



A/L ICT Marking Scheme

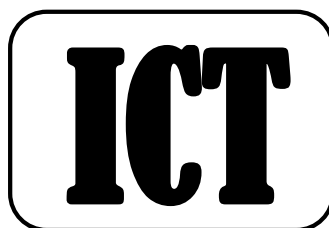
2018 – November

2019 (Gr.13) Batch



Field Work Center (FWC)

Thondaimanaru



Part I – Answers

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

Part – II A Answers

*Note:- * Any other relevant answers.*

Ques. No.	Suggested answers	Marks
(1) (a)	<ul style="list-style-type: none"> Magnetic storage technology – Hard disk, Floppy disk, Zip drive, Jaz drive, Magnetic tape Optical / Laser storage technology – CD, DVD, Blu-ray disc Solid-state / semi-conductor storage technology – SSD, Flash drive, memory card 	3 marks (3 x 1) if no example, deduct 0.5 for each
(1) (b)	An IRQ (interrupt request) value is an assigned location where the computer can expect a particular device to interrupt it when the device sends the computer signals about its operation. <i>For example</i> , when a printer has finished printing, it sends an interrupt signal to the computer. * [1 marks for example]	3 marks [2 + 1] [any suitable example]
(1) (c)(i)	$A\bar{B} + \bar{A}B$ or $A \oplus B$	1 marks
(1) (c)(ii)	AB	1 marks
(1) (d)	$19_{10} = 00010011_2$ ← 0.5 $-13_{10} = 11110011_2$ ← 0.5 $\underline{\hspace{1cm}00000110_2\hspace{1cm}}$ ← 0.5 $\underline{\hspace{1cm}[discard\ carry\ bit\ 1]\hspace{1cm}}$ ← 0.5	2 marks

(2) (a)	(i) ⑦ (ii) ④ (iii) ⑥ (iv) ⑧ (v) ③ (vi) ② (vii) ① (viii) ⑤	4 marks (8 x 0.5)															
(2) (b)	<table border="1"> <thead> <tr> <th></th><th>States</th><th>Conditions / events</th></tr> </thead> <tbody> <tr> <td>(i)</td><td>created / new</td><td>admit [or any equal explanation]</td></tr> <tr> <td>(ii)</td><td>running</td><td>timeout [or any equal explanation]</td></tr> <tr> <td>(iii)</td><td>blocked</td><td>I/O completed [or any equal explanation]</td></tr> <tr> <td>(iv)</td><td>swapped out and waiting</td><td>activate [or any equal explanation]</td></tr> </tbody> </table>		States	Conditions / events	(i)	created / new	admit [or any equal explanation]	(ii)	running	timeout [or any equal explanation]	(iii)	blocked	I/O completed [or any equal explanation]	(iv)	swapped out and waiting	activate [or any equal explanation]	4 marks (8 x 0.5)
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(i)	created / new	admit [or any equal explanation]															
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(iii)	blocked	I/O completed [or any equal explanation]															
(iv)	swapped out and waiting	activate [or any equal explanation]															
(2) (c)	(i) Digital signal carries more information per second than analog signal. (ii) Digital signals maintain their quality over long distances better than analogue signals / less noise / greater noise immunity/ (iii) Digital signals can be processed by digital circuit components, which are cheap and easily produced in many components on a single chip. (iv) Digital signals typically use less bandwidth. (v) There is minimal electromagnetic interference in digital technology. [or any suitable explanations]	2 marks (2 x 1)															
(3)(a)(i)	The table violates 2nd Normal Form ← 1 because there are two partial dependencies : ← 0.5 StudentID → StudentName and BookID → BookTitle ← 0.5	2 marks															
(3)(a)(ii)	<i>Insert anomaly</i> : a new book cannot be added without having a student borrower associated with it. [or any suitable explanations]	1 marks															
(3)(a)(iii)	Student (StudentID, StudentName) Book (BookID, BookTitle) Borrowing (StudentID, BookID, Date)	3 marks [1 for each relation]															

(3) (b)	SELECT BookTitle, Date FROM Book, Borrowing WHERE Book.BookID = Borrowing.BookID	2 marks
(3) (c)	(i) Composite attribute (ii) Identifier attribute (iii) Multivalued attribute (iv) Derived attribute	2 marks (4 x 0.5)
(4) (a)	① User interface ② Knowledgebase ③ Inference engine	3 marks [1 for each]
(4) (b)	1000 Mbps = 1000 x 1000 x 1000 bps = 10 ⁹ bps	1 marks [without calculation, 0.5 marks]
(4) (c)	<div style="text-align: center;"> 1 1 0 1 0 0 1 0 </div> <div style="display: flex; flex-direction: column; align-items: flex-start;"> <div>NRZ-L</div> <div>NRZ-I</div> <div>Manchester</div> </div>	6 marks (3 x 2) [Must be perfectly drawn. No partial marks given]

Teachers' note:

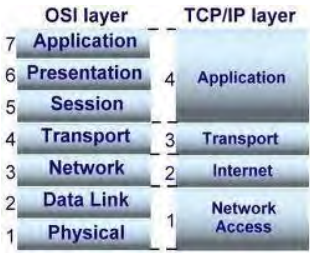
NRZ – I → Transition at beginning (low-to- high or high-to-low) -1

No transition at beginning - 0

Therefore, *consider both encoding schemes* (low-to- high or high-to-low) *for marking*.

Part –II B Answers

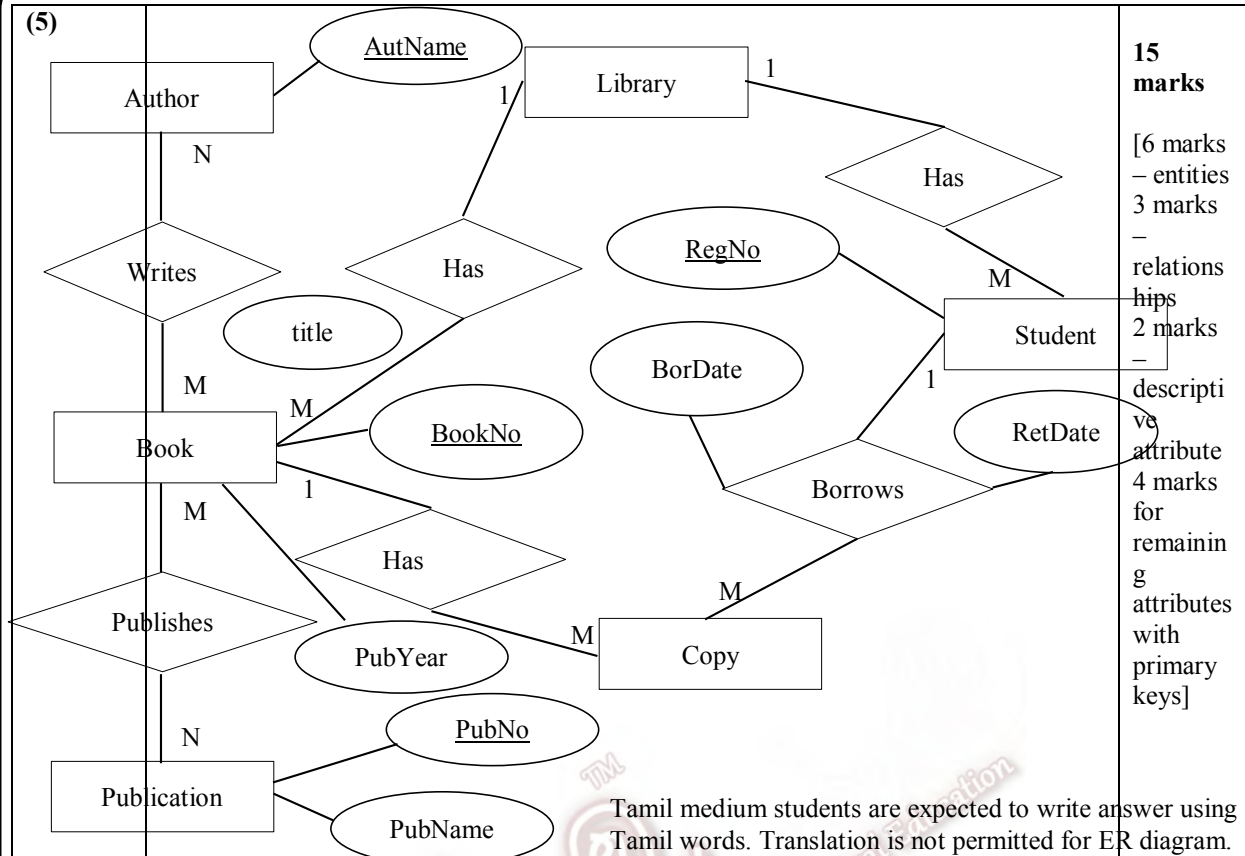
Question No.	Suggested Answers	Marks																																				
(1) (a)	<table border="1"><thead><tr><th>A</th><th>B</th><th>Sum</th><th>Carry</th></tr></thead><tbody><tr><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td><td>1</td></tr></tbody></table>	A	B	Sum	Carry	0	0	0	0	0	1	1	0	1	0	1	0	1	1	0	1	3 marks [inputs – 1, Sum – 1, Carry – 1]																
A	B	Sum	Carry																																			
0	0	0	0																																			
0	1	1	0																																			
1	0	1	0																																			
1	1	0	1																																			
	<p>$\Sigma = A \oplus B = A\bar{B} + \bar{A}B$</p> <p>$C_{out} = AB$</p>	2 marks [no partial marks given]																																				
(1) (b)(i)	<table border="1"><thead><tr><th>A</th><th>B</th><th>C</th><th>X</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>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>1</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>0</td></tr><tr><td>1</td><td>1</td><td>1</td><td>0</td></tr></tbody></table>	A	B	C	X	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	1	1	0	0	1	1	0	1	0	1	1	0	0	1	1	1	0	4 marks [no partial marks given]
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(1)(b)(ii)	$\bar{A}BC + A\bar{B}\bar{C}$	3 marks																																				
(1)(b)(iii)	<p>$\bar{A}BC + A\bar{B}\bar{C}$</p>	3 marks [no partial marks given]																																				

(2) (a)		5 marks [3 for OSI, 2 for TCP/IP] [no partial marks given]
(2)(b)(i)	$2^4 = 16$	1 marks
(2)(b)(ii)	$2^4 - 2 = 14$	1 marks
(2)(b)(iii)	200.138.10.1 – 200.138.10.14 200.138.10.16 – 200.138.10.30 200.138.10.32 – 200.138.10.46	3 marks [1 for each]
(2)(b)(iv)	200.138.10.15 200.138.10.31 200.138.10.47	3 marks [1 for each]
(2) (c)	Two bits are changed. The single bit even parity check will not therefore detect the error, since it can <i>only detect errors that cause an odd number</i> of bits to change.	2 marks [1+1]
(3) (a)	<ul style="list-style-type: none"> • Inaccuracy • Inefficiency 	2 marks [1+1]
(3) (b)	<ul style="list-style-type: none"> • Financial / economic feasibility • Operational feasibility • Technical feasibility • Legal feasibility • Cultural feasibility 	3 marks [1+1+1]
(3) (c)	<ul style="list-style-type: none"> • On site observation • Questionnaire • Interviews and discussions • Prototyping • Sampling • Research • Document reviews 	3 marks [1+1+1]

(3) (d)	<ul style="list-style-type: none"> • Customer shall be able to use automated teller machine service • Employee / Customer shall be able to use online banking system • Employee / Customer shall be able to use money withdrawal facility • Employee / Customer shall be able to use cheque transactions • Employee / Customer shall be able to use money deposit facility • Employee shall be able to use loan facility service • Employee shall be able to use pawning service 	3 marks [1+1+1]
(3) (e)	<p>Financial expert system</p> <p>Expert System uses the <u>credit rating weights for each factor</u> that affecting the decision of the credit. An expert system tool that aids the decision maker to issue the right decision with familiar and <u>easy-to-use interface</u>. It uses to <u>acquire the knowledge</u> of credit evaluations systems in banking with <u>effectiveness, efficiency and correctness</u>. The knowledge has been verified and evaluated with other <u>senior experts</u>, and then some modifications and enhancements have been done to reach the final system.</p>	4 marks [1 for the system and 3 for reason]
(4) (a)	<p><u>1GL</u></p> <ul style="list-style-type: none"> • Also called machine language. • Programs are written in binary / machine code (1, 0). • Execution of programs is very fast. • No program translation needed. • Difficult to write / test programs comparing with 3GL/4GL. • Tied up with the computer architecture. <p><u>3GL</u></p> <ul style="list-style-type: none"> • Programs are written using mathematical symbols and natural language words. • Execution of programs is slow. • Valid program translator needed. • Easy to write / test programs in comparing with 1GL/2GL. 	4 marks (2 x 2)

(4) (b)	<pre> graph TD Start([Start]) --> Input[/Input a value, Min/] Input --> i0[i = 0] i0 --> X10{X < 10?} X10 -- no --> Display[/Display X/] Display --> End([End]) X10 -- yes --> Read[/Read a number X from user through keyboard/] Read --> XMin{X < Min?} XMin -- yes --> MinX[Min = X] MinX --> iplus[i = i + 1] XMin -- no --> iplus iplus --> X10 </pre>	5 marks
(4)(c)(i)	<p>a = 4</p> <p><u>Acquires memory space for the integer</u> and the value <u>4 is assigned to variable</u> / label a and <u>stored in the memory location</u>.</p>	2 marks [partial marks given]
(4)(c)(ii)	<p>b = [3,5,6,4]</p> <p>Acquires memory space for the <u>array / list</u> and the <u>set of values 3,5,6,4 are assigned to array / list</u> (variable / label) b and <u>stored in the memory location</u>.</p>	2 marks [partial marks given]
(4)(c)(iii)	<p>c = input ("Enter a number:")</p> <p>Displays the <u>message "Enter a number:"</u> and user is able to input a <u>string value</u> and the string value entered by the user is assigned to the variable / label c and <u>stored in the memory location</u>.</p>	2 marks [partial marks given]

(5)

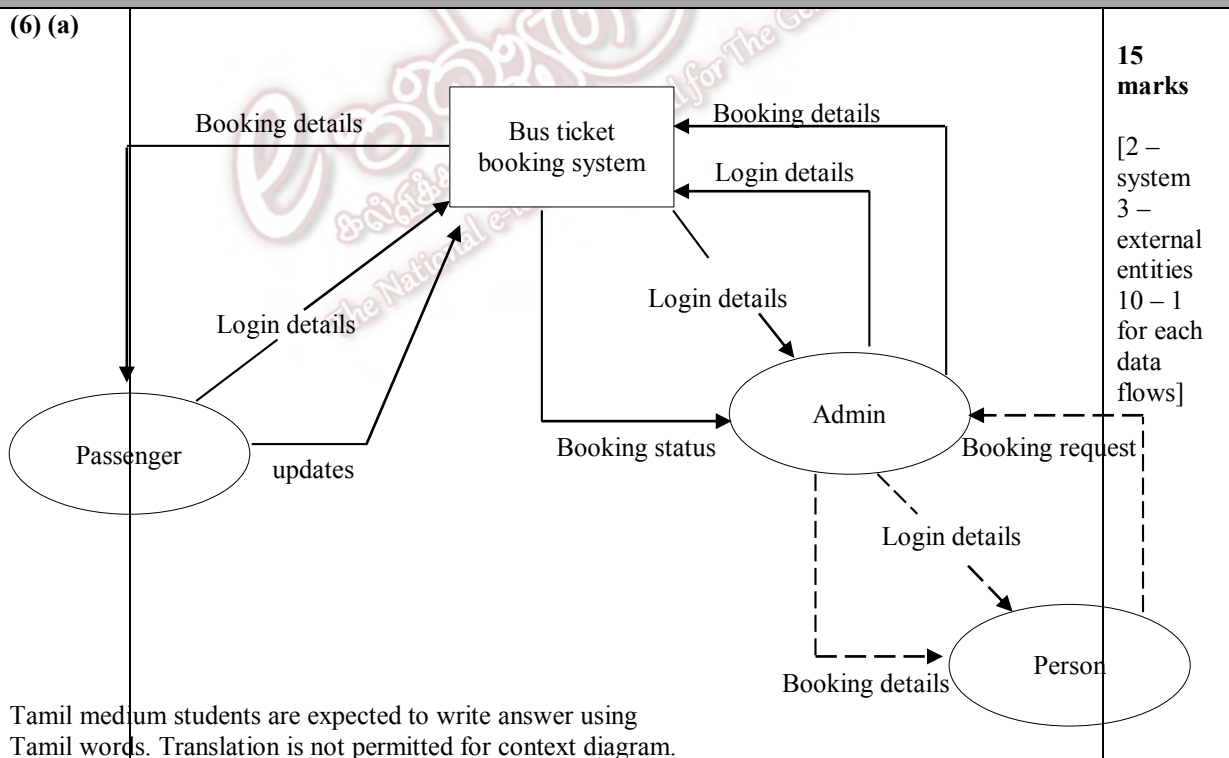


15 marks

[6 marks – entities
3 marks – relations
2 marks – descriptive attribute
4 marks for remaining attributes with primary keys]

Tamil medium students are expected to write answer using Tamil words. Translation is not permitted for ER diagram.

(6) (a)



15 marks

[2 – system
3 – external entities
10 – 1 for each data flows]

Tamil medium students are expected to write answer using Tamil words. Translation is not permitted for context diagram.

Part – I 2 x 50 = 100 marks

Part – II A

10 x 4 = 40 marks

Part – II B

15 x 4 = 60 marks

200 / 2 = 100 marks
