## 4.23 COMPUTER STUDIES (451)

### 4.23.1 Computer Studies Paper 1 (451/1)
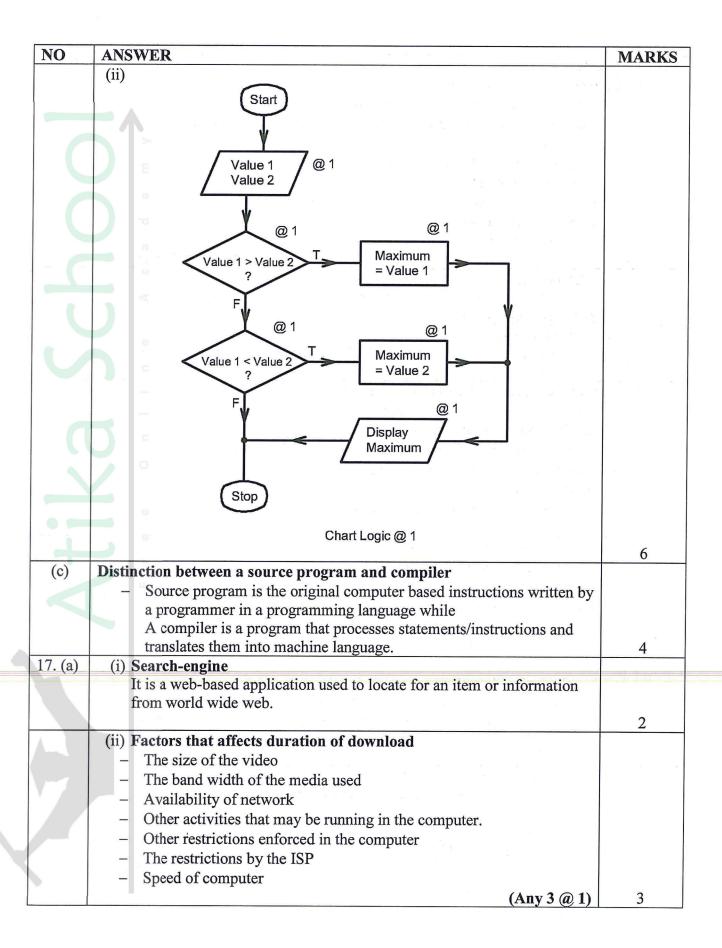
| NO | ANSWER | MARKS |
|----|--------|-------|
| 1. | **Reasons for the preference for laptops.**<br>- They are small and fit in a small storage space.<br>- They are light weight hence can be carried to areas where their services are required.<br>- The monitor, system unit, keyboard units are attached together hence making its use to be convenient.<br>- Rechargeable / backup battery.<br>                                               **Any 2 x 1** | 2 |
| 2. | **Reasons for the use of command – line interface OS**<br>- They do not take up a lot of memory hence boot faster than the GUI OS.<br>- They have direct access or most hardware devices.<br>- They are cheaper to acquire as some can be downloaded free of charge.<br>- They can run on lower –bit hardware systems such as 32-bit computers.<br>                                               **Any 3 x 1** | 3 |
| 3. | **Measures to be put in place in the laboratory to safeguard user health.**<br>- All power cables must be insulated and hidden from users.<br>- The furniture used must be of standard computer furniture.<br>- The room should be lit with adequate lighting.<br>- The room must be ventilated.<br>- Computer monitor should be fitted with antiglare to filter excess light rays emanating from the monitor.<br>- Avoid slippery floors/cemented floors.<br>- Controlling dust.<br>                                               **Any 3 x 1** | 3 |
| 4. | **Ways in which barcode readers can be used in a school.**<br>- To take inventory of items in the school.<br>- To keep track of employee login log out.<br>- Used to transact business in the library.<br>- Used to keep track of movement of goods.<br>                                               **Any 3 x 1** | 3 |
| 5. | **Advantages of flat panel monitors.**<br>- They are compact and light weight;<br>- They consume less power;<br>- They do not suffer from geometrical distortions;<br>- They do not cause eye fatigue.<br>- They support many advanced technologies;<br>- They can be made in almost any size and shape;<br>- They support higher resolution.<br>- Low heat radiation.<br>                                               **Any 3 x 1** | 3 |
| 6. | **Reasons why daisy wheel printer are in extinct.**<br>- They supported one font size and font face;<br>- They were monochrome printers;<br>- They produced noise while printing;<br>- They were very slow; | |

| NO | ANSWER | | MARKS |
|---|---|---|---|
| | - Did not print graphics. <br> - Had poor print quality. <br><br> Any 3 x 1 | | 3 |
| 7. | **Ways in which an OS secures computer system:** <br> - Access controls: Authentication of users in order to access files; <br> - Performing regular patches of updates; <br> - Creating secure accounts with required privileges; <br> - Scrutinizing all incoming and outgoing packets of data through a firewall; <br> - Encryption of data, during the transmission stage; <br> - Password / biometric analysis; <br> - Log files to detect any breach. <br><br> Any 3 x 1 | | 3 |
| 8. | **Advantages of hardcopy output.** <br> - They are acceptable as exhibit in cases of litigation. <br> - Can be used without a computer. <br> - They are difficult to change without leaving any trace. <br> - They can be used without power. <br> - They can be used without the experience of computer usage. <br> Any 2 x 1 | | 2 |
| 9. | **(i) Thesaurus:** <br> It is a feature in a word processor that suggest words with similar or opposite meaning to the selected word @1. <br><br> **(ii) Comments:** <br> It is a feature in WP that allows a user to attach a remark about the selection @1. | | 2 |
| 10. | **Multilevel list:** <br> It is a format style that shows the listed items of different levels rather than one at one level. Each level has different indentation and numbering style @2. <br><br> **Example (Accept any)** <br> 1. Chapter One <br>     1.1 Introduction <br>        1.1.1 Definition of terms @1. | | 3 |
| 11. | **Distinction between real-time and distributed OS.** <br> – Real-time OS reads information from input devices and must respond within a short duration of time to ensure correct performance. <br> – Distributed OS distributes computation among several physical processors which do not share memory or clock. | | 3 |
| 12. | **Function of protect sheet:** <br> – It is a feature used to prevent unwanted changes to be made on the data contained in a sheet by limit the ability to make changes. | | 2 |

| NO | ANSWER | MARKS |
|---|---|---|
| 13. | **Computer based careers created by introducing computerized data processing.** <br> – System analysts <br> – Hardware technicians <br> – Data entry clerks <br> – Programmers <br> – Networks technicians <br> – Database administrators <br> – Web designers <br> – Network administrator <br><br> **(Any 4 @ ½ mark)** | 2 |
| 14. | **= If (A1 > 10, A1 * 77, A1 * 50)** <br> Compares the value in cell A1 If it is greater than 10, if comparison is **True**, the results of operations A1 * 77 is displayed, if it is **False** the results of the operations A1 * 50 is displayed. | 3 |
| 15. | (a) Identifying technologies that could be used in the system. <br> – System analysis/ information gathering/problem recognition <br> (@ 1) <br><br> (b) Identifying the shortcoming of the old system <br> – Problem definition <br> (@ 1) <br><br> (c) Prepares the software migration plan <br> – Implementation stage <br> (@ 1) | 3 |

## SECTION B (60 Marks)
## MARKING SCHEME

| NO | ANSWER | MARKS |
|---|---|---|
| 16. (a) | Looping is the control structure that allows a block of code/statements to be repeated until a certain condition is fulfilled. **@ 2 marks** <br><br>  <br><br> 2 marks <br><br> **Accept any type of looping control structure** | 4 |
| (b) | (i) The pseudocode compares two values and output one of the two which is greater. | 1 |

| NO | ANSWER | MARKS |
|---|---|---|
| | (ii)  Chart Logic @ 1 | 6 |
| (c) | **Distinction between a source program and compiler**<br>  &ndash;  Source program is the original computer based instructions written by a programmer in a programming language while<br>A compiler is a program that processes statements/instructions and translates them into machine language. | 4 |
| 17. (a) | **(i) Search-engine**<br>It is a web-based application used to locate for an item or information from world wide web. | 2 |
| | **(ii) Factors that affects duration of download**<br>  &ndash;  The size of the video<br>  &ndash;  The band width of the media used<br>  &ndash;  Availability of network<br>  &ndash;  Other activities that may be running in the computer.<br>  &ndash;  Other restrictions enforced in the computer<br>  &ndash;  The restrictions by the ISP<br>  &ndash;  Speed of computer<br>                                              **(Any 3 @ 1)** | 3 |

| NO | | ANSWER | MARKS |
|---|---|---|---|
| (b) | | **Causes of Wakulima system's failure** | |
| | | – Lack of power supply to the system servers. | |
| | | – Network infrastructure breakdown/poor network coverage/lack of connection. | |
| | | – Program failure in the system/malware (virus). | |
| | | – Hardware failure in the system. | |
| | | – Human action which could be accidental or intentional. | |
| | | – Lack of access rights. | |
| | | – System overload | |
| | | **(Any 4 @ 1 mark)** | 4 |
| (c) | (i) | **Cropping** | |
| | | Used when handling a graphic and there is a need to remove some of the portions in the graphic. | 2 |
| | (ii) | **Transparency** | |
| | | Used when there is a need to make the background of a graphic to be visible. | 2 |
| (d) | | **Areas where infra-red radio waves are used.** | |
| | | – TV remote control communication; | |
| | | – DVD remote control communication | |
| | | – Communication between peripheral devices and the computer | |
| | | – Data link over short distance using mobile phones | |
| | | – Radio remote control | |
| | | – Remote locking / opening doors/devices | |
| | | **(Any 2 x 1)** | 2 |
| 18. (a) | | **Activities at the planning stages** | |
| | | – Identify opportunity for the new project. | |
| | | – Analyse feasibility to establish the viability of the project. | |
| | | – Develop a work plan. | |
| | | – Identify appropriate staff to work in the project. | |
| | | – Control and direct the project. | |
| | | **(Any 4 x 1)** | 4 |
| (b) | (i) | **Technical Feasibility** | |
| | | Meant to determine whether the proposed solution is technically practical/establish whether the technology is available /expertise is available. | |
| | | (@ 2) | |
| | (ii) | **Economic Feasibility** | |
| | | Meant to establish whether the proposed system will be cost effective. | |
| | | (@ 2) | |
| | (iii) | **Schedule Feasibility** | |
| | | Meant to establish whether the system can be implemented within an acceptable time frame. | |
| | | (@ 2) | 6 |

| NO | | ANSWER | MARKS |
|---|---|---|---|
| (c) | (i) | **Primary keys in the table**<br>Table 1 : Dept code @ ½<br>Table 2 : Student's Registration No. @ ½ | 1 |
| | (ii) | **Benefits of referential integrity in the table**<br>− No record can be added to the table 2 if its corresponding record in Table 1 does not exist.<br>− No record in Table 1 can be deleted without first deleting associated records in Table 2.<br>− Reduces data redundancies.<br>− Prevent deletion of related tables.<br>**(Any 2 x 2)** | 4 |
| 19. (a) | (i) | **Preserve check**<br>It is a measure placed used to ensure that data item is in its original status.<br>**(@ 2 marks)** | 2 |
| | (ii) | **Data type check**<br>It is a measure that ensures that correct data type is entered for each field.<br>**(@ 2 marks)** | 2 |
| | (iii) | **Check digit**<br>This is a number calculated by the computer to make sure that the other numbers in a sequence have been entered properly.<br>**(@ 2 marks)** | 2 |
| (b) | (i) | **BCD**<br>Binary Coded Decimal<br>**(@ 1)** | |
| | (ii) | **EBCDIC**<br>Extended Binary Coded Decimal Interchange Code.<br>**(@ 1)** | |
| | (iii) | **ASCII**<br>American Standard Code for Information Interchange<br>**(@ 1)** | 3 |
| (c) | | $129_{10} - 128_{10}$<br>$+129 = 00\ \ 1000\ \ 0001$<br>$\ \ 128 = 00\ \ 1000\ \ 0000$<br>$-128 = 11\ \ 0111\ \ 1111$<br>$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ + 1$<br>$\ \ \ \ \ \ \ 11\ \ 1000\ \ 0000$ (Twos complement)<br><br>$+129 + (-128)$<br>$\ \ \ \ \ = 00\ \ \ \ 1000\ \ \ \ 0001$<br>$+\ \ \ \ \ 11\ \ \ \ 1000\ \ \ \ 0000$<br>$\ \ \ \ 1\,00\ \ \ \ 0000\ \ \ \ 0001$<br>$= $ **00 0000 0001 (Overflow bit ignored)** | 6 |

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| NO | ANSWER | MARKS |
|---|---|---|
| 20. (a) | (i)  **I. Router**<br>It is the device meant to forward data packets between computer network in the school and the internet.<br>**(@ 2 marks)** | |
| | **II. Firewall**<br>It is a device that prevents unauthorized access to or from a private network (school's LAN)<br>**(@ 2 marks)** | |
| | **III. File server**<br>It is a computer attached to a network whose purpose is to provide location for shared disk access (shared storage of computer files).<br>**(@ 2 marks)** | 6 |
| | (ii)  **Software to be installed in a computer**<br>– Network operating system<br>– Browser/Mozilla,firefox<br>– Necessary system drivers to supports installed hardware<br>– Protocols(SMTP,HTTP)<br><br>**(Any 2 @ 1 mark)** | 2 |
| (b) | **Use of computers in research for data management**<br>– Used for data manipulation;<br>– Computers aid in data capturing;<br>– Computers can be used to store researched and analysed data;<br>– Information in computers can be a secondary source of data;<br>– Computers can be used to generate reports;<br>– Computers can be used to communicate researched work.<br>**(Any 4 x 1)** | 4 |
| (c) | **Advantages of online application services and shared processing resources.**<br>– Users will not be required to have powerful processing devices;<br>– Users can access the services from anywhere in the world;<br>– Users can access services at any time (24/7);<br>– Users can offload their data to the cloud infrastructure;<br>– Users can collaborate with remote users to process the data;<br>– The approach will cut out high cost of hardware;<br>– Sharing of resources;<br>– Faster access to service;<br>– Cost effective;<br>– Orders are made without going to the shop.<br>**(Any 3 x 1)** | 3 |