

A/L ICT 2024



Marking Scheme

Term - 5

NFWC



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

Amendments to be included.

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

Part - II A - Suggested Answers

Question No.		Marks
(1)(a)(i)	<pre> <dl> <dt> <u> Coffee </u> </dt> <dd> <i> Black hot drink </i> </dd> <dt> <u> Milk </u> </dt> <dd> <i> White cold drink </i> </dd> </dl> </pre>	1 marks
(1)(a)(ii)	<pre> <html> <head> <title> Application </title> </head> <body> <form method="post" action=""> <fieldset> <legend> Enter details: </legend> <label for="fname">First name:</label>
 <input type="text" id="fname" name="fname">
 </pre>	5 marks [10 x 0.5] partial marks can be given

	<pre> <label for="lname">Last name:</label>
 <input type="text" id="lname" name="lname">

 Choose gender:
 <input type="radio" id="male" name="gender" value="male" checked> <label for="male"> Male </label>
 <input type="radio" id="female" name="gender" value="female"> <label for="female"> Female </label>

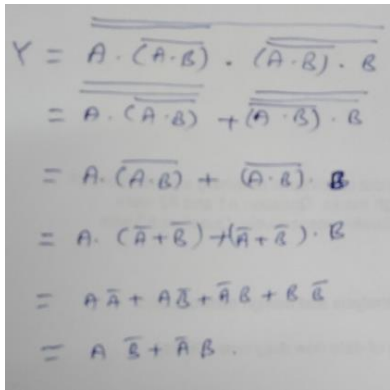
 <input type="submit" name="sbt" value="Submit"> </fieldset> </form> </body> </pre>													
(1)(b)	Contact Details <table border="1"> <thead> <tr> <th>Company</th><th colspan="2">Contacts</th></tr> </thead> <tbody> <tr> <td>K Systems</td><td>021 222 6575</td><td>011 337 3774</td></tr> <tr> <td>Lin Systems</td><td>021 221 7447</td><td>011 443 5556</td></tr> <tr> <td>Base</td><td>021 222 4454</td><td>011 444 6653</td></tr> </tbody> </table>	Company	Contacts		K Systems	021 222 6575	011 337 3774	Lin Systems	021 221 7447	011 443 5556	Base	021 222 4454	011 444 6653	2 marks <i>0.5 for each row</i>
Company	Contacts													
K Systems	021 222 6575	011 337 3774												
Lin Systems	021 221 7447	011 443 5556												
Base	021 222 4454	011 444 6653												
(1)(c)	(i) False (ii) True (iii) True (iv) True	2 marks <i>[0.5 x 4]</i>												
(2)(a)	① - Input / Enter / Get / Read L , B ② - Is (L and B) > 0 ? ③ - Area = L x B, Perimeter = 2x (L + B) ④ - Display Area, Perimeter	4 marks <i>[4 x 1]</i>												
(2)(b)	machine	2 marks												
(2)(c)	i*i sm	2 marks <i>[1+1]</i>												
(2)(d)	Machine-Oriented	2 marks												

	• Fast Execution • Assembly Language • Control Over Hardware • Complex Syntax	<i>[4 x 0.5]</i>
(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 <i>[1+1]</i> <i>Any other relevant answers accepted</i>
(3)(a)	(i) Keys / Algorithms (ii) Algorithms / Keys (iii) Plaintext, Ciphertext (iv) Same key (v) Secure key (vi) Pair of key	3.5 marks <i>[7 x 0.5]</i>
(3)(b)	A - SYN B - SYN-ACK C - ACK	1 marks <i>[0.5+0.5]</i>
(3)(c)	(i) Firewall (ii) Proxy server (iii) PCM (iv) Multiplexing (v) Attenuation (vi) Flowcontrol	3 marks <i>6 x 0.5</i>
(3)(d)(i)	0	1 marks
(3)(d)(ii)	• Single-Bit Detection • No Error Correction • Overhead	1 marks

(4)(a)(i)	Table is in 1NF but not in 2NF. • The primary key is a composite key made of OrderID and ProductID. • ProductName depends only on ProductID (a partial dependency). • CustomerName depends only on CustomerID (a partial dependency).	2 marks
(4)(a)(ii)	Product (<u>ProductID</u>, ProductName) Customer (<u>CustomerID</u>, CustomerName) Order (<u>OrderID</u>, <u>ProductID</u>, Quantity, CustomerID)	2 marks
(4)(a)(iii)	• Data Redundancy • Data Integrity Issues • Data anomalies • Poor Query Performance • Scalability Issues • Difficulty in Maintenance of database	1 marks
(4)(b)(i)	Multivalued attribute	0.5 marks
(4)(b)(ii)	Identifier attribute	0.5 marks
(4)(b)(iii)	Composite-identifier attribute	0.5 marks
(4)(c)(i)	M:N or Many to many	1 marks
(4)(b)(ii)	Student (StudentID, Name, DateOfBirth) Course (CourseID, CourseName, Credits) Student_Course (StudentID, CourseID)	1.5 marks
(4)(b)(iii)	In the relational database, a primary key is a specific set of attributes (columns) that uniquely identify a tuple (row) in a relation (table).	1 marks

Part – II B – Suggested Answers

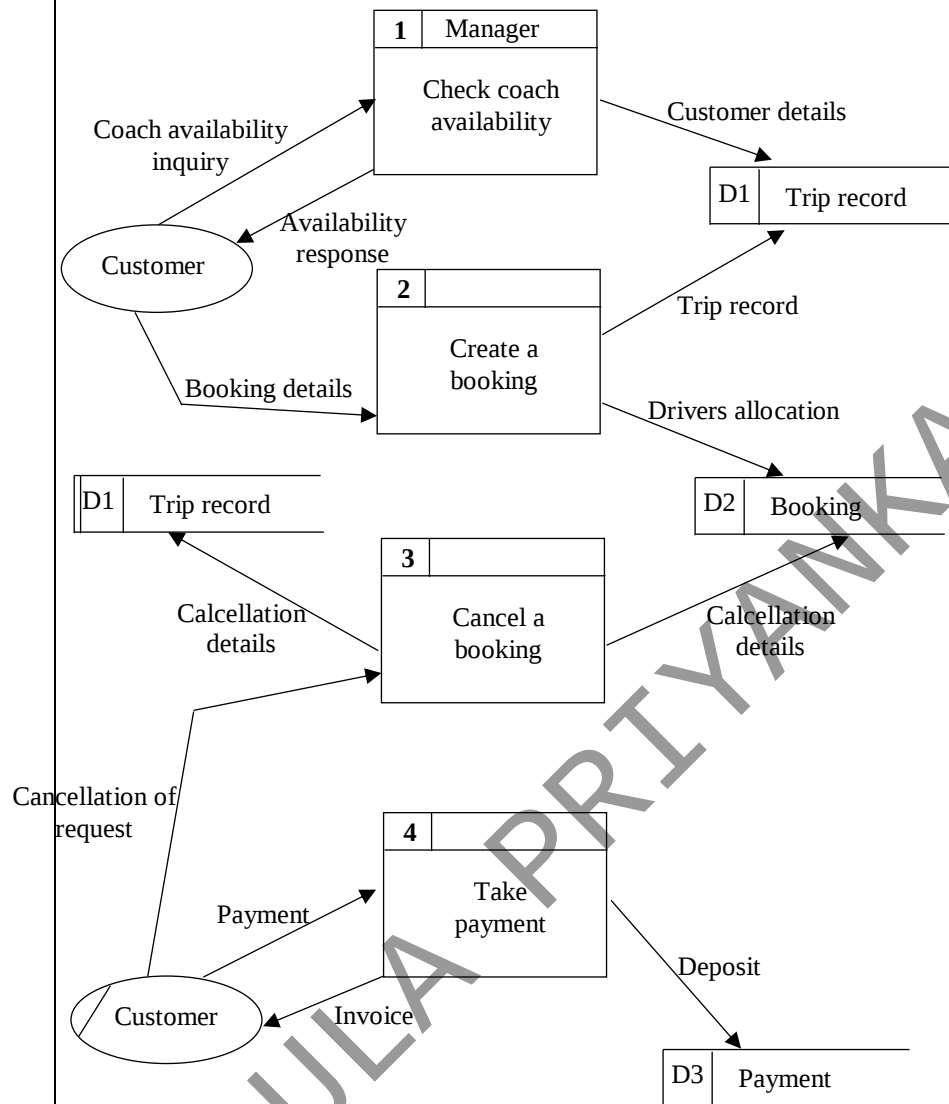
Question No.		
(5)		
(a)(i)	$B + AC$	2 marks
(5)(a)(ii)		2 marks
(5)(a)(iii)	$(A + B)(B + C)$	2 marks
(5)(a)(iv)		2 marks

(5)(b)(i)		3 marks																																			
(5)(b)(ii)	<table border="1"><thead><tr><th>A</th><th>B</th><th>$\bar{B}$</th><th>$A\bar{B}$</th><th>$\bar{A}$</th><th>$\bar{A}B$</th><th>$A\bar{B} + \bar{A}B$</th></tr></thead><tbody><tr><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>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</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></tr></tbody></table>	A	B	$\bar{B}$	$A\bar{B}$	$\bar{A}$	$\bar{A}B$	$A\bar{B} + \bar{A}B$	0	0	1	0	1	0	0	0	1	0	0	1	1	1	1	0	1	1	0	0	1	1	1	0	0	0	0	0	2 marks
A	B	$\bar{B}$	$A\bar{B}$	$\bar{A}$	$\bar{A}B$	$A\bar{B} + \bar{A}B$																															
0	0	1	0	1	0	0																															
0	1	0	0	1	1	1																															
1	0	1	1	0	0	1																															
1	1	0	0	0	0	0																															
(5)(b)(iii)	XOR	2 marks																																			
(6)(a)(i)	- Improved Network Performance - Enhanced Security - Efficient IP Address Management - Simplified Network Management - Improved Network Reliability - Better Control Over Network Growth - Compliance with Organizational Policies	1 marks Any other appropriate answers accepted																																			
(6)(a)(ii)	- Packet Segmentation and Reassembly - Connection Establishment, Maintenance, and Termination - Flow Control - Error Detection and Correction - Reliable Data Transfer - Multiplexing and Demultiplexing - Congestion Control - Quality of Service (QoS)	1 marks Any other appropriate answers accepted																																			

(6)(a)(iii)	- Higher Cost - more cabling, switch/hub cost - Dependency on Central Hub/Switch - Complex Installation and Maintenance - Scalability Concerns - Redundancy and Backup Challenges	1 marks Any other appropriate answers accepted																									
(6)(b)(i)	255.255.255.192	1 marks																									
(6)(b)(ii)	2 bits	1 marks																									
(6)(b)(iii)	<table><tr><th>Subnet</th><th>Network Address</th><th>First usable IP address</th><th>Last usable IP address</th><th>Broadcast Address</th></tr><tr><td>Marketing</td><td>192.112.4.64</td><td>192.112.4.65</td><td>192.112.4.78</td><td>192.112.4.79</td></tr><tr><td>Production</td><td>192.112.4.80</td><td>192.112.4.81</td><td>192.112.4.94</td><td>192.112.4.95</td></tr><tr><td>Finance</td><td>192.112.4.96</td><td>192.112.4.97</td><td>192.112.4.110</td><td>192.112.4.111</td></tr><tr><td>HRM</td><td>192.112.4.112</td><td>192.112.4.113</td><td>192.112.4.126</td><td>192.112.4.127</td></tr></table>	Subnet	Network Address	First usable IP address	Last usable IP address	Broadcast Address	Marketing	192.112.4.64	192.112.4.65	192.112.4.78	192.112.4.79	Production	192.112.4.80	192.112.4.81	192.112.4.94	192.112.4.95	Finance	192.112.4.96	192.112.4.97	192.112.4.110	192.112.4.111	HRM	192.112.4.112	192.112.4.113	192.112.4.126	192.112.4.127	4 marks [1 for each row]
Subnet	Network Address	First usable IP address	Last usable IP address	Broadcast Address																							
Marketing	192.112.4.64	192.112.4.65	192.112.4.78	192.112.4.79																							
Production	192.112.4.80	192.112.4.81	192.112.4.94	192.112.4.95																							
Finance	192.112.4.96	192.112.4.97	192.112.4.110	192.112.4.111																							
HRM	192.112.4.112	192.112.4.113	192.112.4.126	192.112.4.127																							
(6)(c)	<table><tr><th>TCP</th><th>UDP</th></tr><tr><td>Connection-oriented</td><td>Connectionless</td></tr><tr><td>Reliable</td><td>Unreliable</td></tr><tr><td>Guarantees the order of packet delivery</td><td>Does not guarantee order</td></tr><tr><td>Provides flow control</td><td>No flow control</td></tr><tr><td>Implements congestion control</td><td>No congestion control</td></tr></table>	TCP	UDP	Connection-oriented	Connectionless	Reliable	Unreliable	Guarantees the order of packet delivery	Does not guarantee order	Provides flow control	No flow control	Implements congestion control	No congestion control	2 marks Any relevant answers accepted													
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(6)(d)	<table><tr><td>Application layer</td><td>data</td></tr><tr><td>Presentation layer</td><td>data</td></tr><tr><td>Session layer</td><td>data</td></tr><tr><td>Transport layer</td><td>segment</td></tr><tr><td>Network layer</td><td>packet</td></tr><tr><td>Datalink layer</td><td>frame</td></tr><tr><td>Physical layer</td><td>bits</td></tr></table>	Application layer	data	Presentation layer	data	Session layer	data	Transport layer	segment	Network layer	packet	Datalink layer	frame	Physical layer	bits	3+1 marks											
Application layer	data																										
Presentation layer	data																										
Session layer	data																										
Transport layer	segment																										
Network layer	packet																										
Datalink layer	frame																										
Physical layer	bits																										
(7)(a)(i)	220	1 marks																									

(7)(a)(ii)	4 x 4 KB = 16 KB	1 marks
(7)(a)(iii)	• Efficient Use of Disk Space - No Need for Contiguous Space, Easy to Expand Files • Simplicity in File Management • Reduced External Fragmentation	2 marks

(7)(b)



11 marks

[4 marks for processes, 1 marks for external entities, 3 marks for data stores, 3 for data flows.]

(8)(a)		9 marks [entity – 2 marks, relationship / cardinality – 2 marks, attributes + primary keys + cardinalities – 5 marks]
(8)(b)(i)	• 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.	1 marks Any other appropriate answers accepted
(7)(b)(ii)	3NF Every determinant is key (<u>SubjectID</u> → SubjectName) Or No transitive dependency.	2 marks

(7)(b)(iii)	2NF No partial functional dependency Or Transitive dependency is there (StudentID → FirstName, NIC → FirstName)	1 marks
(7)(b)(iv)	3NF Students (StudentID, NIC, FirstName) Results (StudentNo, SubjectID, Grade)	2 marks
(9)(a)	<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)(b)	<pre> <html> <head> <title> Employee Details </title> </head> <body> </pre>	10 marks 0.5 marks for each line

	<pre> <form> <fieldset> <legend> Employee Details: </legend> <p> First name: <input type = "text" name = "fname"/> </p> <p> Last name: <input type = "text" name = "lname"/> </p> <p> <input type = "radio" name = "Gender" value = "Male" checked> Male <input type = "radio" name = "Gender" value = "Female"> Female </p> <p> Employee ID: <input type = "text" name = "ID"/> </p> <p> Designation: <input type = "text" name = "ID"/> </p> <p> Phone Number: <input type = "text" name = "phone"/> </p> <p> <input type = "submit" name = "submit" value = "Submit"/> <input type = "reset" name = "reset" value = "Reset"/> </p> </fieldset> </form> </body> </html> </pre>	
(10)(a)	<u>Variables</u> • A variable is a named storage location in memory that can hold data which may change during the execution of a program. The value of a variable can be modified. • The memory location assigned to a variable can be written to and read from, allowing the value to be updated. <u>Constants</u> • A constant is a named storage location in memory that holds a value which cannot be changed once it is assigned. The value of a constant remains the same throughout the execution of the program. • The memory location assigned to a constant is typically read-only after initialization, preventing any changes to the value.	2 marks

(10)(b)	<pre> graph TD Start([Start]) --> Init[i = 0
R = 1] Init --> EnterN[/Enter a number, N/] EnterN --> IsNgti{Is N>i?} IsNgti -- No --> DisplayR[/Display R/] DisplayR --> End([End]) IsNgti -- Yes --> EnterNum[/Enter a number, Num/] EnterNum --> IsNumOdd{Is Num%2=1?} IsNumOdd -- No --> End IsNumOdd -- Yes --> CalcR[R = R * Num] CalcR --> Inci[i = i + 1] Inci --> IsNgti </pre>	5 marks <i>[0.5 for every symbol and meaning and remaining s for proper flowlines]</i>
(10)(c)(i)	16	1.5 marks
(10)(c)(ii)	Finding total value of some positive numbers entered by user .	2 marks
(10)(c)(iii)	<pre> i=0 Sum=0 N=int(input('Enter a number:')) while (i<N): S=int(input('Enter a number:')) if S>0: Sum=Sum+S i=i+1 print(Sum) </pre>	4.5 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
