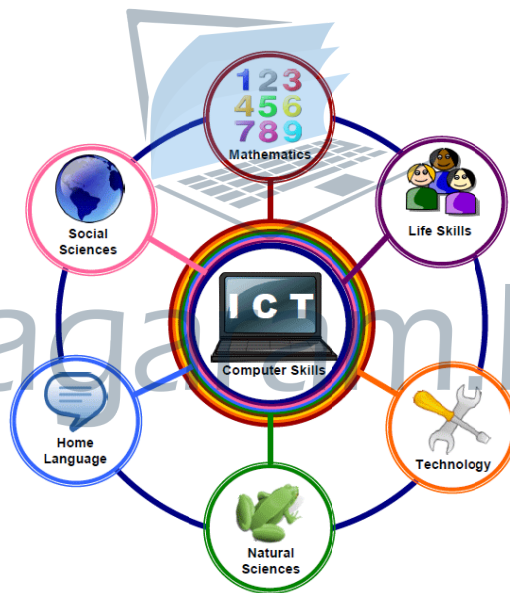




***A/L ICT Marking  
Scheme March – 2020  
Gr – 13 (2020)***



**Field Work Center(FWC)  
Thondaimanaru**

**ICT**

### Part – I


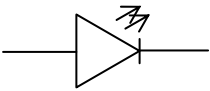

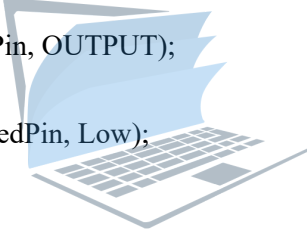
01) 3	11) 3	21) 2	31) 2	41) 5
02) 5	12) 3	22) 5	32) 4	42) 2
03) 4	13) 1	23) 2	33) 3	43) 3
04) 4	14) 4	24) 1	34) 1	44) 5
05) 3	15) 2	25) 3	35) 1	45) 4
06) 2	16) 5	26) 4	36) 3	46) 2
07) 5	17) 3	27) 5	37) 4	47) 1
08) 4	18) 3	28) 1	38) 4	48) 3
09) 1	19) 3	29) 3	39) 2	49) 3
10) 2	20) 1	30) 4	40) 5	50) 4


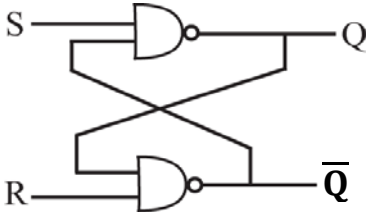
(2 x 50 = 100 Marks)

### Part – II A

**Note :-Any other relevant answers**

Question No	Suggested Answers	Marks
1) (a) (i) (ii) (iii)	True True True	1.5 Marks (0.5 x 3)
(b) (i)	<b>Microprocessor – based :-</b> In microprocessor – based all devices are separately. <b>Micro controller – based :-</b> In micro controller – based all devices inserted into the CPU.	2 Marks (1 x 2)
(ii)	I. Reset button II. USB Port III. USB – Serial interface controller IV. Power supply circuit V. Power supply jack VI. Power pins VII. Analog Input pins VIII. Microcontroller IX. 16 MHz Oscillator X. Tx & Rx indicator XI. Power indicator XII. LED connected to digital pin 13 XIII. Tx & Rx pins XIV. Digital I/O pins XV. USB – Serial interface control circuit.	3 Marks (0.2 x15)

(c) (i)	<p>I.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">   <math>220 \Omega</math>  Resistor </div> <p>II.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">   LED </div> <p>III.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">  Rest button </div>	1.5 Marks (0.5 x 3)
(ii)	<p>I. <code>pinMode (ledPin, OUTPUT);</code>  II. <code>delay (500) ;</code>  III. <code>digitalWrite (ledPin, Low);</code>  IV. <code>delay (500) ;</code></p> 	2 Marks (0.5 x 4)
2) (a)	<pre> &lt;dl&gt;   &lt;dt&gt; commerce &lt;/dt&gt;   &lt;dd&gt; Business studies &lt;/dd&gt;   &lt;dd&gt; Economics &lt;/dd&gt;   &lt;dd&gt; Accounting &lt;/dd&gt;   &lt;dt&gt; Bio Science &lt;/dt&gt;   &lt;dd&gt; Biology &lt;/dd&gt;   &lt;dd&gt; Physics &lt;/dd&gt;   &lt;dd&gt; Chemistry &lt;/dd&gt; &lt;/dl&gt; </pre>	3 Marks
(b)	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;"><b>ICT</b></p> <p>Information &amp; Communications Technology  is an <u>extensional</u> term for</p> <p>IT  I C T</p> </div>	2 Marks

<p>(c)</p>	<table border="1"> <thead> <tr> <th>HTML code segment</th> <th>Colour</th> <th>Reason</th> </tr> </thead> <tbody> <tr> <td>&lt;p&gt; Sri Lanka &lt;/p&gt;</td> <td>Green</td> <td>Element selector</td> </tr> <tr> <td>&lt;p class = “para2”&gt; Sri Lanka &lt;/p&gt;</td> <td>Blue</td> <td>Class selector</td> </tr> <tr> <td>&lt;p class = “para2” id = “para1”&gt; Sri Lanka &lt;/p&gt;</td> <td>Red</td> <td>ID selector</td> </tr> <tr> <td>&lt;div class = “Para3” &gt; &lt;p id = “para1”&gt; Sri Lanka &lt;/p&gt; &lt;/div&gt;</td> <td>Black</td> <td>Class section</td> </tr> </tbody> </table>	HTML code segment	Colour	Reason	<p> Sri Lanka </p>	Green	Element selector	<p class = “para2”> Sri Lanka </p>	Blue	Class selector	<p class = “para2” id = “para1”> Sri Lanka </p>	Red	ID selector	<div class = “Para3” > <p id = “para1”> Sri Lanka </p> </div>	Black	Class section	<p>2 Marks (0.5 x 4)</p>															
HTML code segment	Colour	Reason																														
<p> Sri Lanka </p>	Green	Element selector																														
<p class = “para2”> Sri Lanka </p>	Blue	Class selector																														
<p class = “para2” id = “para1”> Sri Lanka </p>	Red	ID selector																														
<div class = “Para3” > <p id = “para1”> Sri Lanka </p> </div>	Black	Class section																														
<p>(d)</p>	<p>(i) root (ii) 12345 (iii) school_info_sys (iv) UPDATE (v) Student (vi) Address</p>	<p>3 Marks (0.5 x 6)</p>																														
<p>3) (a) (i) (ii) (iii)</p>	<p>00010111 11000111 00010111 <u>11000111</u> 11011110</p> 	<p>0.5 Marks 0.5 Marks 1 Marks</p>																														
<p>(iv)</p>	<ul style="list-style-type: none"> <li>• Check the most significant bit .</li> <li>• If it is 0, the sign is positive, just convert the number to decimal (optional)</li> <li>• If it is 1, the sign is negative, perform the 2’s complement and convert the number to decimal.</li> </ul>	<p>1 Marks</p>																														
<p>(b) (i)  (ii)</p>	 <table border="1"> <thead> <tr> <th>S</th> <th>R</th> <th>Q</th> <th><math>\bar{Q}</math></th> <th></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>invalid</td> </tr> <tr> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td></td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>[after S = 0, R = 1]</td> </tr> <tr> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td></td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>[after S = 1, R = 0]</td> </tr> </tbody> </table>	S	R	Q	$\bar{Q}$		0	0	1	1	invalid	0	1	1	0		1	1	1	0	[after S = 0, R = 1]	1	0	0	1		1	1	1	0	[after S = 1, R = 0]	<p>1.5 Marks  1.5 Marks</p>
S	R	Q	$\bar{Q}$																													
0	0	1	1	invalid																												
0	1	1	0																													
1	1	1	0	[after S = 0, R = 1]																												
1	0	0	1																													
1	1	1	0	[after S = 1, R = 0]																												

OR

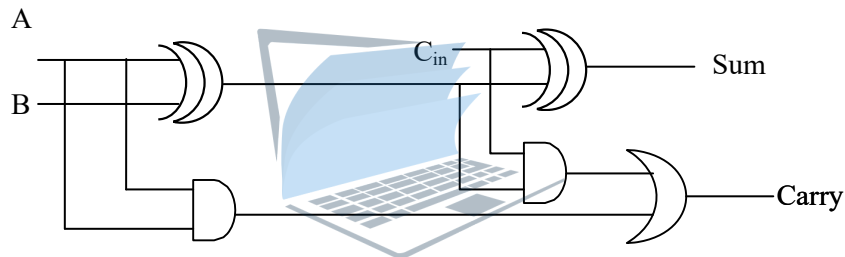
S	R	Q	$\bar{Q}$
0	0	Not use	
0	1	1	0
1	0	0	1
1	1	Memory	

(c) (i)

A	B	C in	Sum	Carry
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

1.5  
Marks

(ii)



1 mark

(d)

```
def fact ( ) :
    n = int (input ("Enter a number:"))
    fact = n
    while (n > 1 ) :
        n = n - 1
        fact = fact * n
    print (fact)
```

1.5  
Marks

4) (a)

A = 1, B = M (N) / one to many / 1 : M

1 Marks

(b)

Yes.  
Both Exam and Student table are in 1 NF as all fields are atomic and every non – prime attribute of each relation is fully functionally dependent on the primary key / primary key is not composite. hence all other attributes are fully functionally dependent on the primary key, and there are no partial dependencies / they are in 3 NF, hence in 2 NF.

1 Marks

2 Marks

(c)

```
CREATE TABLE Student (StuId varchar (10), StuName varchar (30),
Address varchar (40), DateofBirth date, PRIMARY KEY (StuId),
FOREIGIN KEY (ExamId) REFERENCES Exam (ExamId));
```

2 Marks  
(or 0 Marks)

(d)

```
SELECT Student.StuName, Exam.ExamName, Exam.Year FROM
Student, ExamWHERE Student.ExamId = Exam.ExamId;
```

2 Marks  
(or 0 Marks)

(e)	INSERT INTO Student VALUES ('S0006', 'S. Nazeer', 'Colombo', 2000.07.23, 'E002');  OR  INSERT INTO Student (StuId, StuName, Address, DateofBirth, ExamId) VALUES ('S006', 'S. Nazeer', 'colombo', 2000.07.23, 'E002');	2 Marks
-----	--	---------

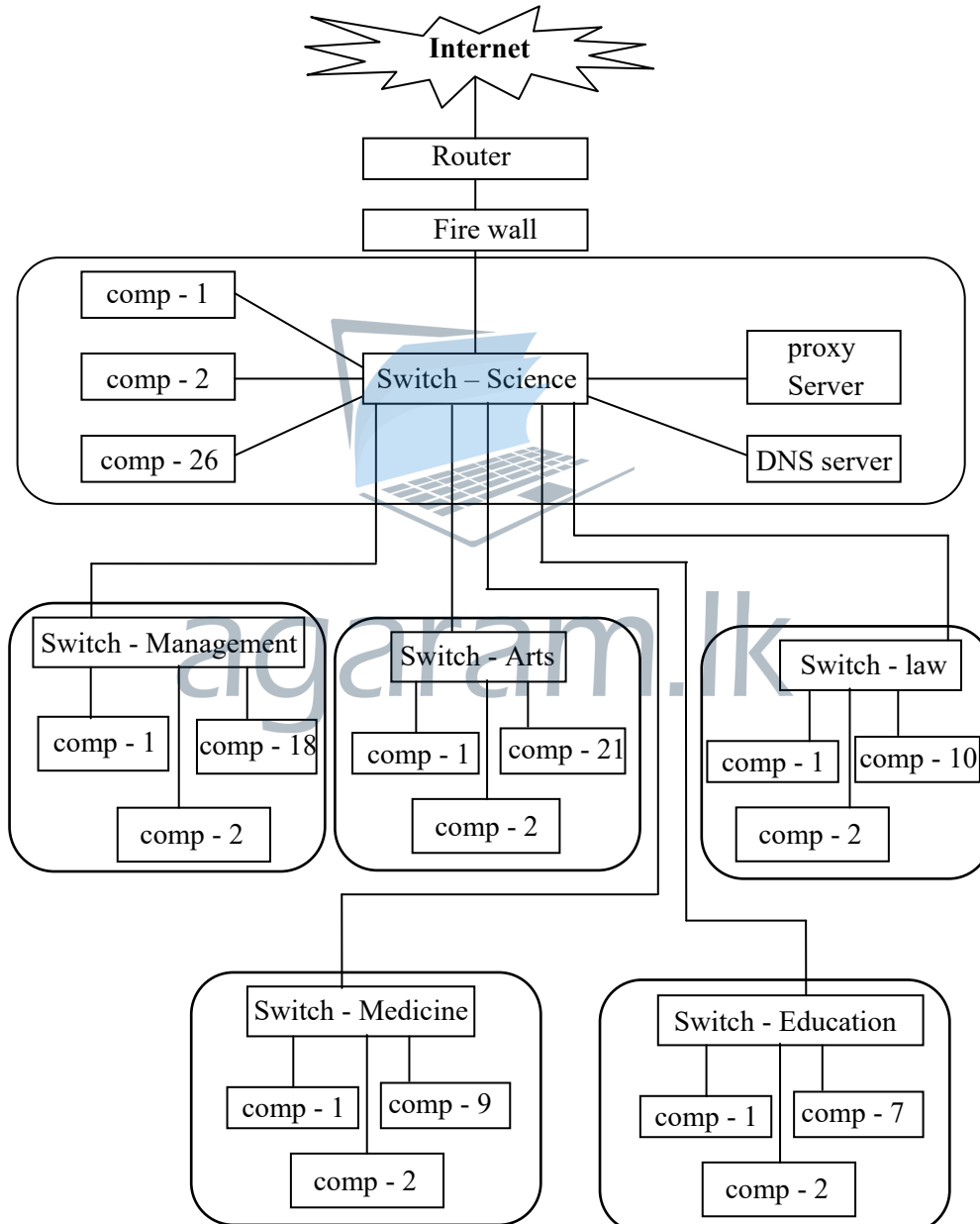
**Part – II B Essay – four questions only.**

1)	<p>(a)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> <th>Z / output</th> </tr> </thead> <tbody> <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>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>0</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td></tr> </tbody> </table>	A	B	C	Z / output	0	0	0	0	0	0	1	0	0	1	0	1	0	1	1	1	1	0	0	0	1	0	1	1	1	1	0	0	1	1	1	1	4 Marks (0.5 x 8)
A	B	C	Z / output																																			
0	0	0	0																																			
0	0	1	0																																			
0	1	0	1																																			
0	1	1	1																																			
1	0	0	0																																			
1	0	1	1																																			
1	1	0	0																																			
1	1	1	1																																			
	(b) $\bar{A}\bar{B}\bar{C} + \bar{A}BC + A\bar{B}\bar{C} + ABC$	2 Marks																																				
	(c) $\bar{A}\bar{B}\bar{C} + \bar{A}BC + A\bar{B}\bar{C} + ABC$ $= \bar{A}B(\bar{C} + C) + AC(\bar{B} + B)$ (distributive law) $= \bar{A}B.1 + AC.1$ (Inverse / complement law) $= \bar{A}B + AC$ (Identity law)	3 Marks																																				
	(d) <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: none;"></td> <td style="border: none;">AB</td> <td style="border: none;">00</td> <td style="border: none;">01</td> <td style="border: none;">11</td> <td style="border: none;">10</td> </tr> <tr> <td style="border: none;">C</td> <td style="border: none;">1</td> <td></td> <td style="text-align: center;">1</td> <td></td> <td></td> </tr> <tr> <td style="border: none;">0</td> <td style="border: none;"></td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td></td> </tr> </table> <p style="margin-left: 40px;">Simplified SOP : <math>Z = \bar{A}B + AC</math></p>		AB	00	01	11	10	C	1		1			0		1	1	1		3 Marks																		
	AB	00	01	11	10																																	
C	1		1																																			
0		1	1	1																																		
	(e)	3 Marks																																				
	2) (a) (i) 255.255.255.224	1 Marks																																				
	(ii) No. of subnets = $2^3 = 8$ Valid host address = $2^5 - 2 = 30$	2 Marks (1 x 2)																																				

(iii)

Faculty	Network Address	Usable IP address Range	Broadcast address.
1. Science	192.188.10.0	192.188.10.1 – 192.188.10.30	192.188.10.31
2. Management	192.188.10.32	192.188.10.33 – 192.188.10.62	192.188.10.63
3. Arts	192.188.10.64	192.188.10.65 – 192.188.10.94	192.188.10.95
4. Medicine	192.188.10.96	192.188.10.97 – 192.188.10.126	192.188.10.127
5. Education	192.188.10.128	192.188.10.129 – 192.188.10.158	192.188.10.159
6. Law	192.188.10.160	192.188.10.161 – 192.188.10.190	192.188.10.191

6 Marks  
(1 x 6)



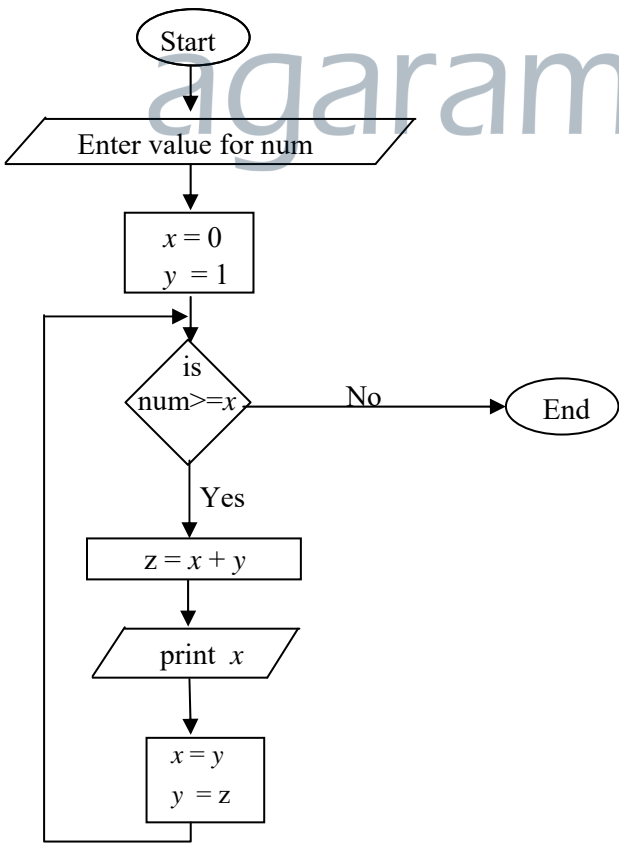
Router,  
fire wall  
1 Marks

Switch –  
Science  
lab,  
proxy,  
DNS  
server  
1 Marks

Other lab  
switches  
and  
computer  
2 Marks

(c)	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center; width: 50%;">OSI Layer</td> <td style="text-align: center; width: 50%;">TCP / IP layer</td> </tr> <tr> <td style="vertical-align: top;">           7. <input type="text" value="Application"/>            6. <input type="text" value="Presentation"/>            5. <input type="text" value="Session"/>            4. <input type="text" value="Transport"/>            3. <input type="text" value="Network"/>            2. <input type="text" value="Data link"/>            1. <input type="text" value="Physical"/> </td> <td style="vertical-align: top;">           4. <input type="text" value="Application"/>            3. <input type="text" value="Transport"/>            2. <input type="text" value="Internet"/>            1. <input type="text" value="Network access"/> </td> </tr> </table>	OSI Layer	TCP / IP layer	7. <input type="text" value="Application"/> 6. <input type="text" value="Presentation"/> 5. <input type="text" value="Session"/> 4. <input type="text" value="Transport"/> 3. <input type="text" value="Network"/> 2. <input type="text" value="Data link"/> 1. <input type="text" value="Physical"/>	4. <input type="text" value="Application"/> 3. <input type="text" value="Transport"/> 2. <input type="text" value="Internet"/> 1. <input type="text" value="Network access"/>	2 Marks
OSI Layer	TCP / IP layer					
7. <input type="text" value="Application"/> 6. <input type="text" value="Presentation"/> 5. <input type="text" value="Session"/> 4. <input type="text" value="Transport"/> 3. <input type="text" value="Network"/> 2. <input type="text" value="Data link"/> 1. <input type="text" value="Physical"/>	4. <input type="text" value="Application"/> 3. <input type="text" value="Transport"/> 2. <input type="text" value="Internet"/> 1. <input type="text" value="Network access"/>					
3) a)	<pre> &lt;html&gt; &lt;body&gt; &lt;h2&gt;School Registration&lt;/h2&gt; &lt;form action="register.php"method="post"&gt; &lt;div&gt;School Name&lt;input type="text"name="name"&gt;&lt;/div&gt;&lt;br&gt; &lt;div&gt;E-Mail&lt;input type="text"name="email"&gt;&lt;/div&gt;&lt;br&gt; &lt;div&gt; &lt;inputtype="radio"name="stype"value="national"&gt;National School &lt;inputtype="radio"name="stype"value="Province"checked&gt; Provincial School&lt;/div&gt;&lt;/br&gt; &lt;div&gt; District: &lt;selectname="district"&gt; &lt;optionvalue="jaffna"&gt;Jaffna&lt;/option&gt; &lt;optionvalue="kilinochchi"&gt;Kilinochchi&lt;/option&gt; &lt;optionvalue="mannar"&gt;Mannar&lt;/option&gt; &lt;optionvalue="mullaitivu"&gt;Mullaitivu&lt;/option&gt; &lt;optionvalue="vavuniya"&gt;Vavuniya&lt;/option&gt; &lt;/select&gt; &lt;br&gt; &lt;/div&gt; &lt;div&gt;&lt;p&gt; Available Labs:&lt;br&gt; &lt;inputtype="checkbox"name="com"value="comlab"checked&gt; Computer Lab&lt;br&gt; &lt;inputtype="checkbox"name="sci"value="scilab"checked&gt; Science Lab&lt;br&gt; &lt;inputtype="checkbox"name="tech"value="techlab"&gt; Technology Lab&lt;br&gt; &lt;inputtype="checkbox"name="phy"value="phylab"&gt; Physics Lab &lt;p&gt; &lt;/div&gt; &lt;div&gt; &lt;inputtype="reset"name="clear"value="clear"&gt; &lt;inputtype="submit"name="submit"value="submit"&gt; &lt;/div&gt; &lt;/form&gt; &lt;/body&gt; &lt;/html&gt; </pre>	<p>h2 1 Marks form, text box 1 Marks radio button 1 Marks list box 1 Marks</p> <p>checkbox box 2 Marks</p> <p>clear and submit buttons 1 Marks</p> <p>html format 1 Marks</p>				



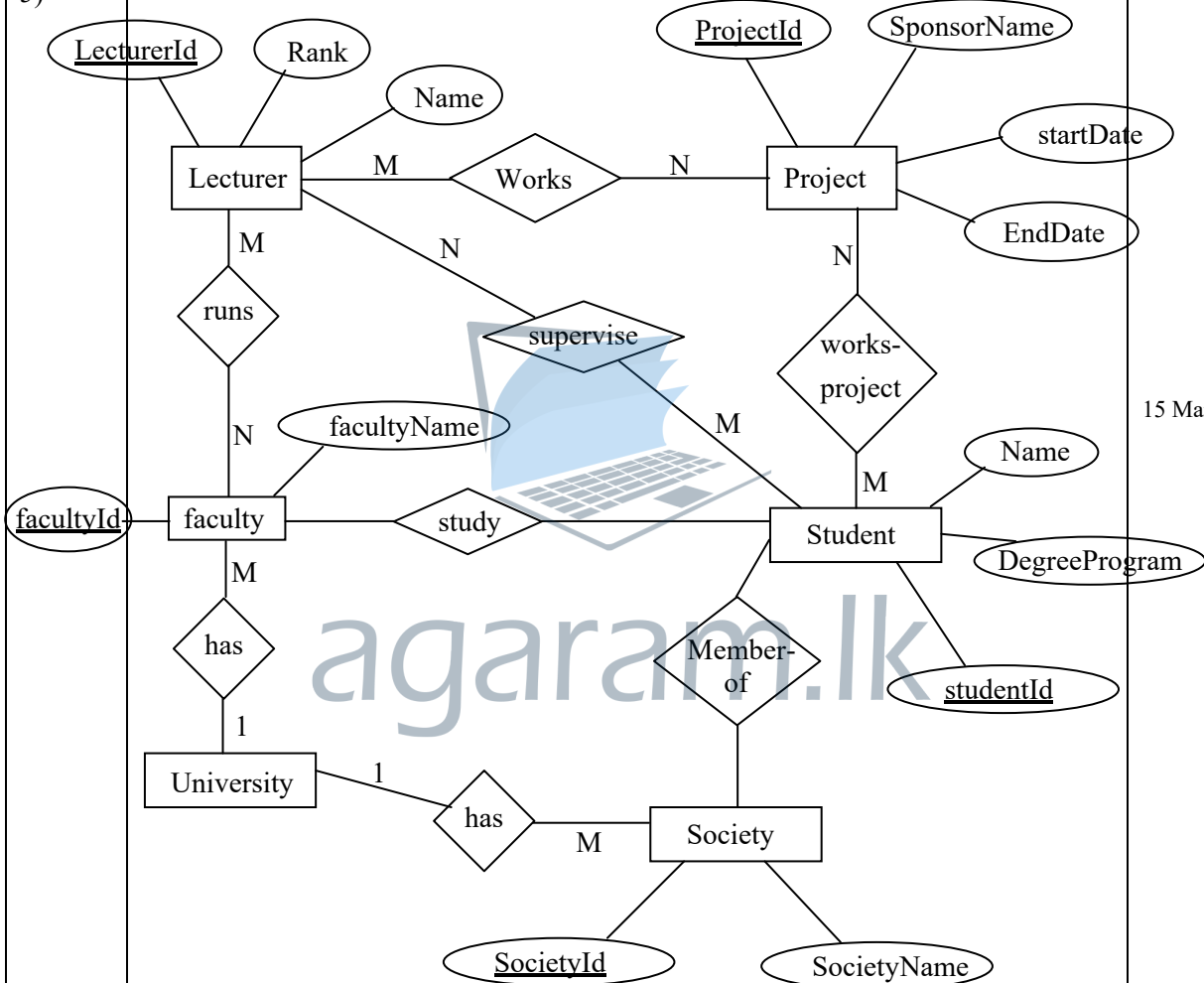
(b) (i)	<pre>&lt;? php echo "Hello Word"; ? &gt;</pre>	2 Marks
(ii)	<ol style="list-style-type: none"> <li>1) Sessions</li> <li>2) Cookies</li> </ol>	2 Marks (2 x 1)
(iii)	<p>Main differences :- Cookies is a client side technique whereas session is a server side technique</p>	2 Marks
(iv)	Nimal\$name2	1 Marks
4) a) (i)	<p><math>x = 5</math> <u>Acquires memory space for the integer and the value 5 is assigned to variable / label x and stored in the memory location.</u></p>	2 Marks
(ii)	<p><math>y = [ 3, 2, 5, 6 ]</math> <u>Acquires memory space for the array / list and the set of values 3, 2, 5, 6 are assigned to array / list (variable / label) y and stored in the memory location</u></p>	2 Marks
(iii)	<p><math>z = \text{int}(\text{input}(\text{"Enter a number :"}))</math> Print the string "Enter a number:" on the screen and wait till user input, convert the string value into integer. Assign the integer to the variable / label <b>z</b> and stored in the memory location. Type of <b>z</b> is integer.</p>	3 Marks
b) (i)	 <pre> graph TD     Start([Start]) --&gt; Input[/Enter value for num/]     Input --&gt; Init[x = 0 y = 1]     Init --&gt; Decision{is num &gt;= x}     Decision -- No --&gt; End([End])     Decision -- Yes --&gt; Sum[z = x + y]     Sum --&gt; Print[/print x/]     Print --&gt; Assign[x = y y = z]     Assign --&gt; Decision   </pre>	<p>Input 0.5 Marks</p> <p>variable declarati on 1 Marks</p> <p>condition 0.5 Marks</p> <p>statement and output 1 Marks</p> <p>Two statement 1 Marks</p>

(ii)

```
num = int (input ("Enter a number:"))
x = 0
y = 1
while num >= x :
    z = x + y
    print (x)
    x = y
    y = z
```

Input  
0.5 Marks  
variable  
declaration  
1 Marks  
condition  
0.5 Marks  
statement  
and output  
1 Marks  
Two  
statement  
1 Marks  
  
(04 Marks)

5)



15 Marks

- Entities - 03 Marks (0.5 x 6)
- Attributes ( for each entities ) - 06 Marks (0.5 x 12)
- Primary keys - 03 Marks
- Relationship – 03 Marks

6) a)  
(i)

Minimize data duplication, reduce too much of paper work ,fast, easy to maintain data, maintain consistency of data, high storage, high security and no need to repeat the work.

1 Marks

<p>(ii)</p>	<p><b>Water fall model :-</b></p> <ul style="list-style-type: none"> <li>• All requirements are identifies at the beginning of system development.</li> <li>• As it consuming more time, the requirements may change when time of Deployment.</li> </ul> <p><b>Spiral model :-</b></p> <ul style="list-style-type: none"> <li>• As system development steps are repeated new requirements can be adopted when necessary.</li> <li>• It is more suitable for risk prone computer systems.</li> </ul>	<p>1 Marks</p>
<p>(iii)</p>	<ul style="list-style-type: none"> <li>• The old system is helpful to identify the accuracy of new system.</li> <li>• The old system could be used If new system has faults.</li> </ul>	<p>1 Marks</p>
<p>(iv)</p>	<ul style="list-style-type: none"> <li>• <b>Functional requirements :-</b> Any requirement which specifies <u>What the system should do</u> or provide for users / they <u>related to the technical functionality</u> of the system. / Function is described as a <u>specification of behavior between outputs and input / behavior (output)that a device or software is expected to exhibit in the case of a certain input.</u></li> <li>• <b>Non – functional requirements :-</b> Any requirement which specifies <u>how the system performs a certain function or system works.</u>They describe how, how well or to what standard a function should be provided/nonfunctional requirements describe the <u>general characteristics of a system.</u> They are also known as <u>quality attributes.</u> (include service hours, service hours, service availability, responsiveness, throughput and reliability)/define <u>system attributes</u> such as security, reliability performance, maintainability, scalability and usability.</li> </ul>	<p>1 Marks</p> <p>1 Marks</p>
<p>b)</p>	<ul style="list-style-type: none"> <li>• Processes - 02 Marks</li> <li>• External Entity – 02 Marks</li> <li>• Data stores – 02 Marks</li> <li>• Data flows – 03 Marks</li> </ul>	<p>9 Marks</p>



agaram.lk