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**Department of Examinations, Sri Lanka**

**G.C.E. (O/L) Examination – 2023 (2024)**

**80 – ICT**

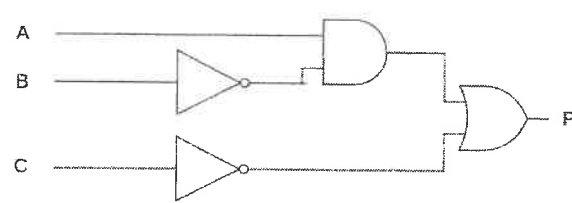
**Mark Scheme**



**This document has been prepared for the use of marking examiners. Some changes would be made according to the views presented at the Chief Examiner's Meeting.**

**Amendments are to be included.**



| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Marks |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1(i)     | <p><b>Any two from:</b></p> <ul style="list-style-type: none"> <li>• Total amount of money to be paid to each owner</li> <li>• Total amount of money to be paid to all owners</li> <li>• List of songs played</li> <li>• The number of times each song was played</li> <li>• Most played song list</li> <li>• Least played song list</li> <li>• Owner-wise song distribution</li> <li>• Suggestion of songs to be played</li> </ul> <p>Award 1 mark for each correct answer up to a maximum of 2.<br/>If more than two pieces given, cut the extra ones and consider only the first two.<br/>The above are examples only. The Chief Examiner is given the freedom to decide on other pieces of information. But those should be obtainable from the system.</p> | 2     |
| 1(ii)    | <p>(a) B<br/>(b) A</p> <p>Award one mark for each.<br/>Ignore case.<br/>Drawing the ports acceptable. But the drawings must be exact.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2     |
| 1(iii)   | <p>1010101<sub>2</sub></p> <p>Writing base (2) is not compulsory.<br/>Zero marks if other bases written.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2     |
| 1(iv)    |  <p>Award only 1 mark if only the AND with correct inputs is correct.<br/>If more than one circuit drawn, cut the extra ones and consider only the first one.<br/>Label P not compulsory.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2     |

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                       |   |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---|
| 1(v)    | <p>A - BIOS<br/>B - memory<br/>C - operating system // OS<br/>D - computer</p> <p>Award 0.5 marks for each.</p>                                                                                                                                                                                                                                                                                                                        |    | 2 |
| 1(vi)   | <p><b>Any two</b> from: Q, R, V</p> <p>Award 1 mark for each correct answer up to a maximum of 2.<br/>Naming (italic, underline, change case) or drawing the icon acceptable.<br/>If more than three labels indicated, then 0 marks.<br/>If three labels written, then they have to be Q, R, V. Else 0 marks.</p>                                                                                                                      |                                                                                       | 2 |
| 1(vii)  | <p>A - ✓<br/>B - ✗<br/>C - ✗<br/>D - ✓</p> <p>Award 0.5 marks for each.<br/>True, False, Correct, Incorrect, Wrong, T, F etc. acceptable.</p>                                                                                                                                                                                                                                                                                          |    | 2 |
| 1(viii) | <p>P - E      Q - C      R - A      S - F      T - D      U - B</p> <p>Award 1 mark for P, Q, R (if only two <u>adjoining</u> ones correct then 0.5)<br/>Award 1 mark for S, T, U (if only two <u>adjoining</u> ones correct then 0.5)</p> <p>Writing answer in text is acceptable. But the text must be exactly as given in the <b>List</b> in the question. Ignore case in such text. Ignore also the hyphens in 'End-of-file?'.</p> |  | 2 |

|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 1(ix) | <p>(a) 2<sup>nd</sup> - <u>Designing</u> the solution<br/> 3<sup>rd</sup> - <u>Coding</u> the solution<br/> 4<sup>th</sup> - Testing // Debugging<br/> 5<sup>th</sup> - <u>Deployment</u> of the system // Installation</p> <p>If one or two steps correct, give 0.5 marks.<br/> If three or four steps correct, give 1 mark.</p> <p>For a step to be marked correct, its position must be correct.<br/> If more than four steps given, cut the extra ones and consider only the first four. If the student starts with the first step, then ignore it and examine the rest.</p> | 1 |
|       | (b) ' <u>Identification</u> of requirements' step // first step                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1 |
| 1(x)  | <p>A - ✓<br/> B - ✗<br/> C - ✓<br/> D - ✓</p> <p>Award 0.5 marks for each.<br/> True, False, Correct, Incorrect, Wrong, T, F etc. acceptable.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                | 2 |

| Question | Answer                                                                                                                                                                                                                                                                                    | Marks |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 2(i)     | <code>=D3 - E3</code><br><br>Cell addresses must be relative (i.e., \$ sign should <b>not</b> be used).<br>If more than one formula written, cut the extra ones and consider only the first one.<br>Ignore case.                                                                          | 2     |
| 2(ii)    | <code>=D8 - E8</code><br><br>Cell addresses must be relative.<br>If more than one formula written, cut the extra ones and consider only the first one.<br>Ignore case.<br><br>If 2(i) is incorrect but 2(ii) is correct, give only 1 mark.                                                | 2     |
| 2(iii)   | (a) <code>=MIN(B3 : B9)</code><br><br><b>ALTERNATIVE:</b> <code>=MIN(B9 : B3)</code><br><br>Cell addresses must be relative.<br>If more than one formula written, cut the extra ones and consider only the first one.<br>Square and curly brackets <b>not</b> acceptable.<br>Ignore case. | 1     |
|          | (b) <code>=MAX(C3 : C9)</code><br><br><b>ALTERNATIVE:</b> <code>=MAX(C9 : C3)</code><br><br>Cell addresses must be relative.<br>If more than one formula written, cut the extra ones and consider only the first one.<br>Square and curly brackets <b>not</b> acceptable.<br>Ignore case. | 1     |
| 2(iv)    | D, E, A, C, B<br><br>No partial marks.                                                                                                                                                                                                                                                    | 2     |
| 2(v)     | Column                                                                                                                                                                                                                                                                                    | 1     |
| 2(vi)    | <code>= \$B4 + C3</code><br>Ignore case.                                                                                                                                                                                                                                                  | 1     |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                      | Marks |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 3(i)     | (a) Student_id + Course_id<br><br>Exact spelling with underscore required.<br>No marks if other fields written.<br>The use of 'and' instead of '+' acceptable only if the student gives a correct description.<br>Ignore case and spacing defects.                                                                                                                                                                                          | 2     |
|          | (b) Student_id<br>Course_id<br><br>Award 0.5 marks for each if <b>no other field is written</b> . Else 0 marks.<br>i.e., if the student writes just one of these fields (with no other fields) then s/he will get 0.5 marks.<br><br>Exact spelling with underscore required.<br>The use of 'and' and comma acceptable.<br>If the answer is: Student_id + Course_id, then 0 marks.<br>Ignore case and spacing defects.<br>'or' unacceptable. | 1     |
| 3(ii)    | (a) COURSE<br><br>Exact spelling required.<br>No marks if additional tables written.<br>Ignore case defects.                                                                                                                                                                                                                                                                                                                                | 1     |
|          | (b) STUDENT<br>ENROLMENT<br><br>Exact spelling required.<br>No marks if COURSE table also written.<br>Ignore case defects.                                                                                                                                                                                                                                                                                                                  | 1     |

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |                                             |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---------------------------------------------|
| 3(iii) | <p>COURSE → (C228, Inorganic Chemistry, 3, Chemistry)</p> <p>ENROLMENT → (S1000, C228, 08-01-2024)</p> <p>ENROLMENT → (S1003, C228, 09-01-2024)</p> <p>COURSE record <b>should be correct</b> for the ENROLMENT records to be considered.<br/> Exact spelling required.<br/> No marks if additional tables/records are written.<br/> Ignore case and spacing defects.</p> <p><b>Format:</b><br/> Reduce 0.5 marks <b>from the total mark</b> if a correct answer is written in table format. Ignore any existing table records that the student has repeated in his/her answer.</p>                                                                                          | ✗ | <p>1</p> <p>0.5</p> <p>0.5</p>              |
| 3(iv)  | <p>ENROLMENT, COURSE</p> <p>Exact spelling required.<br/> No marks if STUDENT table also written.<br/> Ignore case defects.<br/> No partial marks.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ✗ | 2                                           |
| 3(v)   | <p>Create a new table TEACHER having fields<br/> Teacher_id, Teacher_name, Teacher_phone with<br/> Teacher_id as the primary key.</p> <p>To COURSE table add new foreign key Teacher_id.</p> <p>Student can choose other similar names for the TEACHER table (e.g., INSTRUCTOR, LECTURER) and its primary key.</p> <p><b>ALTERNATIVE:</b></p> <p>Add a new table for teachers (<b>Note 1</b>).</p> <p>Change COURSE table (<b>Note 2</b>).</p> <p><b>Note 1:</b> If fields of the TEACHER table are listed, then <b>they have to be correct</b>.</p> <p><b>Note 2:</b> If a description is given about the change to the COURSE table, then <b>it has to be correct</b>.</p> |   | <p>0.5</p> <p>0.5</p> <p>0.5</p> <p>0.5</p> |

| Question                                                                                                                                                                   | Answer                                                                          | Marks | Information                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4                                                                                                                                                                          | A: 401 // =400                                                                  | 2     |                                                                                                                                                                                                    |
|                                                                                                                                                                            | B: INPUT // GET // READ // ENTER                                                | 1     |                                                                                                                                                                                                    |
|                                                                                                                                                                            | C: bmi = weight / (height * height)                                             | 1     | <b>Accepted:</b><br>bmi = weight / height <sup>2</sup><br>× and ÷                                                                                                                                  |
|                                                                                                                                                                            | D: bmi < 18.5 THEN                                                              | 1     | THEN not compulsory                                                                                                                                                                                |
|                                                                                                                                                                            | E: bmi < 25.0 THEN                                                              | 1     | THEN not compulsory                                                                                                                                                                                |
|                                                                                                                                                                            | F: IF bmi <=29.9 THEN<br>OUTPUT "Overweight"<br>ELSE<br>OUTPUT "Obese"<br>ENDIF | 2     | <b>Accepted:</b><br>IF bmi > 29.9 THEN<br>OUTPUT "Obese"<br>ELSE<br>OUTPUT "Overweight"<br>ENDIF<br><br>THEN not compulsory;<br>Double/single quotes<br>essential for the two<br>OUTPUT statements |
|                                                                                                                                                                            | G: Count = Count + 1                                                            | 2     |                                                                                                                                                                                                    |
| Ignore case.<br>Ignore minor spelling mistakes in 'Overweight' and 'Obese'. But variable names (bmi, weight, height, Count) must be exact. Ignore case defects in 'Count'. |                                                                                 |       |                                                                                                                                                                                                    |

| Question | Answer                                                                                                                                                                                                                                                                 | Marks |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 5(i)     | <p>P → SMTP<br/>Q → HTTP<br/>R → IP address<br/>S → URL</p> <p>Award 0.5 marks for each.<br/>Ignore case.</p>                                                                                                                                                          | 2     |
| 5(ii)    | <p>1 → F<br/>2 → A<br/>3 → D<br/>4 → G<br/>5 → B<br/>6 → H</p> <p>Award 0.5 marks for each.<br/>Ignore case.</p> <p>Writing the example in text is acceptable. But the text must be exactly as given in the <b>List</b> in the question. Ignore case in such text.</p> | 3     |
| 5(iii)   | <p>1: title<br/>2: body<br/>3: center<br/>4: h2<br/>5: ul<br/>6: li<br/>7: table<br/>8: th<br/>9: td<br/>10: a</p> <p>Award 0.5 marks for each.<br/>Ignore case.<br/>Angle brackets <b>not</b> acceptable.</p>                                                         | 5     |

| Question                                   | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Marks                     |              |                          |                                                                                  |                                            |                                                |   |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------|--------------------------|----------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------|---|
| 6(i)                                       | <div>(a) <div>JPG</div><div>JPG files are compressed while BMP files are not // JPG uses lossy compression // BMP files are uncompressed and lossless.</div><div>Choosing JPG is sufficient for full marks.</div></div> <div>(b) <div>BMP</div></div>                                                                                                                                                                                                                                                                                                                  | <div>1</div> <div>1</div> |              |                          |                                                                                  |                                            |                                                |   |
| 6(ii)                                      | <div>Any one of the following differences:</div> <table><thead><tr><th>Raster files</th><th>Vector files</th></tr></thead><tbody><tr><td>Images built from pixels</td><td><u>Uses</u> (mathematical equations / lines / curves) <u>to produce an image</u></td></tr><tr><td>Quality is lost when the size is increased</td><td>Quality is not lost when the size is increased</td></tr></tbody></table> <div>If more than one difference given, cut the extra ones and consider only the first one.</div> <div>Award 0.5 marks for each correct side of the row.</div> | Raster files              | Vector files | Images built from pixels | <u>Uses</u> (mathematical equations / lines / curves) <u>to produce an image</u> | Quality is lost when the size is increased | Quality is not lost when the size is increased | 1 |
| Raster files                               | Vector files                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                           |              |                          |                                                                                  |                                            |                                                |   |
| Images built from pixels                   | <u>Uses</u> (mathematical equations / lines / curves) <u>to produce an image</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                           |              |                          |                                                                                  |                                            |                                                |   |
| Quality is lost when the size is increased | Quality is not lost when the size is increased                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                           |              |                          |                                                                                  |                                            |                                                |   |
| 6(iii)                                     | <div>(a) <div>A – To select a (circular / elliptical) region of an image</div><div>B – To select a user specified area of an image</div><div>C – To insert text into an image</div><div>D – To select in an image, the regions with the same colour</div><div>Award 0.5 marks to each.</div><div>The word `image` not compulsory.</div></div> <div>(b) <div>To copy pixels from one part of a graphic to another // To copy an image or a part of it to another place</div></div>                                                                                      | <div>2</div> <div>1</div> |              |                          |                                                                                  |                                            |                                                |   |
| 6(iv)                                      | <div>A static frame in a series of frames to be used in the creation of an animation // Drawings that define the starting and ending frames of a transition // Frames at the beginning and end of a motion // Change points in an animation</div>                                                                                                                                                                                                                                                                                                                      | 1                         |              |                          |                                                                                  |                                            |                                                |   |

|       |                                                                      |                                                                                     |     |
|-------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----|
| 6(v)  | P - Select a portion of an opened audio file                         |                                                                                     | 1   |
|       | Q - To (trim / crop) an audio // To remove audio outside selection   |                                                                                     | 0.5 |
|       | R - To make the selection silent // To remove audio inside selection |                                                                                     | 0.5 |
|       | The word 'audio' not compulsory.                                     |                                                                                     |     |
| 6(vi) | A                                                                    |  | 1   |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Marks |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 7(i)     | <p><u>numbers</u>, <u>(symbols / special characters)</u>, <u>letters</u></p> <p><u>sufficiently long</u> // mix of the components // difficult to guess // (Or another characteristic that the Chief Examiner can approve)</p> <p>The four mark points underlined. Award 0.5 marks for each mark point.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2     |
| 7(ii)    | The practice of taking someone else's (work / ideas) and passing them as one's own                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1     |
| 7(iii)   | <p><b>Any two from:</b></p> <ul style="list-style-type: none"> <li>• Using a voltage stabilizer</li> <li>• Using a surge protector</li> <li>• Avoiding physical damage (e.g., falls, shocks)</li> <li>• Protecting from (sun / dust / moisture / liquids)</li> <li>• Protecting from viruses</li> <li>• Keeping the magnets away from hard disks</li> <li>• Providing adequate cooling and ventilation</li> <li>• Doing proper maintenance</li> <li>• Doing hard disk defragmentation</li> <li>• Doing hard disk partitioning</li> <li>• (Doing Disk cleanup / Removing unnecessary files on hard disk)</li> <li>• Doing necessary (system / hardware / software) upgrades</li> <li>• Doing necessary (system / software) updates</li> <li>• Using a UPS</li> <li>• Unplugging it from power after use</li> </ul> <p>Award 1 mark for each correct answer up to a maximum of 2.<br/>If more than two given, cut the extra ones and consider only the first two.</p> | 2     |
| 7(iv)    | <p><b>Any one from:</b></p> <ul style="list-style-type: none"> <li>• installing only authorized software</li> <li>• Protecting from viruses // Installing an antivirus software</li> <li>• Keeping the software updated</li> <li>• Not opening attachments from unverified emails</li> <li>• Activating a firewall</li> <li>• Implementing access privileges (e.g., passwords)</li> <li>• Using a UPS</li> </ul> <p>If more than one given, cut the extra ones and consider only the first one.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1     |

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 7(v)   | (a) <b>Any one from:</b> <ul style="list-style-type: none"> <li>Using a good folder scheme without storing files everywhere</li> <li>Using a good file naming method</li> </ul> <p>If more than one given, cut the extra ones and consider only the first one.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1 |
|        | (b) <b>Any one from:</b> <ul style="list-style-type: none"> <li>When finishing each day's work, deleting all unwanted files that one created during that day</li> <li>Not unnecessarily (downloading files / installing software)</li> <li>Uninstalling all unused software</li> <li>Using disk cleanup (options / tools)</li> <li>Removing temporary files</li> <li>Empty the contents in the (recycle / trash) bin</li> <li>Storing the wanted files (on external storage / in the cloud)</li> <li>Storing the wanted files compressed</li> </ul> <p>If more than one given, cut the extra ones and consider only the first one.</p>                                                                                                                                                                                                           | 1 |
| 7(vi)  | Keeping the top of screen (at eye level / slightly lower the eye level)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1 |
| 7(vii) | <b>Any one from:</b> <ul style="list-style-type: none"> <li><u>Can get real-time statistics about the citizens in the District</u></li> <li><u>Can find the real-time population of the District</u></li> <li><u>Can find real-time population density of different areas of the District</u></li> <li>Given a particular day, can find the citizens whose birthdays fall on that day</li> <li><u>Can find the real-time (male / female) distribution in the District</u></li> <li><u>Can find in real-time the number of people in different age groups and where they live</u></li> <li>Can be used to build (relationship / generation) trees</li> <li>Eases doing a census</li> <li>(Or any other benefit that the Chief Examiner can approve)</li> </ul> <p>If more than one given, cut the extra ones and consider only the first one.</p> | 1 |