

A/L ICT 2023



Marking Scheme

Term - 5

NFWC



*This document /scheme has been prepared for the use of marking examination paper.
Some changes and alternative anaswers would be made by the teachers.*

Amendments to be included.

Part – I – Suggested Answers

(1)	2	(11)	2	(21)	2	(31)	4	(41)	5
(2)	3	(12)	4	(22)	5	(32)	4	(42)	2
(3)	5	(13)	2	(23)	4	(33)	1	(43)	1
(4)	2	(14)	3	(24)	Open,3	(34)	3	(44)	3
(5)	4	(15)	4	(25)	4	(35)	2	(45)	4
(6)	1/5	(16)	5	(26)	5	(36)	1	(46)	3
(7)	2	(17)	2	(27)	3	(37)	4	(47)	4
(8)	1	(18)	1	(28)	4	(38)	4	(48)	5
(9)	2	(19)	1	(29)	5	(39)	1	(49)	2
(10)	3	(20)	4	(30)	3	(40)	4	(50)	4

* (6) - TM (1 or 5), EM (1) , (24) - TM (Open) , EM (3)

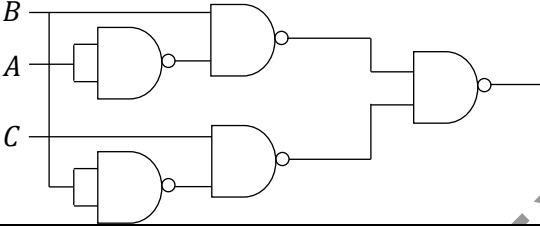
Part – II A – Suggested Answers

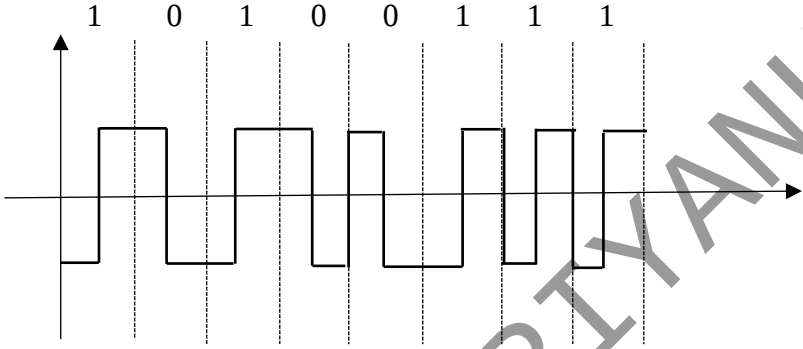
Question No.		Marks											
(1)(a)(i)	<pre> <dl> <dt> Violin </dt> <dd> - a string instrument </dd> <dt> Clarinet </dt> <dd> - a wind instrument </dd> </dl> </pre>	3 marks <i>partial marks can be given</i>											
(1)(a)(ii)	<pre> Full Name: <input type="text" name="name"/> <p> Mail Address: <input type="text" name="email"/> </p> User Name: <input type="text" name="uname"/> <p> Password: <input type="password" name="pwd"/> </p> <input type="submit" name="Submit" value="Submit"/> <input type="reset" name="Cancel" value="Cancel"/> </pre>	3 marks [6 x 0.5] <i>partial marks can be given</i>											
(1)(b)	<table border="1"> <thead> <tr> <th>Heading 1</th><th colspan="2">Heading 2</th></tr> </thead> <tbody> <tr> <td>1</td><td>2</td><td>3</td></tr> <tr> <td rowspan="2">8</td><td>4</td><td>5</td></tr> <tr> <td>6</td><td>7</td></tr> </tbody> </table>	Heading 1	Heading 2		1	2	3	8	4	5	6	7	2 marks <i>partial marks can be given</i>
Heading 1	Heading 2												
1	2	3											
8	4	5											
	6	7											

(1)(c)	(i) False (ii) True (iii) True (iv) True	2 marks [0.5 x 4]
(2)(a)	① - Input / Enter / Get / Read Radius, Height ② - Is Radius > 0 and Height > 0? ③ - Volume = 3.14 x Radius x Radius x Height ④ - Display Volume	2 marks [4 x 0.5]
(2)(b)	Error for Tamil medium / 6791 for English Medium	2 marks
(2)(c)(i)	Line 5 → count = count + 1 Line 6 → print(count) should be aligned with while.	2 marks [1+1]
(2)(d)	(i) ④ (ii) ① (iii) ③ (iv) ②	2 marks [4 x 0.5]
(2)(e)	- Syntax that is easy for humans to understand - Syntax that uses command words similar to natural human language - A single line of code can accomplish multiple tasks - Source code is translated into machine code for the computer to process	2 marks [1+1] <i>Any other relevant answers accepted</i>
(3)(a)	(i) Public key encryption (ii) Secret key encryption (iii) Data encryption (iv) Trojan horse (v) Digital signature (vi) Open marks for Tamil medium / Port scan for English medium	3 marks [6 x 0.5]

(3)(b)(i)	1 Total of data plus parity bit shud be even number.	1 marks [0.5+0.5]																								
(3)(b)(ii)	It can be used for only one bit error detection (ot it cannot be used for burst error detection).	1 marks																								
(3)(c)	(i) <table border="1"> <thead> <tr> <th>CustID</th><th>City</th><th>OrderID</th></tr> </thead> <tbody> <tr> <td>1</td><td>London</td><td>NULL</td></tr> <tr> <td>2</td><td>Berlin</td><td>999</td></tr> <tr> <td>3</td><td>New York</td><td>NULL</td></tr> </tbody> </table> (ii) <table border="1"> <thead> <tr> <th>CustID</th><th>City</th><th>OrderID</th></tr> </thead> <tbody> <tr> <td>2</td><td>Berlin</td><td>999</td></tr> <tr> <td>NULL</td><td>NULL</td><td>998</td></tr> <tr> <td>NULL</td><td>NULL</td><td>997</td></tr> </tbody> </table>	CustID	City	OrderID	1	London	NULL	2	Berlin	999	3	New York	NULL	CustID	City	OrderID	2	Berlin	999	NULL	NULL	998	NULL	NULL	997	3 marks [2 x 1.5]
CustID	City	OrderID																								
1	London	NULL																								
2	Berlin	999																								
3	New York	NULL																								
CustID	City	OrderID																								
2	Berlin	999																								
NULL	NULL	998																								
NULL	NULL	997																								
(3)(d)	(i) Composite attribute (ii) Identifier attribute (iii) Composite multivalued attribute [2 for all correct, 1.5 for 2 correct, 1 for 1 correct]	2 marks																								
(4) (a)	(i) Library Member (ii) Registering member, Checkingout book, Returning book, Searching book (iii) Member, Book, Checked-Out Book (iv) Member Registration Data, Book Checkout Request, Book Return Request, Book Search Request <u>Note:</u> (ii) - should be in verb form (iv) - should be in noun																									
(4)(b)	(ii) → (vi) → (iv) → (v) → (iii) → (vii) → (i)	3marks																								

Part – II B – Suggested Answers

Question No.																																																																										
(5)(a)(i)	$\bar{A}B + \bar{B}C$ AB C <table><tr><td>00</td><td>01</td><td>11</td><td>10</td></tr><tr><td>0</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></table>	00	01	11	10	0	0	1	0	1	1	0	1	1 marks [1+1]																																																												
00	01	11	10																																																																							
0	0	1	0																																																																							
1	1	0	1																																																																							
(5)(a)(ii)		2 marks																																																																								
(5)(a)(iii)	<table><tr><th>A</th><th>B</th><th>C</th><th>$\bar{A}$</th><th>$\bar{A}B$</th><th>$\bar{B}$</th><th>$\bar{B}C$</th><th>$\bar{A}B + \bar{B}C$</th></tr><tr><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table>	A	B	C	$\bar{A}$	$\bar{A}B$	$\bar{B}$	$\bar{B}C$	$\bar{A}B + \bar{B}C$	0	0	0	1	0	1	0	0	0	0	1	1	0	1	1	1	0	1	0	1	1	0	0	1	0	1	1	1	1	0	0	1	1	0	0	0	0	1	0	0	1	0	1	0	0	1	1	1	1	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	4 marks
A	B	C	$\bar{A}$	$\bar{A}B$	$\bar{B}$	$\bar{B}C$	$\bar{A}B + \bar{B}C$																																																																			
0	0	0	1	0	1	0	0																																																																			
0	0	1	1	0	1	1	1																																																																			
0	1	0	1	1	0	0	1																																																																			
0	1	1	1	1	0	0	1																																																																			
1	0	0	0	0	1	0	0																																																																			
1	0	1	0	0	1	1	1																																																																			
1	1	0	0	0	0	0	0																																																																			
1	1	1	0	0	0	0	0																																																																			
(5)(b)(i)	$\overline{(A + (\bar{A} + B)) + (B + (\bar{A} + B))}$$\overline{(A + (\bar{A} + B))} \cdot \overline{(B + (\bar{A} + B))}$$(A + \overline{(\bar{A} + B)}) \cdot (B + \overline{(\bar{A} + B)})$$AB + A \cdot (\bar{A} + B) + B \cdot (\bar{A} + B) \cdot (\bar{A} + B)$$AB + A \cdot (\bar{A} \cdot \bar{B}) + B \cdot (\bar{A} \cdot \bar{B}) + \bar{A} \cdot \bar{B}$$AB + \bar{A} \cdot \bar{B} = \bar{A} \oplus B$	3 marks [0.5 for each line]																																																																								

(5)(b)(ii)	<table border="1" data-bbox="424 241 799 421"> <tr> <th>A</th><th>B</th><th>$AB + \bar{A}.\bar{B}$</th></tr> <tr> <td>0</td><td>0</td><td>1</td></tr> <tr> <td>0</td><td>1</td><td>0</td></tr> <tr> <td>1</td><td>0</td><td>0</td></tr> <tr> <td>1</td><td>1</td><td>1</td></tr> </table>	A	B	$AB + \bar{A}.\bar{B}$	0	0	1	0	1	0	1	0	0	1	1	1	2 marks
A	B	$AB + \bar{A}.\bar{B}$															
0	0	1															
0	1	0															
1	0	0															
1	1	1															
(5)(b)(iii)	XNOR	2 marks															
(6)(a)		3 marks															
(6)(b)(i)	• It gives network administrators better control over their computer networks, including traffic, data packets, subnets, and routers. • It boosts the network's overall performance. • It enhances network's security. • It ensures that IP addresses are used efficiently (or prolonged usage of IPv4 addresses). • Efficient data routing.	2 marks <i>Any other appropriate answers accepted</i>															
(6)(b)(ii)	• Framing • MAC addressing / physical addressing • Error control • Hop to Hop or Node to Node delivery of data	2 marks <i>Any other appropriate answers accepted</i>															
(6)(b)(iii)	• Easy to troubleshoot • More practical • Less cost • Adding a new node to the existing network / removing a new node from the existing network is easy	2 marks <i>Any other appropriate answers accepted</i>															

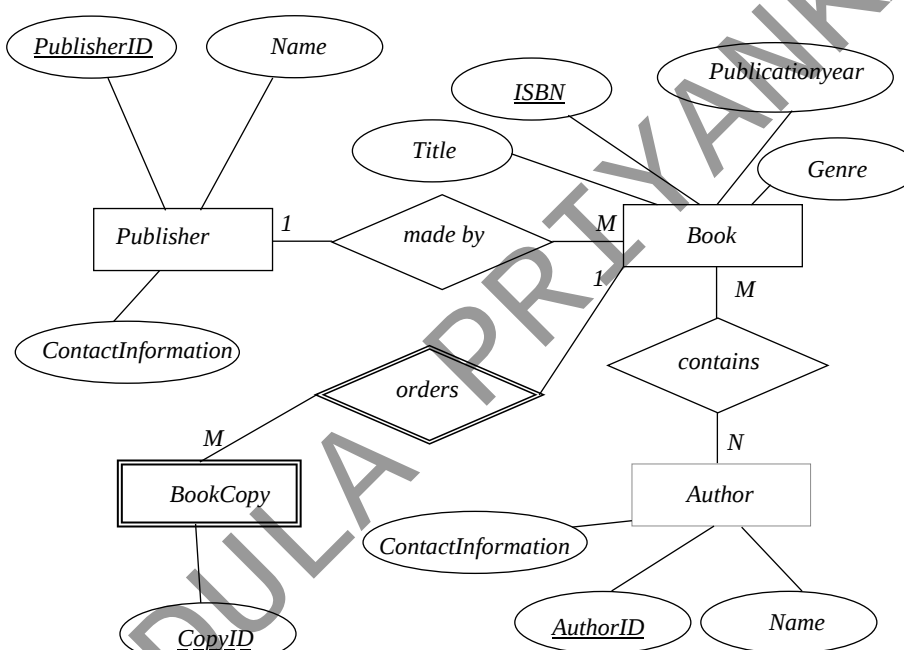
(6)(c)

Departments	Network address	Broadcast address	Subnet mask	Usable ID address range
Accounting information system	192.147.1.0	192.147.1.63	255.255.255.192	192.147.1.1 - 192.147.1.62
Marketing	192.147.1.64	192.147.1.127	255.255.255.192	192.147.1.65 - 192.147.1.126
Sales	192.147.1.128	192.147.1.191	255.255.255.192	192.147.1.129 - 192.147.1.190
Production	192.147.1.192	192.147.1.255	255.255.255.192	192.147.1.193 - 192.147.1.254

6 marks

[1.5 for each row]

(7)(a)



6 marks

[four entities – 2 marks, three relationships – 1.5 marks, cardinalities – 1 marks, attributes – 1.5 marks]

(7)(b)

- Reduces redundant data.
- Removing / reducing data anomalies [delete / update / insert]
- Provides data consistency within the database.
- More flexible database design.
- Higher database security.
- Better and quicker execution.
- Greater overall database organization.

2 marks
[1+1]

Any other appropriate answers accepted

(7)(c)(i)	3NF Every determinant is key (<u>SubjectID</u> → SubjectName) Or No transitive dependency.	2 marks [1+1]																		
(7)(c)(ii)	2NF No partial functional dependency Or Transitive dependency is there (StudentID → FirstName, NIC → FirstName)	2 marks [1+1]																		
(7)(c)(iii)	3NF Students (<u>StudentID</u> , NIC, FirstName) Results (<u>StudentNo</u> , <u>SubjectID</u> , Grade)	2 marks [1+1]																		
(7)(c)(iv)	<table border="1"> <thead> <tr> <th>SubjectID</th><th>StudentNo</th><th>Grade</th></tr> </thead> <tbody> <tr> <td>ENG</td><td>S1234</td><td>B</td></tr> <tr> <td>PHY</td><td>S1447</td><td>C</td></tr> <tr> <td>ACC</td><td>S1234</td><td>A</td></tr> <tr> <td>ENG</td><td>S1323</td><td>S</td></tr> <tr> <td>ACC</td><td>S1323</td><td>B</td></tr> </tbody> </table>	SubjectID	StudentNo	Grade	ENG	S1234	B	PHY	S1447	C	ACC	S1234	A	ENG	S1323	S	ACC	S1323	B	2 marks [rows order is must]
SubjectID	StudentNo	Grade																		
ENG	S1234	B																		
PHY	S1447	C																		
ACC	S1234	A																		
ENG	S1323	S																		
ACC	S1323	B																		
(8)(a)(i)	- It helps to define user needs early in the development process. - It is used to determine the needs and expectations of a new product - It helps deliver a system that meets customers' time (schedule), budget and quality expectations.	2 marks Or any other suitable answers																		
(8)(a)(ii)	- The services expected by the users from the system or the services provided by the system to the users. And - Functional requirements define what a product must do, what its features and functions are. - They must be able to perform by the system.	2 marks [1+1]																		
(8)(b)(i)	103	2 marks																		
(8)(b)(ii)	16KB	2 marks																		
(8)(b)(iii)	- Linked allocation does not support direct access / random access. - Linked allocation has excess pointer overheads. - Linked allocation is less reliable.	2 marks																		

(8)(c)	Process Control Block is a <u>data structure</u> that contains <u>information of the process</u> related to it.	2 marks
(8)(d)	1. The execution <u>state of the cur</u>rently-executing process is saved (old process). 2. A <u>new process</u> is selected for execution. 3. The execution state of the new process is <u>restored</u>. 4. <u>Control is passed to the new process</u>.	2 marks [0.5 x 4] Or equivalent steps / meaning.
(9)(a)(i)	The HTML element is everything from the start tag to the end tag.	1.5 marks
(9)(a)(ii)	HTML attributes provide additional information about HTML elements.	1.5 marks
(9)(b)	<pre> <!DOCTYPE html> <html> <head> <title> Checkbox </title> </head> <body> <h2> Select you want </h2> <form action="" method="post"> <input type="checkbox" id="vehicle1" name="vehicle1" value="Bike" checked> <label for="vehicle1"> I have a bike</label>
 <input type="checkbox" id="vehicle2" name="vehicle2" value="Car"> <label for="vehicle2"> I have a car</label>
 <input type="checkbox" id="vehicle3" name="vehicle3" value="Boat"> <label for="vehicle3"> I have a boat</label>

 <input type="submit" value="Submit"> </form> </body> </html> </pre>	5 marks [Well- formed document should be followed and HTML 4 / HTML 5 methods acceptable] [Checkbox – 2 marks, submit button – 1 marks, text – 1 marks, remaining – 1 marks]

(9)(c)	<pre> <html> <head> <title> Webpage </title> </head> <body> <form action="" method="post"> <label for="name"> Name: </label> <input type="text" name="name">

 <label for="sex"> Sex: </label> <input type="radio" name="sex" id="male" value="male"> <label for="male"> Male </label> <input type="radio" name="sex" id="female" value="female"> <label for="female"> Female </label>

 <label for="country"> Country: </label> <select name="country" id="country"> <option> Select an option </option> <option value="nepal"> Nepal </option> <option value="usa"> USA </option> <option value="australia"> Australia </option> </select>

 <label for="message"> Message: </label>
 <textarea name="message" id="message" cols="30" rows="4"></textarea>

 <input type="checkbox" name="newsletter" id="newsletter"> <label for="newsletter"> Subscribe? </label>

 <input type="submit" value="Submit"> </form> </body> </html> </pre>	7 marks [Well-formed document should be followed and HTML 4 / HTML 5 methods acceptable 1] [Textbox – 1, Radiobutton – 1, Dropdown list – 1, Textarea – 1, Checkbox – 1, Submit button – 1, remaining – 1]
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(10)(a)	<pre> graph TD Start([Start]) --> Init[i = 0
Sum = 0] Init --> Input[/Enter a number, N/] Input --> Cond1{Is i < N?} Cond1 -- Yes --> InputS[/Enter a number, S/] InputS --> Cond2{Is S > 0?} Cond2 -- Yes --> SumAdd[Sum = Sum + S] SumAdd --> IncI[i = i + 1] IncI --> Cond1 Cond2 -- No --> DisplaySum[/Display Sum/] Cond1 -- No --> DisplaySum DisplaySum --> End([End]) </pre>	6 marks <i>[0.5 for every symbol and meaning and remainings for proper flowlines]</i>
(10)(b)(i)	7	2 marks
(10)(b)(ii)	Displaying <u>number of values</u> in the list that are <u>greater than 3</u> .	2 marks
(10)(b)(iii)	<pre> L = [5, 4, 7, 4, 4, 3, 2, 1, 5, 6] S = int(input('Enter a number:')) count = 0 j = 0 N = len(L) while j < N: if L[j] > S: count = count + 1 j = j + 1 print(count) </pre>	5 marks <i>[0.5 marks for each line]</i>

Final Marks Distribution

Part –I 2 x 50 = 100 marks, **Part – II A** 10 x 4 = 40 marks, **Part – II B** 15 x 4 = 60 marks

Total: 200 / 2 = 100 marks
