451/1 MARKING SCHEME

SECTION A (40 Marks)

№	ANSWER	MARKS
1.	**Ways in which computers are used in health care.** — **Telemedicine**: A doctor can use a computer to treat a patient who is in a remote location (or the doctor could be in a remote location) — **Data analysis**: Performing laboratory analysis and to match samples — **Communication**: Computer network media are used to facilitate communication between stake holders in the health industry. — **Dedicated computers:** Health care equipment embedded with computers used to perform special functions — **Security:** computerized devices are used to provide surveillance of a health centre — Computers support **hospital information management system** that help to make accurate decisions — ***Medical Imaging*** :a high resolution image generation of human body **Any 2×1**	2
2.	***Operations that can performed on a file by the Operating System*** — Renaming — Deleting — Creating — Moving — Copying — Finding/Search — Compressing **Any 4×½**	2
3.	**Website** — A group of related web documents stored in a web server and linked together such that a user can jump from one section of a document to another section or to another file.	2
4.	**Reasons for enactment data protection laws by a government** — The government being compelled to protect individual and organizational fundamental rights to personal information.	2

№	ANSWER	MARKS
5.	**Cell Formats** (a) 9022 111 000 - **Custom format** (1 mark) (b) 31/10/2022 - **Date** (1 mark)	2
6.	**Uses of image handles** — For resizing the image — For rotating the image — For flipping over the image — For changing the shape **Any 3×1**	3
7.	**Circumstance under which dry-run testing is performed.** — When there is a need to identify manually the logic flaws in a program by using sample data to trace through it.	2
8.	**Ways in which data validation is implemented on an input form.** — Using displayed comments to guide/alert a user. — Using controls which restrict the type of data to be entered. — Using error triggers to alert a user when wrong data is entered. — Using appropriate data type during the design of the table. **Any 2 × 1**	2
9.	**Roles of a computer trainer in an organization.** — Train workers to use computers hardware and software — Develop training materials — Evaluate learning outcomes — Establish learning needs — Provide user support Any 3 × 1	3

№	ANSWER	MARKS
10.	**Electronic data processing modes** — Real time processing — On-line processing — Time-sharing processing — Distributed processing — Batch processing **Any 3×1**	3
11	**Data collection**: It is a process of gathering original data from the source **Data capture**: It is the process of obtaining data in a computer in a sensible format.	4
12.	**Features of a GUI operating system.** (a) **Pointer** — It is a symbol that appears on the display screen which is moved using pointing devices in order to select an object or a command. **(2 marks)** *(b)* ***Desktop*** — *It is* the area on the display screen where icons representing different programs are placed. **(2 marks)**	4
13.	**Circumstances under which the following input devices are used** (a) **Optical Character Reader** — Used when the text on a paper is to be instantly converted to machine readable formats. **(1 mark)** (b) **Optical Mark Reader** — Used when some detailed marks on a paper are to be recognized in a computer formats. **(1mark)**	2

№	ANSWER	MARKS
14.	**Characteristics of an impact printer** — Produce noise while printing — There is a physical contact with paper to produce an image — Has low consumable costs — *Useful for bulk printing* — *For printing duplicate and triplicate copies.* **Any 3×1**	3
15.	**Features of a Word Processor:** (a) **Hyphenation** — It is a feature which allows a word to break lines between the syllables in order to have uniform spacing between words. **(2 marks)** (b) **Status bar** — It is the area at the bottom of word processing screen that can be made to display options such as page, number, word count, permission etc. **(2 marks)**	4
	SECTION A TOTAL	**40**

SECTION B (60 Marks)

Question 16 compulsory and any other three

№	ANSWER	MARKS
16. (a)	(i) A – First Generation (1 GL) **1 mark** B – Fourth Generation (4 GL) **1 mark**	**2**
	(ii) **A – Advantages of First Generation (1 GL)** — They are translation free and can be directly executed by a computer — Programs written are executed very first — Programs written are executed efficiently by the CPU — The program written utilize the memory in an efficient manner because it is possible to keep track of each bit of data. **Any 2 × 1**	
	(iii) **B – Advantages of Fourth Generation (4 GL)** — The program are machine independent — The program are easy to learn and to understand — The languages provides better communication **Any 2 × 1**	**4**

№	ANSWER	MARKS

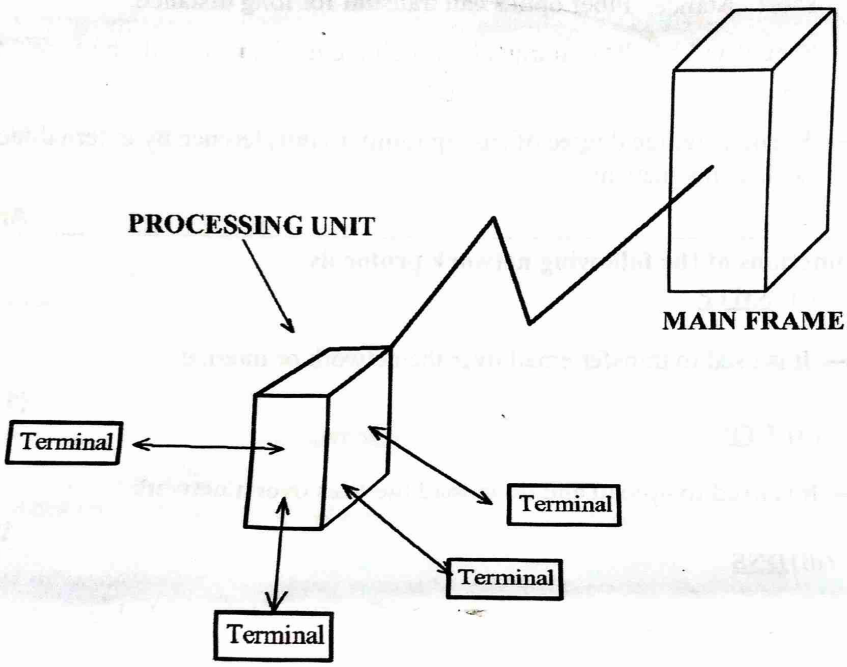
(b)	**Pseudocode**
	Start
	Input TotalEmployee
	Count= 0
	
	While count ≤ TotalEmployee
	Input Employee salary
	If salary ≥ 70,000 then
	Increment = 5/100 × Employee salary
	Else if Employee salary > 50,000 Then
	Increment = 8/100 × Salary
	Else
	Increment = 10/100 × Salary
	End if
	
	New salary = Salary + Increment
	Count = Count +1
	Print Employee salary
	Print Increment
	Print New Salary
	End while
	Stop
	Accept the correct use of any other loop construct
		9

№	ANSWER	MARKS
17. (a)	**Differences between Octal and Binary number system.** **Octal** — Uses eight digits 0, 1, 2, 3, 4,5,6 and 7 — The maximum value of a single digit is 7 — Each position in a octal represents a specific power of 8 — uses less number of digits to represent a number **Any 2 x 1** **Binary** — Uses two digits 0 and 1 — The maximum value of a single digit is 1 — Each position in a binary represents a specific power of 2 — uses more number of digits (bits) to represent a number **Any 2 × 1**	**4**
(b)	***23_{10} - 17_{10} (Using 8-bits one's complement)*** *Converting to bits* $23_{10} = 00010111_2$ $17_{10} = 00010001_2$ (1 mark) One's complement (17) = 11101110 (1 mark) Adding to 23 + 00010111 100000101 (1 mark) + 1 Answer 00000110 (1 mark)	**4**
(c)	**Ways in which a graphic designer would use a computer** — Use the computer to take photos to be inserted in the design — Use the computer for communicating business information — Use a graphics program to design graphics — Use a computer and a scanner to directly capture images — Use a computer to source graphics from the internet **Any 4 × 1**	**4**

№	ANSWER	MARKS
(d)	**The Operating System could perform each of the following disk management** — Disk formatting: preparing a disk to store data — Disk partitioning : Creating a logical storage block in a disk — Defragmentation: rearranging scattered related data in order to consolidate on the used space — Disk diagnostics: establishing the health status of a disk — disk compression: Compact data space so as to create extra space — Data backup: Creating a copy of original data **Any 3 × 1**	3
18. (a)	**Benefits a car selling company gains from e-commerce** — Accessibility: the clients would be able to access the services from any part of the world. — Compliance with health requirement of social distancing hence reducing the risks of infections within the company. — The business would be conducted 24/7 from any parts of the world — Analysis of customer preference can easily made hence tailoring the business to customer needs — Analysis of customer behavior so as to easily predict the outcome of any event — Use the internet media to easily communication with the customers — Sales campaigns can easily be run on the platform to attract more clients. **Any 3 × 2**	6
(b)	**Reasons why a system analyst would consider studying an existing system** — In order to understand the organizational structure. — To determine the sources of data in the organization. — To establish the flow of data within the organization. — Accuracy and timelines aspect of the data handling process. — To establish the data storage mechanism. — To identify the type of data processing used. — To identify the reports being generated at various stages. — To establish user requirements. **Any 5 × 1**	5

№	ANSWER	MARKS
(c)	Usability testing is mainly concerned with the ease in which a user could use the application. **(2 marks)** Functional Testing is concerned with establishing whether the system is meeting its objectives. **(2 marks)**	4
19. (a)	**Purpose of each of the following features in a spreadsheet chart.** (i) **Legend** — It is a brief description of the data in the chart alongside each data items. **(2 marks)** (ii) **Data Series** — It is a collection of data points which corresponds to the data within a single row. **(2 marks)** (iii) **Data Marker** — It is a symbol on the chart that represents a simple value in the worksheet. **(2 marks)**	6
(b)	**Challenges that a school may experience after installing a computer network** — Cost of installation: the school would be reeling from the expenses associated with the installation of the network — Maintenance cost: the school would have to incur extra expenses to ensure that the network is functioning as intended. This include hiring a personnel to manage it — Security for personal and school data from getting into wrong arms — Malicious software would easily spread from one computer to another through the network — Extra measures would be required to control access to information. **Any 3 × 2**	6

№	ANSWER	MARKS
(c)	**Factors to consider when selecting the media for connectivity.** — **Cost**: the cost of acquiring, installation and maintenance of the network. — **Transmission distance** – twisted pair, infrared and radio transmit only for short distance. Fiber optics can transmit for long distance. — **Security**: how data on transit through the media can easily be accessed or lost. — **Error rate**: the degree of susceptibility to interference by external factors such as magnetism. **Any 3×1**	3
20. (a)	**Functions of the following network protocols** (i) **SMTP** — It is used to transfer email over the network or internet. **(1 mark)** (ii) **FTP** — It is used to upload and download the files over a network **(1 mark)** (iii) **DNS** — *It is used to resolve domain name to the IP address and vice versa.* **(1 mark)**	3
(b) (i)	**Characteristics of mesh topology** — *Every node in the network is connected to every other nodes.* — *It is used in Wide Area Network to interconnect Local Area Networks.* **Any 2 × 1**	
(ii)	**Characteristics of Ring topology** — *Devices are connected in a closed loop.* — *All devices have equal access to media.* — *Devices waits for its turn to transmit data.* **Any 2 × 1**	4

№	ANSWER	MARKS
(c)	**Centralised Computing** — It is a network design where processing is centralized and dumb terminals are used to request services from a mainframe. The mainframe is used to store all the data  **Description @2** **Drawing @2**	4
(d)	**Security threats:** (i) **Social engineering** — It is a technique used by a hacker to steal data by using psychological manipulation combine with social scene. **(2 marks)** (ii) **Vulnerability** — It is a weakness, design problem or implementation error in a system that can lead to unexpected or undesirable event regarding security system. **(2 marks)**	4

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