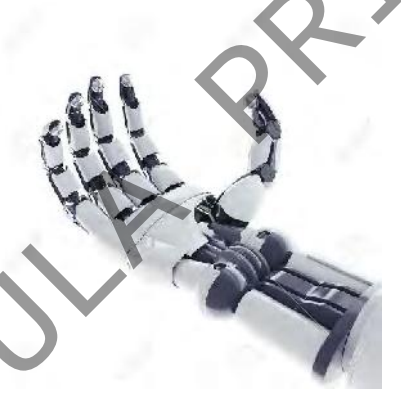
# A/L ICT Marking Scheme

# 2018 – November

# 2019 (Gr.13) Batch



## Field Work Center (FWC)

## Thondaimanaru

ICT

## Part I – Answers

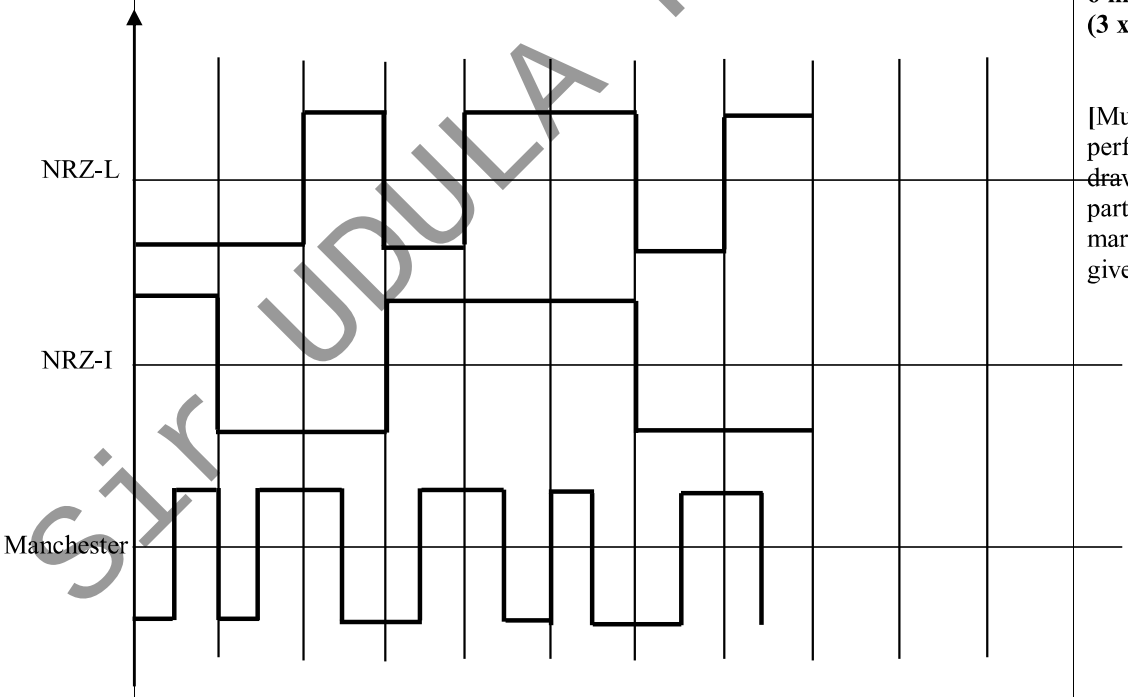
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **(1)** | **2** | **(11)** | **4** | **(21)** | **5** | **(31)** | **2** | **(41)** | **2** |
| **(2)** | **4** | **(12)** | **2** | **(22)** | **4** | **(32)** | **4** | **(42)** | **2** |
| **(3)** | **5** | **(13)** | **1** | **(23)** | **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.*

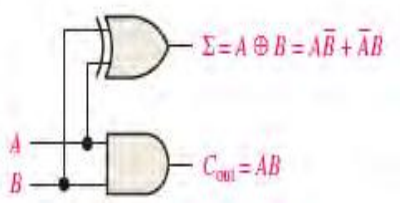
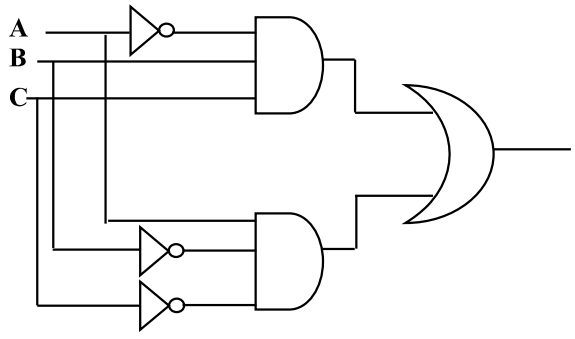
| Ques. No. | Suggested answers | Marks |
|---|---|---|
| **(1) (a)** | • **Magnetic storage technology** – Hard disk, Floppy disk, Zip drive, Jaz drive, Magnetic tape<br>• **Optical / Laser storage technology** – CD, DVD, Blu-ray disc<br>• **Solid-state / semi-conductor storage technology** – SSD, Flash drive, memory card | **3 marks (3 x 1)**<br>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.<br>*For example*, when a printer has finished printing, it sends an interrupt signal to the computer. * [1 marks for example] | **3 marks [ 2 + 1]**<br>[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<br>$-13_{10} = 11110011_2$ ← 0.5<br>$00000110_2$ ← 0.5<br>[discard carry bit 1] ← 0.5 | **2 marks** |

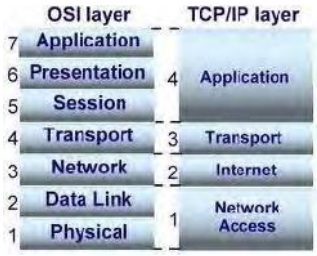
<table>
<tr><td>(2) (a)</td><td>(i) ⑦<br>(ii) ④<br>(iii) ⑥<br>(iv) ⑧<br>(v) ③<br>(vi) ②<br>(vii) ①<br>(viii) ⑤</td><td>4 marks (8 x 0.5)</td></tr>
<tr><td>(2) (b)</td><td><table><tr><th></th><th>States</th><th>Conditions / events</th></tr><tr><td>(i)</td><td>created / new</td><td>admit [or any equal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

| | | |
|---|---|---|
| **(3) (b)** | SELECT BookTitle, Date<br>FROM Book, Borrowing<br>WHERE Book.BookID = Borrowing.BookID | **2 marks** |
| **(3) (c)** | **(i)** Composite attribute<br>**(ii)** Identifier attribute<br>**(iii)** Multivalued attribute<br>**(iv)** Derived attribute | **2 marks**<br>**(4 x 0.5)** |
| | | |
| **(4) (a)** | ① User interface<br>② Knowledgebase<br>③ Inference engine | **3 marks**<br>[1 for each] |
| **(4) (b)** | 1000 Mbps = 1000 x 1000 x 1000 bps = $10^9$ bps | **1 marks**<br>**[**without calculation, 0.5 marks**]** |
| **(4) (c)** | 1 1 0 1 0 0 1 0<br>  <br> | **6 marks**<br>**(3 x 2)**<br>**[**Must be perfectly ~~dra~~wn. No partial marks given**]** |

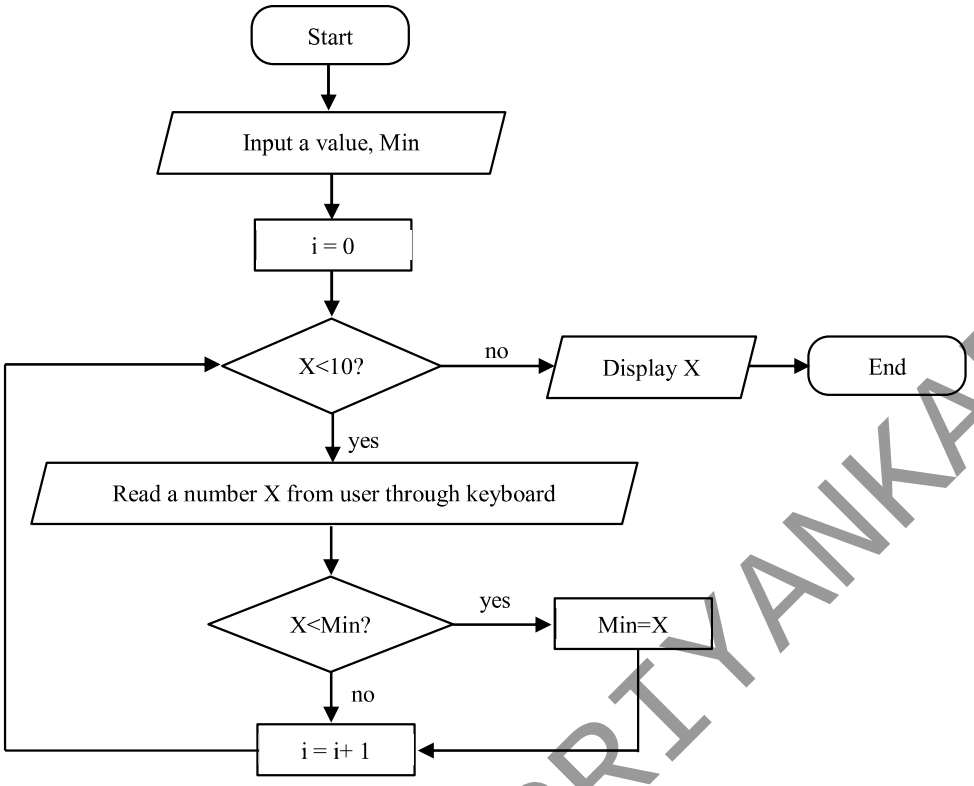
**Teachers' note:**
NRZ – I → Transition at beginning (low-to- high or high-to-low) -1
No transition at beginning - 0
Therefore, ***consider both encoding schemes (***low-to- high or high-to-low***) for marking***.

## Part –II B Answers

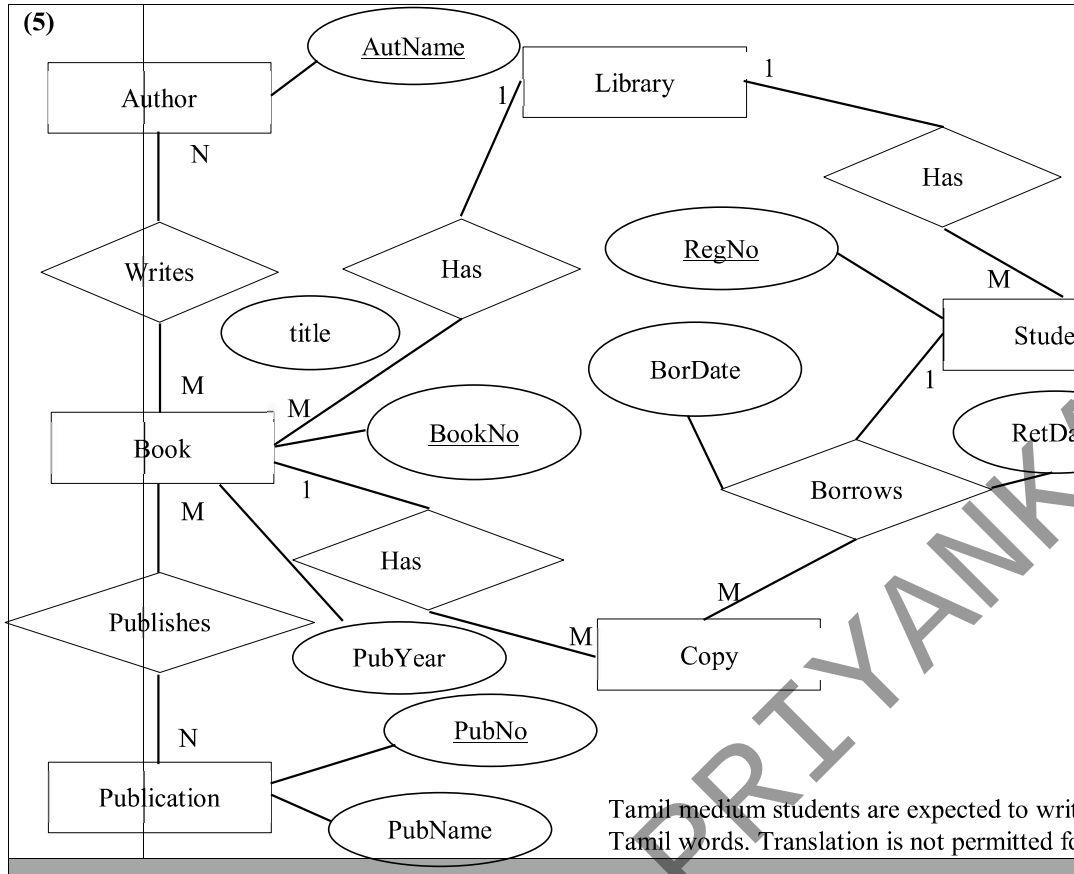
| Question No. | Suggested Answers | Marks |
|---|---|---|
| (1) (a) | <table><tr><th>A</th><th>B</th><th>Sum</th><th>Carry</th></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td><td>1</td></tr></table> | **3 marks**<br><br>[inputs – 1, Sum – 1, Carry - 1] |
| |  | **2 marks**<br><br>[no partial marks given] |
| (1) (b)(i) | <table><tr><th>A</th><th>B</th><th>C</th><th>X</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>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></table> | **4 marks**<br><br>[no partial marks given] |
| (1)(b)(ii) | $\bar{A}BC + A\bar{B}\bar{C}$ | **3 marks** |
| (1)(b)(iii) |  | **3 marks**<br><br>[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<br>200.138.10.16 – 200.138.10.30<br>200.138.10.32 – 200.138.10.46 | **3 marks** [1 for each] |
| **(2)(b)(iv)** | 200.138.10.15<br>200.138.10.31<br>200.138.10.47 | **3 marks** [1 for each] |
| **(2) (c)** | Two bits are changed.<br>The single bit even parity check will not therefore detect the error, since it can ***only detect errors that cause an odd number*** of bits to change. | **2 marks [1+1]** |
| | | |
| **(3) (a)** | • Inaccuracy<br>• Inefficiency | **2 marks** [1+1] |
| **(3) (b)** | • Financial / economic feasibility<br>• Operational feasibility<br>• Technical feasibility<br>• Legal feasibility<br>• Cultural feasibility | **3 marks** [1+1+1] |
| **(3) (c)** | • On site observation<br>• Questionnaire<br>• Interviews and discussions<br>• Prototyping<br>• Sampling<br>• Research<br>• Document reviews | **3 marks** [1+1+1] |
| | | |

| | | |
|---|---|---|
| **(3) (d)** | • Customer shall be able to use automated teller machine service<br>• Employee / Customer shall be able to use online banking system<br>• Employee / Customer shall be able to use money withdrawal facility<br>• Employee / Customer shall be able to use cheque transactions<br>• Employee / Customer shall be able to use money deposit facility<br>• Employee shall be able to use loan facility service<br>• Employee shall be able to use pawning service | **3 marks**<br>[1+1+1] |
| **(3) (e)** | Financial expert system<br><br>Expert System uses the **credit rating weights for each factor** that affecting the decision of the credit. An expert system tool that aids the decision maker to issue the right decision with familiar and **easy-to-use interface**. It uses to **acquire the knowledge** of credit evaluations systems in banking with **effectiveness, efficiency and correctness**. The knowledge has been verified and evaluated with other **senior experts**, and then some modifications and enhancements have been done to reach the final system. | **4 marks**<br><br>[1 for the system and 3 for reason] |
| | | |
| **(4) (a)** | **1GL**<br>• Also called machine language.<br>• Programs are written in binary / machine code (1, 0).<br>• Execution of programs is very fast.<br>• No program translation needed.<br>• Difficult to write / test programs comparing with 3GL/4GL.<br>• Tied up with the computer architecture.<br><br>**3GL**<br>• Programs are written using mathematical symbols and natural language words.<br>• Execution of programs is slow.<br>• Valid program translator needed.<br>• Easy to write / test programs in comparing with 1GL/2GL. | **4 marks**<br>**(2 x 2)** |

| | | |
|---|---|---|
| **(4) (b)** |  | **5 marks** |
| **(4)(c)(i)** | a = 4<br><br>**<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>**. | **2 marks** [partial marks given] |
| **(4)(c)(ii)** | b = [3,5,6,4]<br><br>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>**. | **2 marks** [partial marks given] |
| **(4)(c)(iii)** | c = input ("Enter a number:")<br><br>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>** | **2 marks** [partial marks given] |

**(5)**

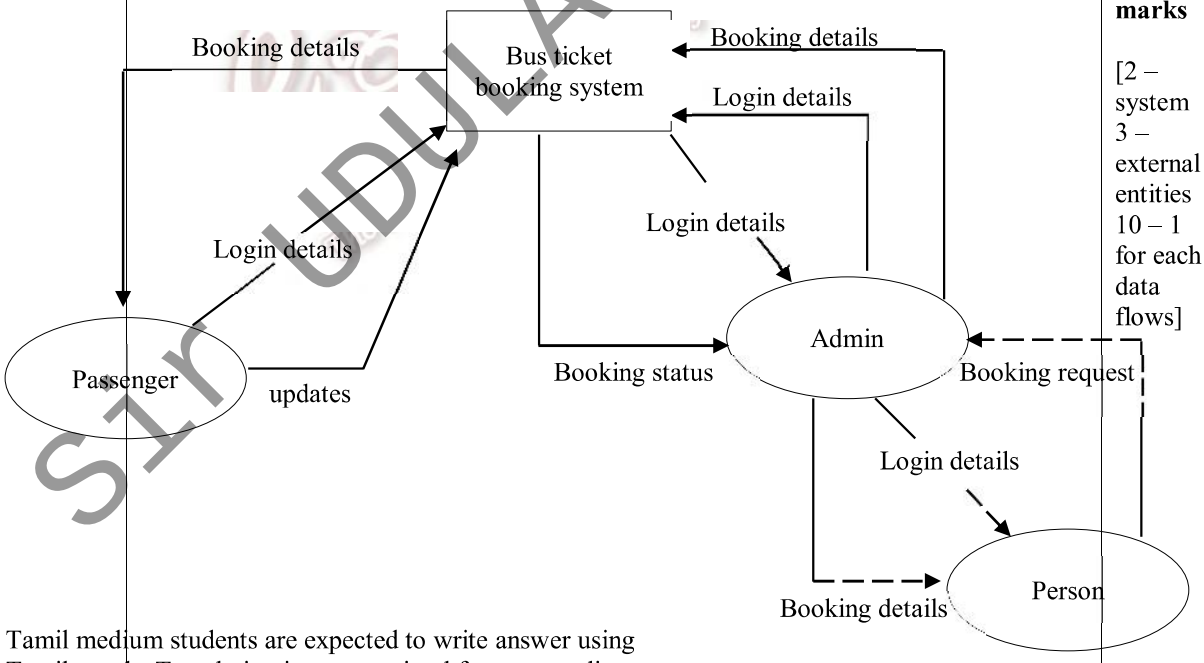



**15 marks**

[6 marks – entities 3 marks – relationships 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**

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