

## **Aga Khan University Examination Board**

### Notes from E-Marking Centre SSC-I Computer Science Annual Examinations 2023

#### **Introduction**

This document has been prepared for the teachers and candidates of Secondary School Certificate (SSC) Part I (Class IX) Computer Science. It contains comments on candidates' responses to the 2023 SSC-I Examination indicating the quality of the responses and highlighting their relative strengths and weaknesses.

#### **E-Marking Notes**

This includes overall comments on candidates' performance on every question and *some* specific examples of candidates' responses which support the mentioned comments. Please note that the descriptive comments represent an overall perception of the better and weaker responses as gathered from the e-marking session. However, the candidates' responses shared in this document represent some specific example(s) of the mentioned comments.

Teachers and candidates should be aware that examiners may ask questions that address the Student Learning Outcomes (SLOs) in a manner that requires candidates to respond by integrating knowledge, understanding and application skills they have developed during the course of study. Candidates are advised to read and comprehend each question carefully before writing the response to fulfil the demand of the question.

Candidates need to be aware that the marks allocated to the questions are related to the answer space provided on the examination paper as a guide to the length of the required response. A longer response will not in itself lead to higher marks. Candidates need to be familiar with the command words in the SLOs which contain terms commonly used in examination questions. However, candidates should also be aware that not all questions will start with or contain one of the command words. Words such as 'how', 'why' or 'what' may also be used.

#### **General Observations**

Most candidates achieved success in constructing good responses specifically in the following topics.

- Network Topologies
- Types of Operating System
- List in HTML

Nonetheless, it is essential for teachers to concentrate on the following concepts and provide candidates with more practice to foster a solid understanding.

- Secondary storage devices
- Analog and digital signals

**Note: Candidates' responses shown in this report have not been corrected for grammar, spelling, format, or information.**

## Detailed Comments

### Constructed Response Questions (CRQs)

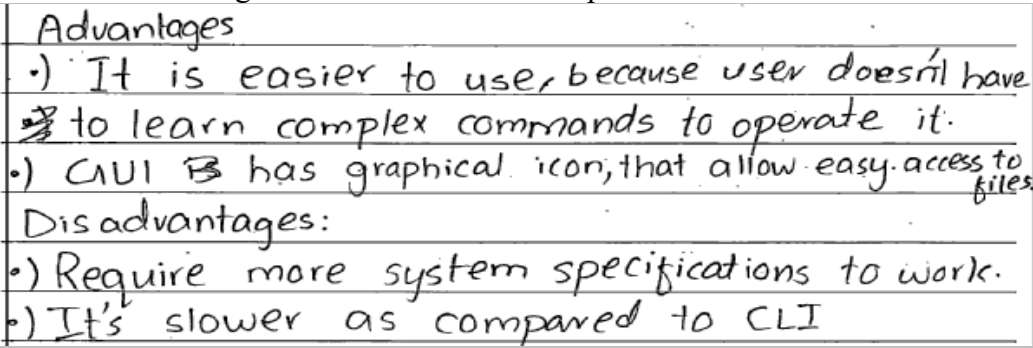
Question No. 1	
<b>Question Text</b>	Computer operating systems have evolved since the first computers used the Command Line Interface (CLI). Nowadays, many computers use Graphical User Interface (GUI). Give TWO advantages and TWO disadvantages of using GUI.
<b>SLO No.</b>	2.1.3
<b>SLO Text</b>	Differentiate among the following three types of user interfaces provided by OS: a. Command Line Interface (CLI), e.g. DOS and UNIX b. Menu Driven Interface (MDI), e.g. Novel c. Graphical User Interface (GUI), e.g. Macintosh, Linux
<b>Max Marks</b>	4
<b>Cognitive Level</b>	U*
<b>Checking Hints</b>	1 mark for each correct advantage (Any TWO required) 1 mark for each correct disadvantage (Any TWO required)
<b>Overall Performance</b>	The majority of candidates demonstrated a satisfactory grasp of the core concepts differentiating GUIs and CLIs. They successfully identified the two main types of user interfaces and outlined their basic distinctions, such as GUIs employing graphical elements like windows, menus, and icons, while CLIs utilise text commands. However, a notable portion of the cohort could benefit from further elaboration on specific differentiators between these interfaces. Overall, the cohort's performance was very good, highlighting a solid understanding of GUI and CLI fundamentals.
<b>Description of Better Responses</b>	Better responses displayed a good understanding of the advantages of GUI over CLI. Candidates effectively highlighted key points, supported by practical experience, particularly on Windows operating system. Many candidates' observation on GUI's user-friendliness and ease of learning, in contrast to CLI's reliance on memorising complex commands, was insightful. These candidates highlighted the correct disadvantages of GUI over CLI mentioning the use of resources and speed.
<b>Image of Better Response</b>	 <p>The image shows a handwritten student response on lined paper. It is divided into two sections: 'Advantages' and 'Disadvantages'. Under 'Advantages', there are two bullet points: '•) It is easier to use, because user doesn't have to learn complex commands to operate it.' and '•) GUI has graphical icon, that allow easy access to files'. Under 'Disadvantages', there are two bullet points: '•) Require more system specifications to work.' and '•) It's slower as compared to CLI'.</p>
<b>Description of Weaker Responses</b>	Some responses regarding advantages and disadvantages of GUI showed room for improvement. Some candidates mentioned GUI as an acronym, the explanation lacked specificity and depth. The points on ease of use could have been further elaborated with relevant examples. To enhance their response, the candidates should focus on providing precise advantages and disadvantages of GUI, like ease of use, use of resources, execution time etc.

Image of Weaker Response

GUI stands for graphical user interface. It is used in our computers and this is more than easy to CLI and CLI is the better than the GUI because they are Command Line Interface and they all are in operating system.

**Suggestions for improvement (Highlighted part)**

How to Approach SLO	Pedagogy** Used for that SLO	Assessment Strategies
<ul style="list-style-type: none"> <li>Understand the expectations of the command words</li> <li>Look at the cognitive level</li> <li>Identify the content that is required to answer that question (both in terms of understanding of concepts and any skills that may be required like analysing or evaluating)</li> <li>Go through the past paper questions on that particular concept</li> <li>Refer to the resource guide for extra resources</li> </ul>	<ul style="list-style-type: none"> <li>Story Board</li> <li>Cause and Effect</li> <li>Fish and Bone</li> <li>Concept mapping</li> <li>Audio Visual resources</li> <li>Think, pair and share</li> <li>Questioning Technique (Socratic approach)</li> <li>Practical Demonstration</li> </ul> <p>** For description of each pedagogy, refer to Annexure A</p>	<ul style="list-style-type: none"> <li>Past paper questions</li> <li>Discussion on E-Marking Notes</li> <li>AKU-EB Digital Learning Solution powered by Knowledge Platform</li> </ul>

**Any Additional Suggestion:**

Teachers are advised to show a practical demonstration to the candidates such as showing them the Windows, Android, Linux, Unix and Mac operating system and differentiate amongst them in terms of interface. It will help them to understand the topic in depth.

\*K = Knowledge U = Understanding A = Application and other higher-order cognitive skills

**Question No. 2**

<b>Question Text</b>	Give any TWO differences between analog and digital signals.
<b>SLO No.</b>	4.1.3
<b>SLO Text</b>	Differentiate between analog and digital signals.
<b>Max Marks</b>	2
<b>Cognitive Level</b>	U
<b>Checking Hints</b>	1 mark for each correct difference. (TWO required) No mark for any incomplete difference (point written in any one column) Note: marks to be awarded for accuracy whether mentioned in digital or analog
<b>Overall Performance</b>	The candidates' responses to the question on analog and digital signals displayed a mixed level of understanding. While some candidates demonstrated a solid grasp of the key concepts, others appeared to confuse these concepts with analog and digital computers. To enhance their

	understanding, candidates should focus specifically on the attributes of analog and digital signals, avoiding any confusion with computing terminologies.				
<b>Description of Better Responses</b>	Better responses correctly identified two key characteristics of analog signals, highlighting their continuous nature and ability to represent any value within a range as periodic voltage or current fluctuations. Furthermore, the candidates accurately recognised a key feature of digital signals, describing them as discrete with a limited number of values, and emphasised their higher speed but lower accuracy compared to analog signals.				
<b>Image of Better Response</b>	<table border="1"> <thead> <tr> <th>Analog</th> <th>Digital</th> </tr> </thead> <tbody> <tr> <td>1) It sends data in voltages and waves forms. 2) They are more accurate but not fast.</td> <td>It sends data in Binary forms 0s and 1s. 2) They are less accurate but are very fast.</td> </tr> </tbody> </table>	Analog	Digital	1) It sends data in voltages and waves forms. 2) They are more accurate but not fast.	It sends data in Binary forms 0s and 1s. 2) They are less accurate but are very fast.
Analog	Digital				
1) It sends data in voltages and waves forms. 2) They are more accurate but not fast.	It sends data in Binary forms 0s and 1s. 2) They are less accurate but are very fast.				
<b>Description of Weaker Responses</b>	Weaker responses highlighted several misunderstandings, including the claim that analog signals are transmitted solely through guided media and digital signals only through unguided media is incorrect. It is important to note that both signal types can be transmitted through both guided and unguided media. Furthermore, the candidates should have elaborated on how these signals travel through the transmission medium, rather than just describing their continuous and discrete characteristics.				
<b>Image of Weaker Response</b>	<p>The analog receive signals through wires but digital signals receive signals wireless.</p> <p>The analog is controlled by us. but the digital one is automatic.</p>				

#### Suggestions for improvement (Highlighted part)

How to Approach SLO	Pedagogy Used for that SLO	Assessment Strategies
<ul style="list-style-type: none"> <li>Understand the expectations of the command words</li> <li>Look at the cognitive level</li> <li>Identify the content that is required to answer that question (both in terms of understanding of concepts and any skills that may be required like analysing or evaluating)</li> <li>Go through the past paper questions on that particular concept</li> <li>Refer to the resource guide for extra resources</li> </ul>	<ul style="list-style-type: none"> <li>Story Board</li> <li>Cause and Effect</li> <li>Fish and Bone</li> <li>Concept mapping</li> <li>Audio Visual resources</li> <li>Think, pair and share</li> <li>Questioning Technique (Socratic approach)</li> <li>Practical Demonstration</li> </ul>	<ul style="list-style-type: none"> <li>Past paper questions</li> <li>Discussion on E-Marking Notes</li> <li>AKU-EB Digital Learning Solution powered by Knowledge Platform</li> </ul>

#### Any Additional Suggestion:

Teachers are advised to use real-life examples to explain the concept for the better understanding of the candidates such as the transmission of sound from microphone to speakers .

### Question No. 3

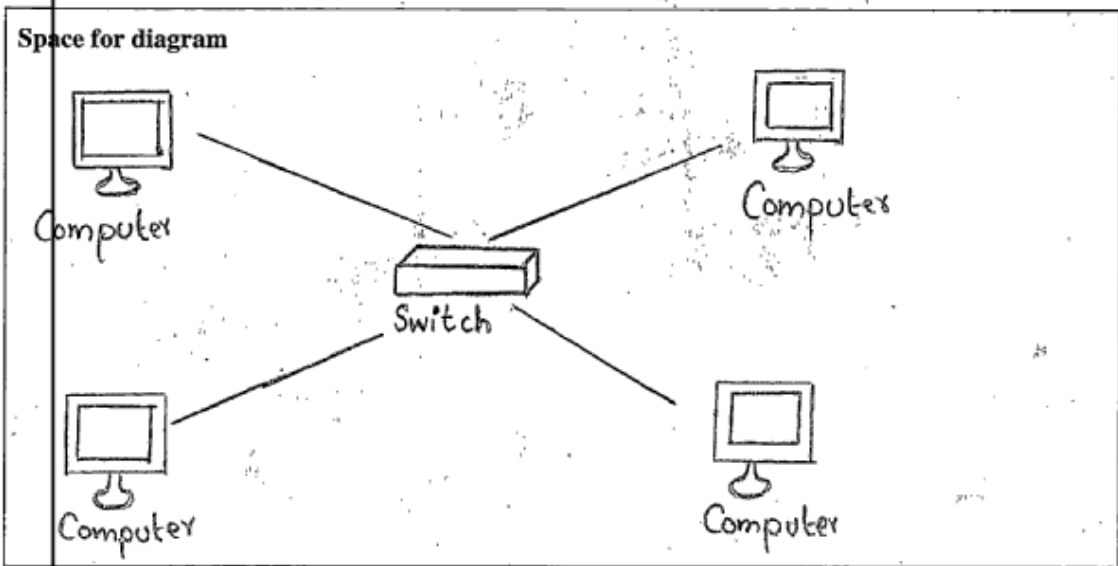
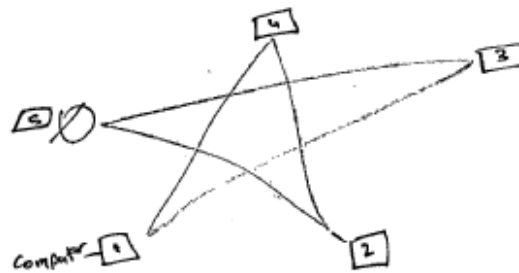
<b>Question Text</b>	a. Draw the diagram of star topology. b. Give any ONE advantage of using this topology.
<b>SLO No.</b>	5.2.3
<b>SLO Text</b>	Explain the following network topologies with the help of diagrams, i.e. bus topology, ring topology, star topology and mesh topology;
<b>Max Marks</b>	2
<b>Cognitive Level</b>	U
<b>Checking Hints</b>	1 mark for the correct diagram. 1 mark for the advantage (Any ONE required).
<b>Overall Performance</b>	Most of the cohort's responses in this question showed commendable performance, showcasing a good grasp of the layout of star topology along with its advantages. However, few candidates still seemed uncertain in their understanding of the star topology mixing the concept with mesh topology.
<b>Description of Better Responses</b>	Better responses on star topology demonstrated a clear understanding of the key characteristics of the topology. Candidates correctly identified star topology as a network where each node connects to a central hub or switch. Additionally, to mention the advantage of fault-tolerance showcased their good understanding of the topic. Moreover, such responses were well-structured and informative, effectively outlining the advantages of star topology.
<b>Image of Better Response</b>	<div style="border: 1px solid black; padding: 10px;"> <p><b>Space for diagram</b></p>  <p>b. Give any ONE advantage of using this topology. <span style="float: right;">(1 Mark)</span></p> <p><u>If a single wire is damaged in this topology, then the rest of the topology will not be affected by that.</u></p> </div>
<b>Description of Weaker Responses</b>	Weaker responses on star topology includes the wrong representation of the nodes connecting to a central switch, In actual, nodes connect directly to a central hub or switch. Most of the candidates mixed up the concept of star topology and mesh topology. Some candidates either mentioned wrong advantages or did not write it.

Image of Weaker Response

Space for diagram



b. Give any ONE advantage of using this topology.

(1 Mark)

I + \$ is very cheap.

**Suggestions for improvement (Highlighted part)**

How to Approach SLO	Pedagogy Used for that SLO	Assessment Strategies
<ul style="list-style-type: none"> <li>Understand the expectations of the command words</li> <li>Look at the cognitive level</li> <li>Identify the content that is required to answer that question (both in terms of understanding of concepts and any skills that may be required like analysing or evaluating)</li> <li>Go through the past paper questions on that particular concept</li> <li>Refer to the resource guide for extra resources</li> </ul>	<ul style="list-style-type: none"> <li>Story Board</li> <li>Cause and Effect</li> <li>Fish and Bone</li> <li>Concept mapping</li> <li>Audio Visual resources</li> <li>Think, pair and share</li> <li>Questioning Technique (Socratic approach)</li> <li>Practical Demonstration</li> </ul>	<ul style="list-style-type: none"> <li>Past paper questions</li> <li>Discussion on E-Marking Notes</li> <li>AKU-EB Digital Learning Solution powered by Knowledge Platform</li> </ul>

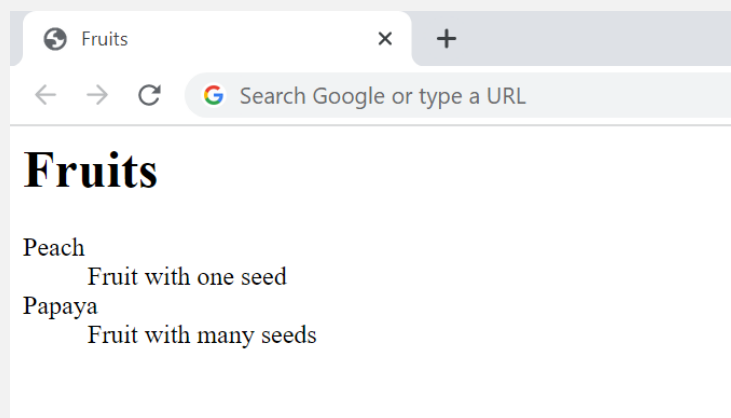
**Any Additional Suggestion:**

Teachers are advised to encourage students to see the applications of these topologies around themselves and to practice the simulations on different software like Packet Tracer.

### Question No. 4

**Question Text**

Consider the given image of a web page.



Write the HTML code to display the web page shown in the given image.

**SLO No.**

6.4.1

**SLO Text**

Write HTML code to create: a. ordered list b. unordered list c. definition list.

**Max Marks**

5

**Cognitive Level**

A

**Checking Hints**

1 mark for <html> and </html> tags  
1 mark for <body> and </body> tags  
1 mark for <dl> and </dl> tag on correct place  
1 mark for <dt> and </dt> tag on correct place  
1 mark for <dd> and </dd> tag on correct place

**Overall Performance**

The cohort's overall performance in this question was very good, indicating a good understanding of HTML tags. However, a few candidates' responses fell short of expectations, suggesting inadequate preparation and lack of practice with HTML tags. Some responses displayed inappropriate use of random tags or no understanding of using definition list tags.

**Description of Better Responses**

The better responses demonstrated a strong understanding of HTML coding principles. The correct placement of HTML tags in the order they appear was noteworthy, ensuring accurate output display in browsers. Additionally, closing all tags properly indicated valid HTML code and facilitated correct rendering. Moreover, most of such responses were well-formatted, with appropriate indentation, making the code easily readable and comprehensible.

<p><b>Image of Better Response</b></p>	<pre> &lt;html&gt;   &lt;head&gt; &lt;title&gt; Fruits &lt;/title&gt; &lt;/head&gt;   &lt;body&gt;     &lt;h2&gt; Fruits &lt;/h2&gt;     &lt;br&gt;     &lt;dl&gt;       &lt;dt&gt; Peach &lt;/dt&gt;       &lt;dd&gt; Fruit with one seed &lt;/dd&gt;       &lt;dt&gt; Papaya &lt;/dt&gt;       &lt;dd&gt; Fruit with many seeds &lt;/dd&gt;     &lt;/dl&gt;   &lt;/body&gt; &lt;/html&gt; </pre>
<p><b>Description of Weaker Responses</b></p>	<p>Weaker responses missed dd, dl, and dt tags, necessary to form a definition list which indicates the lack of understanding of concept. The responses were formatted incorrectly, lacking correct indentation, thus making the code challenging to read. To enhance the understanding, the candidates should focus on including the required tags and improve code formatting for better readability.</p>
<p><b>Image of Weaker Response</b></p>	<pre> &lt;doc&gt; &lt;title&gt; fruits &lt;/title&gt; &lt;body&gt; &lt;head&gt; &lt;b&gt; fruits &lt;/b&gt; &lt;/head&gt; &lt;p&gt; Peach &lt;br&gt; fruit with one seed &lt;/br&gt; &lt;br&gt; Papaya &lt;/br&gt; &lt;br&gt; fruit with many seeds &lt;/br&gt; &lt;/body&gt; </pre>

**Suggestions for improvement (Highlighted part)**

How to Approach SLO	Pedagogy Used for that SLO	Assessment Strategies
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- Refer to the resource guide for extra resources

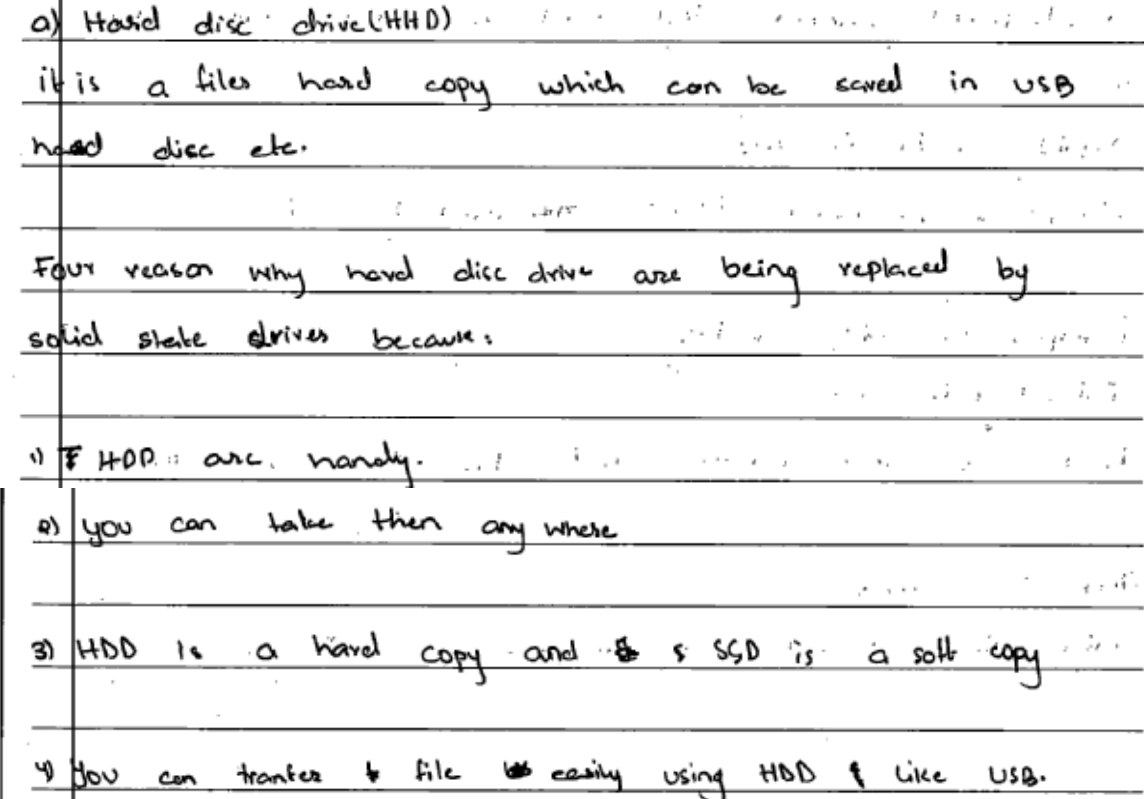
### Any Additional Suggestion:

Teachers are encouraged to familiarise candidates by making them practice more of the tags used in HTML such as asking them to develop web pages that contain list tags, or asking them to change the font size and color or changing the background color etc.

### Extended Response Questions (ERQs)

These questions offered a choice between part **a** and **b**.

Question No. 5a	
<b>Question Text</b>	a. Describe the term hard disk drive (HDD). b. Give any FOUR reasons why hard disk drives (HDD) are being replaced by solid-state drives (SSD).
<b>SLO No.</b>	1.3.5
<b>SLO Text</b>	Compare primary and secondary storage devices on the basis of location with respect to Central Processing Unit (CPU), cost, storage capacity, average access time, direct/ indirect data processing, means of storing information such as semiconductor, magnetic disks, magnetic tape and optical discs.
<b>Max Marks</b>	6
<b>Cognitive Level</b>	U
<b>Checking Hints</b>	1 mark for each highlighted statement for HDD (TWO required) 1 mark for each correct reason (FOUR required)
<b>Overall Performance</b>	As this was a choice questions, less number of candidates opted to attempt this question. The cohort's responses to this question demonstrated a mix of understanding levels. While some candidates showed clear and accurate concepts, others showed inadequate understanding. It was observed that some candidates based their answers on general practical experience, resulting in incorrect responses. Due to missing concepts, full marks were not awarded to several candidates. To enhance the performance in these types of responses in future, it is essential to reinforce the core concepts through structured teaching and practice. Encouraging candidates to rely on their foundational knowledge and providing clear explanations will help improve their responses.
<b>Description of Better Responses</b>	The better responses effectively described the concept of a hard disk drive (HDD) and the reasons behind its replacement with solid-state drives (SSDs). They accurately described HDDs as magnetic disks and provided four reasons why SSDs are preferred that is lighter weight, reduced heat production, space efficiency, and faster performance.
<b>Image of Better Response</b>	<p>Ans) Hard disk drive:- It is a <u>magnetic storage</u>. Hard disk drive has a <u>platter</u> which is further divided into <sup>spiral</sup> <u>tracks</u> and <u>sectors</u>. It has more capacity than CD.</p> <p>Reasons for replacing HDD:-</p> <ol style="list-style-type: none"> <li>1- Unlike Hard disk drive (HDD) solid-state drive (SSD) does not have any moving parts.</li> <li>2- SSD is compact which reduces the size of computers.</li> <li>3- It is lighter in weight than HDD.</li> <li>4- SSD is more durable than HDD.</li> <li>5- It generates less heat.</li> </ol>

<b>Description of Weaker Responses</b>	<p>Weaker responses lacked clarity in providing the definition and description of a hard disk drive (HDD), including its construction and functionality. Many such responses were also unable to justify why solid-state drives (SSDs) may be preferable to HDDs, especially for tasks like “transfer a file.” To improve their answers, the candidates should provide advantages of SSD considering its construction and properties. Additionally, they could elaborate on the advantages of SSDs, such as faster data access, lower power consumption, and durability, which may make them more suitable for certain tasks.</p>
<b>Image of Weaker Response</b>	

**Suggestions for improvement (Highlighted part)**

How to Approach SLO	Pedagogy Used for that SLO	Assessment Strategies
<ul style="list-style-type: none"> <li>Understand the expectations of the command words</li> <li>Look at the cognitive level</li> <li>Identify the content that is required to answer that question (both in terms of understanding of concepts and any skills that may be required like analysing or evaluating)</li> <li>Go through the past paper questions on that particular concept</li> <li>Refer to the resource guide for extra resources</li> </ul>	<ul style="list-style-type: none"> <li>Story Board</li> <li>Cause and Effect</li> <li>Fish and Bone</li> <li>Concept mapping</li> <li>Audio Visual resources</li> <li>Think, pair and share</li> <li>Questioning Technique (Socratic approach)</li> <li>Practical Demonstration</li> </ul>	<ul style="list-style-type: none"> <li>Past paper questions</li> <li>Discussion on E-Marking Notes</li> <li>AKU-EB Digital Learning Solution powered by Knowledge Platform</li> </ul>

**Any Additional Suggestion:**

Teachers are advised to focus on the particular functions of SSDs using Audio Visual resources and show candidates the HDD and SSD in real for better understanding on their construction.

**Question No. 5b**

<b>Question Text</b>	a. Name the basic operations of a computer. b. Describe each basic operation of a computer.
<b>SLO No.</b>	1.4.2
<b>SLO Text</b>	Describe the basic operations of the data processing cycle using block diagram: a. input operation    b. processing operation    c. storage operation    d. output operation.
<b>Max Marks</b>	6
<b>Cognitive Level</b>	U
<b>Checking Hints</b>	1 mark for naming TWO operations (FOUR operations required). No marks will be awarded if only one operation is named. 1 mark for each description (FOUR required). No marks will be awarded if only one name is written. 1 mark will be awarded if only three names are written.
<b>Overall Performance</b>	As this was the choice question, this part of the question received a high attempt rate from candidates. While the overall performance was above average, some candidates confused the concept with the fundamental operations of an operating system. To improve, candidates should focus on clearly distinguishing between basic operations of a computer and operating system's operations. The candidates' effort showcases a good grasp of basic computer principles, and fostering continued exploration will enhance their overall knowledge in this area.
<b>Description of Better Responses</b>	Better responses effectively identified and described key concepts of data processing cycle, providing clear definitions and a comprehensive understanding. The use of relevant keywords like input, process, output and storage strengthened the response, ensuring essential points were covered.
<b>Image of Better Response</b>	
<b>Description of Weaker Responses</b>	Weaker responses mostly confused the concepts of computer operations with those of the operating system. The original question focused on the basic operations of a computer, i.e., input, process, output and storage, but the many such candidates addressed the operations of the operating system instead, i.e., file management, booting, device management, user management etc. This indicates a misunderstanding of the question's context. To improve, the candidates should concentrate on understanding the SLO and questions correctly.

Image of Weaker Response

Booting, Process Management, File Management, User Management etc.

Booting:

Booting is a process of starting the computer screen.

File Management:

In File management saved organization, retrieval, videos and images files.

User Management:

It use to user are data saved and doesn't enter name and password.

**Suggestions for improvement (Highlighted part)**

How to Approach SLO	Pedagogy Used for that SLO	Assessment Strategies
<ul style="list-style-type: none"> <li>Understand the expectations of the command words</li> <li>Look at the cognitive level</li> <li>Identify the content that is required to answer that question (both in terms of understanding of concepts and any skills that may be required like analysing or evaluating)</li> <li>Go through the past paper questions on that particular concept</li> <li>Refer to the resource guide for extra resources</li> </ul>	<ul style="list-style-type: none"> <li>Story Board</li> <li>Cause and Effect</li> <li>Fish and Bone</li> <li>Concept mapping</li> <li>Audio Visual resources</li> <li>Think, pair and share</li> <li>Questioning Technique (Socratic approach)</li> <li>Practical Demonstration</li> </ul>	<ul style="list-style-type: none"> <li>Past paper questions</li> <li>Discussion on E-Marking Notes</li> <li>AKU-EB Digital Learning Solution powered by Knowledge Platform</li> </ul>

**Any Additional Suggestion:**

Teachers are encouraged to use real-life examples such as sharing the recipe of any dish and explain its steps by mapping it with Data processing cycle. After that teacher can share another scenario and ask the candidates to identify the steps.

**Question No. 6a**

<b>Question Text</b>	a. Write TWO differences between guided (wired) and unguided (wireless) media. b. Describe any TWO examples of guided media.
<b>SLO No.</b>	4.2.1
<b>SLO Text</b>	Compare guided (wired) and unguided (wireless) media with examples, i.e. twisted pair cable, coaxial cable, optic fibre cable, radio waves, microwave, infra-red, Bluetooth and satellite.

<b>Max Marks</b>	6						
<b>Cognitive Level</b>	U						
<b>Checking Hints</b>	1 mark for each difference (Any TWO required). 1 mark for each statement in each description (Any TWO required for each example). No marks will be awarded if the difference is incomplete.						
<b>Overall Performance</b>	As this was an ERQ question, almost half of the cohort attempted this part. The cohort's overall performance in this question was commendable, with most candidates effectively differentiating between guided and unguided media. They provided accurate descriptions and examples of guided media. However, a few candidates showed some confusion, mixing concepts and struggling to write the differences accurately. Additionally, some responses contained inappropriate or general conceptual answers. To improve, candidates should focus on enhancing their understanding of guided and unguided media concepts, ensuring precise and contextually relevant examples.						
<b>Description of Better Responses</b>	Better responses effectively distinguished between guided and unguided media. They accurately mentioned that guided media require pathways to transmit signals, whereas unguided media can travel through open space. The examples provided for guided media, such as twisted pair cables and fibre optic cables, were precise and relevant. The transmission speed, structure and working was discussed.						
<b>Image of Better Response</b>	<table border="1"> <thead> <tr> <th>(i) <u>GUIDED (WIRED) MEDIA</u></th> <th><u>UNGUIDED (WIRELESS) MEDIA</u></th> </tr> </thead> <tbody> <tr> <td>1. In guided media, data signals travel through a proper pathway (in cables)</td> <td>2. In un-guided media, data signals travel in open space (in the form of waves)</td> </tr> <tr> <td>2. In it, if any part of cable gets broken, it doesn't affect the whole system</td> <td>2. In it, if any part of it gets broken/damaged, it does affect the whole system.</td> </tr> </tbody> </table> <p>(ii) Its 2 examples are :- Twisted pair cables and fibre optic cables</p> <p>1. <u>Twisted pair cables</u> :- Twisted pair cable is the most commonly used cable. It has pairs of cables twisted around one another. It is mostly used as television cables. Its speed ranges from 200 kbps to 500 kbps. Cross-talk mostly occurs in twisted-pair cables.</p> <p>2. <u>Fibre-optic cables</u> :- These are the thin hair-like strands which are converting light energy into electrical signals which are then also converted. It is the most fast communication medium which can convert million of bits per second (mbps)...</p>	(i) <u>GUIDED (WIRED) MEDIA</u>	<u>UNGUIDED (WIRELESS) MEDIA</u>	1. In guided media, data signals travel through a proper pathway (in cables)	2. In un-guided media, data signals travel in open space (in the form of waves)	2. In it, if any part of cable gets broken, it doesn't affect the whole system	2. In it, if any part of it gets broken/damaged, it does affect the whole system.
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1. In guided media, data signals travel through a proper pathway (in cables)	2. In un-guided media, data signals travel in open space (in the form of waves)						
2. In it, if any part of cable gets broken, it doesn't affect the whole system	2. In it, if any part of it gets broken/damaged, it does affect the whole system.						
<b>Description of Weaker Responses</b>	Weaker responses contained inaccuracies regarding examples of guided media. Some candidates mentioned buses and cache memory as guided media, while others mentioned that guided media is difficult to use while unguided media is easy to use, which is incorrect. Guided media refers to using cables for signal transmission, such as twisted pair, coaxial, and fiber optic cables. Additionally, the candidates misunderstood the concept of unguided media, as it involves wireless signal transmission through the air. To enhance, the candidates should see the examples of guided and unguided media around them such as using ethernet cable in their desktop computers is an example of guided media and using W-Fi is an example of using unguided media.						

Image of Weaker Response

Guided Media	Unguided Media
1. Guided Media are difficult to use.	Unguided media are easy to use.
2. Guided media use wires to connect.	Unguided media are wireless.
Cache cable: It is a cable by which media are connected to each other and also transfer the memory or files it is very useful.	
Buses: It is a cable in which many wires are present and it is used in computers.	

**Suggestions for improvement (Highlighted part)**

How to Approach SLO	Pedagogy Used for that SLO	Assessment Strategies
<ul style="list-style-type: none"> <li>Understand the expectations of the command words</li> <li>Look at the cognitive level</li> <li>Identify the content that is required to answer that question (both in terms of understanding of concepts and any skills that may be required like analysing or evaluating)</li> <li>Go through the past paper questions on that particular concept</li> <li>Refer to the resource guide for extra resources</li> </ul>	<ul style="list-style-type: none"> <li>Story Board</li> <li>Cause and Effect</li> <li>Fish and Bone</li> <li>Concept mapping</li> <li>Audio Visual resources</li> <li>Think, pair and share</li> <li>Questioning Technique (Socratic approach)</li> <li>Practical Demonstration</li> </ul>	<ul style="list-style-type: none"> <li>Past paper questions</li> <li>Discussion on E-Marking Notes</li> <li>AKU-EB Digital Learning Solution powered by Knowledge Platform</li> </ul>
<p><b>Any Additional Suggestion:</b> Teachers are advised to use presentation and simulation videos to teach the concepts.</p>		

**Question No. 6b**

<b>Question Text</b>	Explain Local Area Network (LAN) and Wide Area Network (WAN) with the help of TWO characteristics and a diagram of each.
<b>SLO No.</b>	5.2.1
<b>SLO Text</b>	Differentiate among the following types of networks: a. Local Area Network (LAN) b. Metropolitan Area Network (MAN) c. Wide Area Network (WAN) d. Personal Area Network (PAN) e. Bluetooth network f. internet.
<b>Max Marks</b>	6
<b>Cognitive Level</b>	U

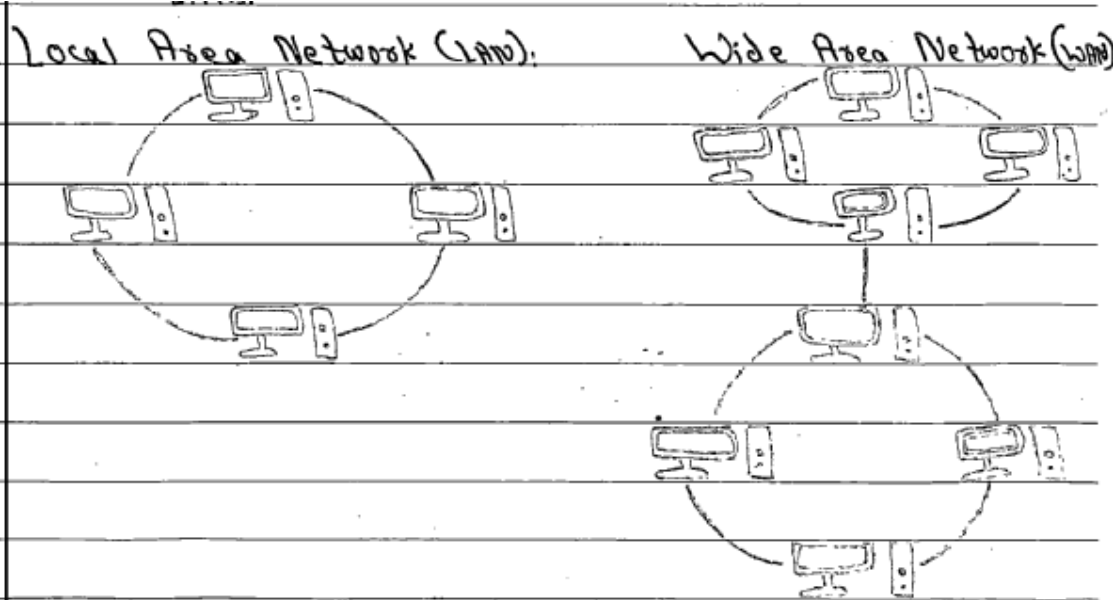
<b>Checking Hints</b>	<p>1 mark for the diagram of LAN.  1 mark for the diagram of WAN.  1 mark for the description of LAN.  1 mark for the description of WAN.  1 mark for any TWO characteristics of LAN.  1 mark for any TWO characteristics of WAN.</p>
<b>Overall Performance</b>	<p>As this was an ERQ question, almost half of the cohort attempted this part. The cohort's overall response to this question was above average. Most candidates provided appropriate descriptions of LAN and WAN, along with their distinguishing characteristics and diagrams. However, a few candidates struggled to draw the diagrams accurately and wrote the characteristics, indicating potential conceptual gaps. To improve, candidates should focus on reinforcing their understanding of LAN and WAN concepts, ensuring precise diagram representations and detailed characteristics. Encouraging more practice and providing visual aids may enhance their responses.</p>
<b>Description of Better Responses</b>	<p>Better responses included an accurate diagram depicting LAN and WAN and mentioned key characteristics (geographical area and speed) of both in the explanation. The diagram helped visually represent the concepts, enhancing the response's clarity. Additionally, the candidates' description of the characteristics demonstrated a good understanding of LAN and WAN.</p>
<b>Image of Better Response</b>	<p>b-(i) Local Area Network (LAN):</p> <ul style="list-style-type: none"> <li>*- LAN consists of several buildings in the city.</li> <li>*- It is fastest Network in all of others.</li> </ul> <p>(ii)- Wide Area Network (WAN):</p> <ul style="list-style-type: none"> <li>*- WAN is used for long distance communication. It connect the organizations etc in the country, or outside.</li> <li>*- It is slower than LAN made by connecting two or more LANs.</li> </ul>  <p>The image shows two hand-drawn diagrams. The first is titled 'Local Area Network (LAN)' and depicts four computer icons arranged in a circle, connected by lines, all contained within a larger circle. The second is titled 'Wide Area Network (WAN)' and shows two separate LANs, each with three computer icons in a circle, connected to each other by a vertical line, all contained within a larger outer circle.</p>
<b>Description of Weaker Responses</b>	<p>Weaker responses depicted unclarity in the understanding of key concepts of LAN and WAN. Candidates did not mention key characteristics of both networks like geographical area and speed, etc. The majority of the candidates were also unable to pictorially represent the network types. Use of simulation software can help the candidates to have better understanding of concept.</p>

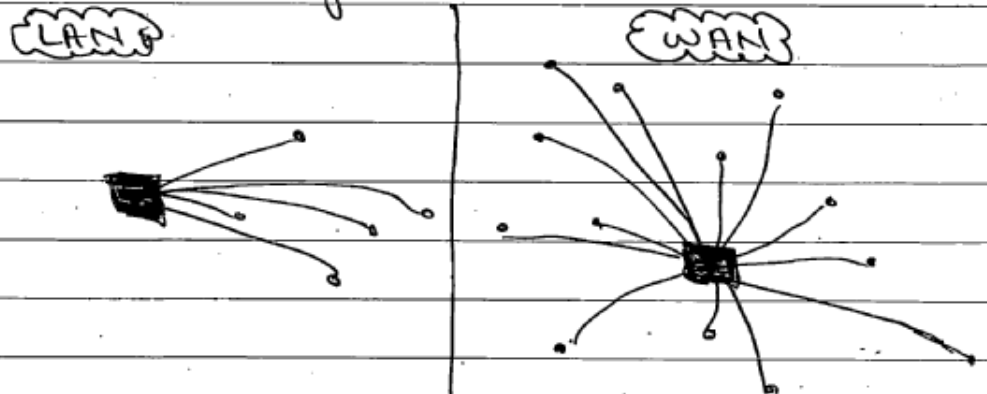
Image of Weaker Response

(LAN)  
 \* local area Network : This network are only located in area . The server can send network only local area.

(WAN)  
 \* wide area Network : This network are all the area and where it= needed . The server can send network only local area.

(WAN)  
 \* wide area Network : This network are all the area and where it= needed . The server can send network in any place and any area.

"Diagram"



Suggestions for improvement (Highlighted part)

How to Approach SLO	Pedagogy Used for that SLO	Assessment Strategies
<ul style="list-style-type: none"> <li>Understand the expectations of the command words</li> <li>Look at the cognitive level</li> <li>Identify the content that is required to answer that question (both in terms of understanding of concepts and any skills that may be required like analysing or evaluating)</li> <li>Go through the past paper questions on that particular concept</li> <li>Refer to the resource guide for extra resources</li> </ul>	<ul style="list-style-type: none"> <li>Story Board</li> <li>Cause and Effect</li> <li>Fish and Bone</li> <li>Concept mapping</li> <li>Audio Visual resources</li> <li>Think, pair and share</li> <li>Questioning Technique (Socratic approach)</li> <li>Practical Demonstration</li> </ul>	<ul style="list-style-type: none"> <li>Past paper questions</li> <li>Discussion on E-Marking Notes</li> <li>AKU-EB Digital Learning Solution powered by Knowledge Platform</li> </ul>

**Any Additional Suggestion:**

Teachers are advised to show real-life examples of LAN and WAN such as internet we use in school or at home.



## **Annexure A: Pedagogies Used for Teaching the SLOs**

### **Pedagogy: Storyboard**

**Description:** A visual pedagogy that uses a series of illustrated panels to present a narrative, encouraging creativity and critical thinking. It helps learners organise ideas, sequence events, and comprehend complex concepts through storytelling.

**Example:** In a Literature class, students are tasked with creating storyboards to visually retell a novel. They draw key scenes, write captions, and present their stories to the class, enhancing their reading comprehension and fostering their imagination.

### **Pedagogy: Cause and Effect**

**Description:** This pedagogy explores the relationships between actions and consequences. By analysing cause-and-effect relationships, learners develop a deeper understanding of how events are interconnected and how one action can lead to various outcomes.

**Example:** In a History class, students study the causes and effects of the Industrial Revolution. They research and discuss how technological advancements in manufacturing led to significant societal changes, such as urbanisation and labour reform movements.

### **Pedagogy: Fish and Bone**

**Description:** A method that breaks down complex topics into main ideas (the fish) and supporting details (the bones). This visual approach enhances comprehension by highlighting essential concepts and their relevant explanations.

**Example:** During a Biology class on human anatomy, the teacher uses the fish and bone technique to teach about the human skeletal system. Teacher presents the main components of the human skeleton (fish) and elaborates on each bone's structure and function (bones).

### **Pedagogy: Concept Mapping**

**Description:** An effective way to visually represent relationships between ideas. Learners create diagrams connecting key concepts, aiding in understanding the overall structure of a subject and fostering retention.

**Example:** In a Psychology assignment, students use concept mapping to explore the various theories of personality. They interlink different theories, such as Freud's psychoanalysis, Jung's analytical psychology, and Bandura's social-cognitive theory, to see how they relate to each other.

### **Pedagogy: Audio Visual Resources**

**Description:** Incorporating multimedia elements like videos, images, and audio into lessons. This approach caters to different learning styles, making educational content more engaging and memorable.

**Example:** In a General Science class, the teacher uses a documentary-style video to teach about the solar system. The video includes stunning visual animations of the planets, interviews with astronomers, and background music, enhancing students' interest and understanding of space.

### **Pedagogy: Think, Pair, and Share**

**Description:** A collaborative learning technique where students ponder a question or problem individually, then discuss their thoughts in pairs or small groups before sharing with the entire class. It fosters active participation, communication skills, and diverse perspectives.

**Example:** In a Literature in English class, the teacher poses a thought-provoking question about a novel's moral dilemma. Students first reflect individually, then pair up to exchange their opinions, and finally participate in a lively class discussion to explore different viewpoints.

**Pedagogy: Questioning Technique (Socratic Approach)**

**Description:** Based on Socratic dialogue, this method stimulates critical thinking by posing thought-provoking questions. It encourages learners to explore ideas, justify their reasoning, and discover knowledge through a process of inquiry.

**Example:** In an Ethics class, the instructor uses the Socratic approach to lead a discussion on the meaning of justice. By asking a series of probing questions, the students engage in a deeper exploration of ethical principles and societal values.

**Pedagogy: Practical Demonstration**

**Description:** A hands-on approach where learners observe real-life applications of theories or skills. Practical demonstrations enhance comprehension, skill acquisition, and problem-solving abilities by bridging theoretical concepts with real-world scenarios.

**Example:** In a Food and Nutrition class, the instructor demonstrates the proper technique for filleting a fish. Students observe and then practice the skill themselves, learning the practical application of knife skills and culinary precision.

**(Note:** The examples provided in this annexure serve as illustrations of various pedagogies. It is important to understand that these pedagogies are versatile and can be applied across subjects in numerous ways. Feel free to adapt and explore these techniques creatively to enhance learning outcomes in your specific context.)

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