4.23 COMPUTER STUDIES (451)

4.23.1 Computer Studies Paper 1 (451/1)

	SECTION A (40 marks)	
QNS	**RESPONSES**	**MARKS**
1.	**Function of:-** (a) Hardware: To perform tasks of inputting, storage, outputting, processing during data processing and communication. (b) Software: - Instructs the hardware/computer on what to do during data processing. - Provides interface between hardware and liveware. - Accept functions of software based category ie. system / application/working/uses. (c) Liveware: Meant to design or operate a computer.	 1 1 1
2.	**Problems arising from use of unsuitable computer desk**. √ It could lead to back problems if the desk is of an unrealistic height. √ If it does not provide good positioning of the monitor, it could result in eye strain. √ Wrist problems will arise if the keyboard and mouse seating positions are bad. √ Injury as a result of falling computer components due to weak computer desks/ small size. (First 2 x 2)	 4
3.	**Categories of system software** √ Firmware; √ Networking software; √ Operating system; √ Utilities. (First 2 x $\frac{1}{2}$)	 1
4.	**Two factors to consider when evaluating warranty** √ Period/ duration/scope of cover: The warranty should specify the duration of time covered. √ Service agreement/level: The warranty should indicate the type of service to be provided. √ Cost implication/liability agreement: Cost sharing between the dealer and the buyer in the event of any loss or malfunction. √ Call out response. (First 2 x 2)	 4

5. **Three ways of using computers in electing school captain**

√ Registering voters/(faster);
√ Voter identification (accurate);
√ Actual voting;
√ Tallying process (speedy).

(Any 3 x 1) — 3

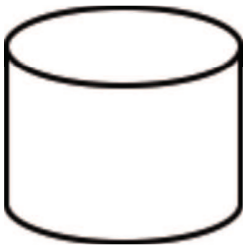
6. **Figure 1: Bring to front or bring to back**
Used when the target graphic is hidden by other objects. When clicked, the target graphic is brought to the front. — 1

Figure 2: Text wrap
It is used when a graphic is placed within the text area and the user needs to define how the text flows around the graphic. — 1

7. **Distinction of GUI and command line operating systems**

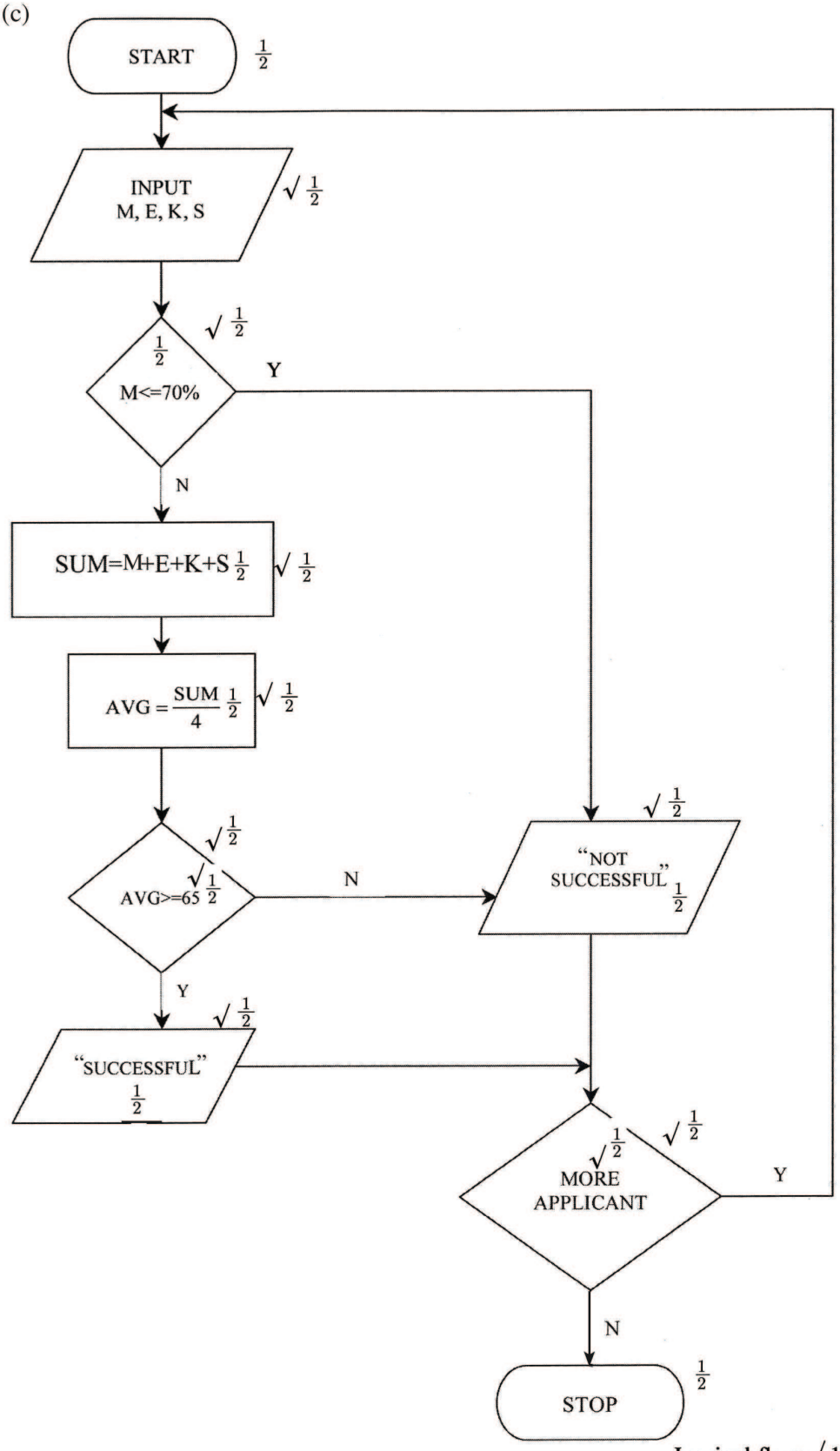
GUI	Command line
Makes use of emerging software/and hardware technologies Their interfaces have: - ribbons - control buttons - scroll bars - menus - can process complex graphics The user interacts by: - clicking - scrolling - mouse over More user friendly.	Hardly makes use of emerging hardware/software technologies. Their interfaces have: - typed commands - prompt - editor window - cannot process complex graphics Users interact by typing in commands Less user friendly.

(Any 2 x 2) — 4

8.	**A system flowchart symbols** (a)  Report or documentation (b)  Disk/ master file/ database	1 1
9.	**Ways of adjusting a document to fit a page** √ change page orientation. √ change the font; √ decrease font size; √ reduce margin size; √ reduce character spacing; √ reduce line height. √ change font style eg. bold/italic (Any 3 x 1)	3
10.	**Role of network administrator** √ to confirm that the network services are running; √ to confirm that the user is granted appropriate priviledge to access the network services/password/authentication; √ to confirm that the network infrastructure is in good condition; √ to confirm that the files sought are in existence. (First 3 x 1)	3
11.	**Impact of mobile phones** √ Users no longer queue in the bank in order to deposit or withdraw money; √ Easy acquisition of financial statements; √ Easy payment of bills; √ Online banking is possible; √ Money transfer is fast. √ Safer transfer of money. √ Provides wide coverage. √ Can offer services anywhere any time. √ Cheaper money transfer services. √ Increase in fraud. (First 3 x 1)	3

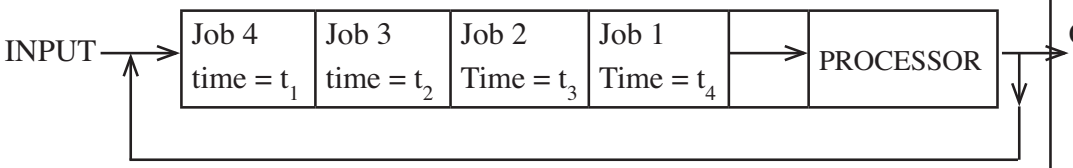
12.	**Items that an email must have**: √ the email address of the recipient; √ the content or message being communicated.	 2
13.	**Direct input methods** √ OBR √ MICR √ OCR; √ OMR; √ Image scanner; √ Magnetic strip technology; √ Image recognition/ face recognition/finger print. (First $4 \times \frac{1}{2}$)	 2
14.	**Insecurity arising from hardware failure** √ Data loss due to total system failure e.g. HD crash; √ The experts called upon to repair can access critical/ valuable information; √ Data recovery software may be used to make unauthorised backups. (First 2 x 1)	 2
15.	Nibbles - 4 Bytes - 2	1 1
	SECTION B (60 marks)	
16.	(a) **Advantages of using low-level language** √ program execution is immediate; √ they require no compilation, no interpretation/translation hence they are faster; √ hardware optimization is extensive; √ program developed takes less memory space; √ suitable for micro devices; √ easy to design electronic device. (First 2 x 1) (b) **Three tools that can be used to develop an algorithm** √ Decision table √ pseudocode; √ natural language; √ top down charts; √ flowcharts. √ DFD/context diagram √ ERD √ decision tree (First 3 x 1)	 2 3

(c)

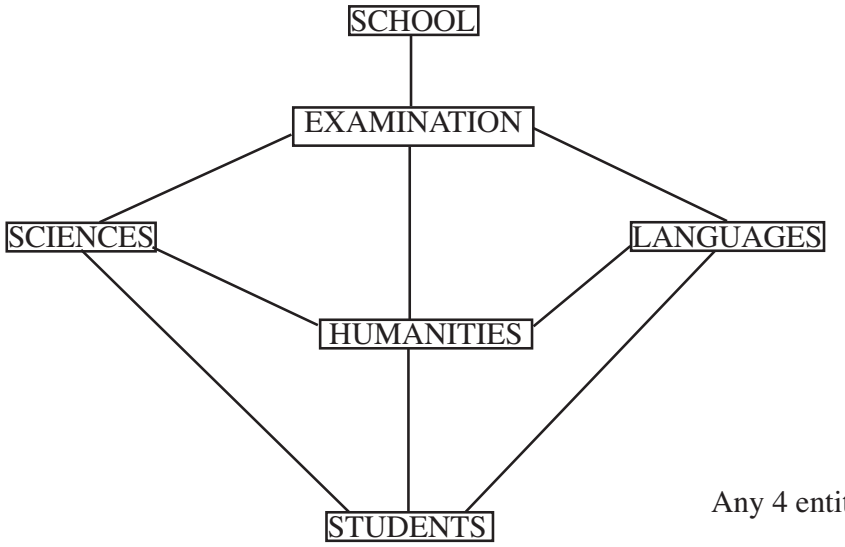


10

Logical flow √ 1

17.	(a) **Time-sharing mode** This is a processing mode in which a central processor serves two or more users with different requirements. The processor time is divided equally among the tasks in the queue. A user whose task requirements are more than is apportioned is send back to the queue. For example, four jobs requiring times t_1, t_2, t_3 and t_4 to complete is apportioned equal time in each round until when they are done.	3
		2
	(b) **Factors to consider when selecting data processing mode** √ The optimisation of processing time; √ The time factor required for decision arising from the processed data; √ The ease of development, use and maintenance; √ The control over the resources e.g. files, I/O devices e.t.c; √ The need for the shared resources among several users who may afford purchasing their own facilities as in time sharing configuration; √ The volume of work involved; √ The cost of acquiring the relevant hardware, software, media e.t.c and the cost of maintenance; √ The nature of the task to be processed. (First 4 x 1)	4
	(c) (i) **Purpose of user manual** It is a documentation whose purpose is to help a user to use the system with little guidance.	2
	(ii) **Purpose of sample data** Before the system is implemented, it has to be confirmed that it is functional. Sample data is meant to be used to test whether the system is giving desired output.	2
	(iii) **Purpose of table descriptions** They are details of table structures that the system will require for the purpose of designing the actual tables.	2
18.	(a) (i) **Repeater** A device used to re-construct data signal during data transmission to its original strength/amplify/boost/regenerate.	1

	(ii) **Router** - It is a device used to facilitate movement of data or packets between two or more LANS of different configuration (expansion of networks). - Delivers a packet/data directly to destination computers. - Interconnects different networks/provides network services.	1
	(b) (i) The component P is the terminator.	1
	(ii) Terminator in a backbone is used to prevent data signal from bouncing back/absorb signals.	2
	(c) **Use of internet in environmental conservation club** √ Source of knowledge on environmental matters; √ Collaboration with peers from other schools or organisations; √ Dissemination of information on what the club is doing; √ Seeking for funding from sponsors. (First 3 x 1)	3
	(d) (i) **Benefits of linking branch B and C** √ Speed of communication between B and C is increased since the traffic between the two branches can be re-routed through the link BC; √ If either AC or AB is down, the three branches can still communicate; √ If the HQ systems fail, the two branches B and C can communicate using this link. (First 2 x 2)	4
	(ii) **Ways to protect company network from hackers** √ Changing password frequently √ Use of encryption; √ Use of data proxies; √ Use of firewalls to filter unwanted packets; √ User restriction e.g. passwords/ biometrics. √ Use of complex password. (Any 3 x 1)	3
19.	(a) **Formats applied** Bold, strikethrough, underline, italics, centre alignment, dropcap, bulleted list, line height / spacing, 2 column paragraph, column break, casing, font type, left alignment, column separator. (First 6 × $\frac{1}{2}$)	3

	(b) **Tools for proofreading** √ Spell checker and grammar/ dictionary; √ Autocomplete; √ Autocorrect; √ Thesaurus. (Any 3 x 1)	3
	(c) (i) = @ or + Countif (B2: B6, ">10,000") (B2:B6) Argument range √1 (>10,000) Criteria √1 All Formula correct √1 (ii) At D3 Formula is $ B3 * C$2 √1 = 16000 × 2 = 32, 000 √1	3 2
	(d)  Any 4 entities each $\frac{1}{2}$ Any 4 connectors 4 each x $\frac{1}{2}$	4
20.	(a) **Characteristics of octal number system**. √ each symbol is represented by 3 bits. √ The number is made of 8 symbols 0, 1, 2, ...7; √ Maximum value of a single digit is 7 (one less than the value of the base); √ This number system uses base 8. (Any 2 x 1)	2

	(b) (i) 111.101_2 to decimal $111 = 7_{10}$ √1 $0.101 = \frac{1}{2}+\frac{0}{4}+\frac{1}{8}=\frac{5}{8}$ √1 **OR** $= 0.625$ $111.101_2 = 7.625_{10}$ or 7.625 √1	210 $111 = 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$ $= 4 + 2 + 1 = 7_{10}$ $101_2 = 1 \times 2^{-1} + 0 \times 2^{-2} + 1 \times 2^{-3}$ $= 1 \times \frac{1}{2} + 0 \times \frac{1}{4} + 1 \times \frac{1}{8}$ $= 0.5 + 0 + 0.125 = 0.625_{10}$ $\therefore 111.101_2 = 7.625$	3
	(ii) 14.6875_{10} to binary $14_{10} = 1110_2$ √1 $0.6875 \times 2 = 1.375$ $0.375 \times 2 = 0.75$ $0.75 \times 2 = 1.5$ $0.5 \times 2 = 1.0$ √1 decimal portion = 0.1011 √1 Number is 1110.1011_2 √1		4
	(c) (i) $17_{10} = 10001$ or 10001_2 √1 1 0010001 √1 binary equivalent of 17 Sign bit for negative.		2
	(ii) $17_{10} =$ 10001 In 8 bit 00010001 Reverse bits 1 1 1 0 1 1 1 0 √1 + 1 1 1 1 0 1 1 1 1 Number is $1\ 1\ 1\ 0\ 1\ 1\ 1\ 1_2$ √		2
	(d) $110.11_2 + 11.011_2$ 1 1 0.1 1 0 + 0 1 1.0 1 1 √1 1 0 1 0 . 0 0 1 √1		2