5.9 COMPUTER STUDIES (451)

5.9.1 Computer Studies Paper 1 (451/1)

1.	(a) CAD - Computer aided design. (b) DVD - Digital video disk/ digital versatile disk. (c) WORM - Write once read many. (d) POS - Point of sale/point of sale terminal. 4 @ $\frac{1}{2}$ mark each = 2 marks
2.	- Indexing becomes easier. - Minimises on memory used. - Ease of data entry. - Reduces redundancies/double entry. - Speedy searches due to shortened comparisons - Simplifies validation any 3 @ 1 mark = 3 marks
3.	In cc, all the recipients of the mail are able to see other recipients of the same mail. Bcc: In Bcc, all recipients of the mail are not able to see other recipients. 2 marks
4.	- Risk of electric shocks to the users. - Risk of fire outbreaks in the laboratory. - Risk of tripping and injuries. - Power interruption caused by stumbling on the cables. Any 3 @ 1 mark = 3 marks
5.	List **two** career opportunities associated with computer networking. - Network administrators - Network engineers - Network technicians Any 2 @ 1 mark = 2 marks
6.	(a) Row 1 or 1 1 mark
7.	(b) = D2 * E2; = product (D2, E2) OR = Product (D2: E2) 2 marks - Customised to suit business needs of the organisation. - It can be upgraded as needed by the organisation. - The organisation can have a module that the competitors don't have. - The organisation develops only the modules needed/memory eptimization, or storage/space. 2 marks

8.	(a) Hybrid topology/tree/hierarchical (1 mark) (b) Star and Bus topologies (line/linear) (2 marks)
9.	(a) The implementation strategy is: - phased change-over/modular (1 mark)
	(b) Reasons for partial approach. - It gives employees opportunity to learn - Organization can revert to old system in case of failure. - Reduces resistance by employees. Any 2 @ 1 mark = (2 marks)
10.	(a) Importance of disk partitioning. - Disk partitioning enhances logical management of files since files can be grouped into partitions based on their roles. - Enhances disk maintenance since partitions can be formatted, deleted or modified individually without affecting files stored in other partitions. - Partitioning helps in virus management. This is done by keeping system files in one partition with limited access rights. Viruses would therefore lack access to the system files. - Enables installation of more than one operation system. (2 marks)
	(b) Difference between pull-down and pop-up menus A pull-down menu is a list of commands that appears as a list from the menu bar going down which is invoked by the click or alt key whereas a pop-up menu is a list that appears anywhere on the screen when there is a click. (2 marks)
11.	Negative social impact of ICTs - Internet addiction - Privacy violation - Exploitation (sexual) through Ponography - Crime - fraud on the internet - Cyber terrorism - Recuirtment to drug trafficking/drug abuse Any 3 @ 1 mark each = (3 marks)
12.	Explanation of DTP preference over word processor in designing a publication. DTP is designed with facilities to support and manipulate graphics that are not found in traditional wordprocessors. eg. the facilities are such as page layout, colour libraries and object layering. (2 marks)

13. Possible causes of Hard disk blinking.
- Virus executing itself.
- Updating of some software applications.
- Network access taking place.

Any 2@ 1 mark = (2 marks)

14. Compatibility factors on computer choice.
- Compatibility with available software. Being able to have the available software installed.
- Having the available peripherals in the market being able to be connected.

(2 marks)

15. Appropriate output devices
(i) Carbon copies - impact printers e.g. dot matrix.
(ii) Architectural design - plotter
(iii) Visual impairment - speakers/ brailles.

16. (a) (i) Output from the flow chart if:

(I) X = 5, (II) X = 7

(I) when X = 5, output = 15 (2 marks)

x	S	N
5	0	0
	1	1
	3	2
	6	3
	10	4
	15	5

(II) when X = 7, output = 28 (2 marks)

7	0	0
	1	1
	3	2
	6	3
	10	4
	15	5
	21	6
	28	7

(ii) Pseudocode for the flowchart is:

① Input X √ (½ mark)

② Initialize the sum
sum = 0 √ (1 mark)

③ Initialize the term N,
N = 0 √ (½ mark)

④ Increment N by 1
N = N + 1 √ (½ mark)

⑤ Add the new value of N to sum;
Sum = Sum + N √ (1 mark)

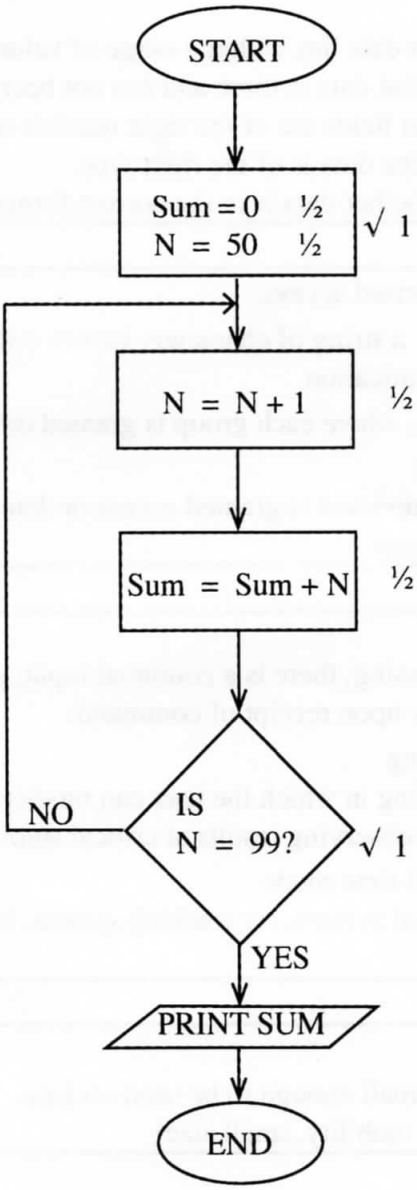
⑥ IF N = X √
Go to step 7
ELSE √
Go to step 4 √
ENDIF (1 mark)

⑦ Print sum √ (½ mark)

⑧ End.

10 statements @ ½ mark each = (5 marks)

(iii) Modifying the flowchart sum between 50 and 100



Logic = 2 marks

(b) Language translators
- Assemblers
- Compilers
- Interpreters

Any 2@ 1 mark each = 2 marks

SECTION B

17.	(a) Validation checks • Range checks: checks that data lies within a range of values. • Presence checks: checks that data is there and has not been missed out. • Length checks: checks that fields are of the right number of characters. • Type checks: checks that the data is of the right type. • Format checks: checks whether data is in the correct format.	
	Any 3 x 2	**6**
	(b) Methods to prevent unauthorised access: - Password: A secret word; a string of characters known only to a restricted group for authentication. - User Access levels: A case where each group is granted different levels of access - User Access rights: An individual is granted access or denied access to resources.	
	Any 2 x 2	**4**
	(c) (i) (I) Real-time In a real-time processing, there is a continual input, process and output of data instantaneously upon receipt of command. **2** (II) Interactive processing A computer processing in which the user can modify the operation appropriately while observing results at critical steps. **2** (ii) Application area for real-time mode Airline booking, medical system, car tracking system, hotel booking system, banking system.	
	Any 1 @ 1 mark	**1**
18.	Definition of a laptop computer (a) (i) Is a portable computer small enough to be used on laps. (evidence of portability, mobility, small size)	**1**
	17" screen (ii) Diagonal length of the screen. An indication of the size of the screen. (mention of size only 1 mark)	**2**
	(b) Advantages of the following: (i) modem - For internet connectivity - Converts analog signal to digital signals and vice versa. - It is wireless technology of internet at any point.	**1**
	(ii) USB - Most peripheral devices are connected to the computer via USB ports. - Has high speed rate. - Supports both power and data transmission. - One USB can support 127 devices at a time.	**1**

	(iii) Free suite: The user is not required to buy a licence for use of the software. (several software packed as one)	**1**
	(c) Package suitability (i) Computing budgets - spreadsheets. (ii) Creating documents - word processor. (iii) Designing brochures - DTP. (iv) Records management - Databases/spreadsheet.	
	Any 4 x 1	**4**
	(d) (i) Three advantages of using a computer for designing an advert such as the one in fig. 4 - Advert can be stored for future use. - Modification of the advert is easy. - Ease of design due to tools and template availability advantages/does not require an expert. - Ease of upload. - Can be electronically sent.	
	Any 3 x 1	**3**
	(ii) 2 benefits of Internet advertising as in figure 4. - Wider coverage. - Feedback from viewers/ visitors can be received instantly. - Service is throughout. - cost is low.	
	Any 2 x 1	**2**
19.	(a) E-mail: - used to send and receive electronic documents to/from the office. - receive instructions from the supervisor or co-workers. (any e-mail related work)	**2**
	Fax: - Used to send documents which are in non-electronic format (any fax related work)	**2**
	Digital camera - Used to capture images in picture form/video conferencing.	**2**
	Firewall - Used to prevent intrusion to the home computer because telecommuting involves connection to the internet.	**2**
	(b) - Communication systems may fail/communication channel may fail. - The document sent may get lost due to sending to wrong address. - The documents may be re-used or updated. - Malfunctioning of either sending/ receiving computers (failure of DTE).	
	Any 3 x 1	**3**

	(c) - Employer will only pay for work done. - The working time is not limited to official working hours/office available 24 hours. - Employer saves on office space. - Does not have to pay for commuter allowance. - Employer may not require permanent employees. - Employer may outsource expert skills that are not available locally.	
	Any 2 x 2	4
20.	(a) (i) In one's complement, a negative number is represented by taking all its bits in the positive number and inverting them. In two's complement, you start with one's complement but add 1 to the results. **OR** In two's complement, there are no two ways of presenting a zero. In one's complement, overflow bit is added back to the answer but ignored in two's complement.	2
	(ii) Binary number system over decimal - it is easy to program. - uses bi-state devices which can either be ON or OFF. - Binary can be used to represent all types of data.	2
	(b) (i) Subtract $1\,00011_2$ from 010010_2 using one's complement method. $0\,1\,0\,0\,1\,0$ $+\underline{0\,1\,1\,1\,0\,0}$ √ 2 marks (Complement of $1\,0\,0\,0\,1\,1$) $1\,0\,1\,1\,1\,0$ √ 2 marks	
		4
	(ii) $21.0\,3\,1\,2\,5_{10}$ to its binary equivalent. 2 | 21 2 | 10 R1 ↑ 2 | 5 R0 ↑ 2 | 2 R1 ↑ 2 | 1 R0 ↑ 2 | 0 R1 ↑ (2 marks) 0.03125 x 2 = 0.0625 ↓ 0 0.0625 x 2 = 0.125 ↓ 0 0.125 x 2 = 0.25 ↓ 0 0.25 x 2 = 0.50 ↓ 0 0.50 x 2 = 1.00 ↓ 1 (2 marks) $\Longrightarrow 1\,0\,1\,0\,1.0\,0\,0\,0\,1_2$ √1 mark	5
	(c) Binary operations 1 1 0 1 1 1 0 1 1 + 1 0 1 1 1 1 1 1 $1\,0\,0\,1\,1\,0\,0_2$	2

5.9.2 Computer Studies Paper 2 (451/2)

Q.	Section		Activity	Marks
1	a	(i)	Creating a database named PATIENTSINFO Caps $\frac{1}{2}$ mark, lower $\frac{1}{2}$ mark or none	1
		(ii)	**Table 1** Creating and naming the table (Patients) 1 mark Creating and naming fields (underscored or joined or spaced) 4 fields @ $\frac{1}{2}$ mark each Correct field data types 4 @ $\frac{1}{2}$ mark each	1 2 2
			Table 2 Creating and naming the table (Doctors) 1 mark Creating and naming fields 2 @ $\frac{1}{2}$ mark each Correct data types: 2 @ $\frac{1}{2}$ mark each	1 1 1
			Table 3 Creating and naming the table (Consultations) 1 mark Creating and naming fields 5 @ $\frac{1}{2}$ mark each Correct data types 5 @ $\frac{1}{2}$ mark each	1 $2\frac{1}{2}$ $2\frac{1}{2}$
		(iii)	Primary keys Table 1: Patients number 1 mark Table 2: Doctors number 1 mark Table 3: Consultation number 1 mark	1 1 1
		(iv)	Two relationships (correct fields) 2 @ 1 mark each	2
				20 marks
	(b)	(i)	Creating data entry forms (forms with all fields) 3 @ 1 mark	3
		(ii)	Data entry - 18 records @ $\frac{1}{2}$ mark (all correct fields)	9
				12 marks
	(c)	(i)	Display of patient names and gender @ $\frac{1}{2}$ mark Naming query - Patient Age @ $\frac{1}{2}$ mark Computation age column Age(Year[consultation date]-[year of birth]) $\frac{1}{2}$ 1 mark 1mark	1 $\frac{1}{2}$ $2\frac{1}{2}$
		(ii)	Selecting correct fields - Name Ailment $\frac{1}{2}$ mark, Consultation date $\frac{1}{2}$ mark, Criteria - Beatrice $\frac{1}{2}$ Doctor name = "Beatrice" 1 mark	$1\frac{1}{2}$ 1

Q.	Section		Activity	Marks
			Saving the query - Beatricedetails ½ mark	½
				7 marks
	(d)	(i)	Selection of tables patients and doctors @ ½ mark	1
			Selection of fields 4 (Names, Consultation date, ailment, names of doctors) @ ½ mark	2
			Grouping (patient name) 1 mark	1
			Grouping total (count of number of consultations) 1 mark	1
		(ii)	Saving the report - Consultations 1 mark	1
			Report title - Consultations per patient 1 mark	1
				7 marks
	(e)	(i)	Printing 3 tables @ ½ mark each	1½
		(ii)	Printing 2 queries @ ½ mark each	1
		(iii)	Printing 1 report @ 1 mark	1
		(iv)	Printing 1 form (consultation) @ ½	½
				4 marks
2.	(a)		Margin - page layout 4 @ ½ mark each	2
			Orientation (order/arrangement of back/spine/front) ½ mark	½
			Paper size ½ mark	
			Saving (Book Cover) 1 mark	½
			Fit of the three parts - back, spine and front	1
				1
				5 marks
			FRONT COVER	
	(b)		Authors / Rectangle	
			Text typing 1 mark text either case ½ mark	1
			Text box positioning/text position at centre ½ mark	½
			Insertion of Rectangle/text-box ½ mark	½
			Fill type (gradient shading)/gradient centre ½ mark	½
			Positioning the rectangle ½ mark	½
			Size ½ mark	½
			Inserting textbox/thick outline border ½ mark	½
				4 marks
			Book title text typing (capital) text + title case 1 mark positioning in relation to the front cover ½ mark	**1½ marks**

Q.	Section		Activity	Marks
			Computer Position of the computer $\frac{1}{2}$ mark Drawing four polygons 4 @ $\frac{1}{2}$ mark Filling polygons 4 @ $\frac{1}{2}$ mark penalise $\frac{1}{2}$ mark for wrong shading	 $\frac{1}{2}$ 2 2 marks
				4$\frac{1}{2}$marks
			Stars Six sided star 1 mark / 5 sided and 8 sided $\frac{1}{2}$ mark No outline $\frac{1}{2}$ mark Fill pattern $\frac{1}{2}$ mark Positioning star 1 and star 2 @ $\frac{1}{2}$ mark Copying and pasting star $\frac{1}{2}$ mark	 1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$
				3$\frac{1}{2}$ marks
			Lower rectangle Positioning $\frac{1}{2}$ mark Sizing $\frac{1}{2}$ mark Outline (bigger) $\frac{1}{2}$ mark Filling (fill) different from the border $\frac{1}{2}$ mark	 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
				2 marks
			Revised edition triangle Right angled triangle $\frac{1}{2}$ mark Positioning $\frac{1}{2}$ mark Fill (white) - no shade $\frac{1}{2}$ mark Text typing 1 mark (award $\frac{1}{2}$ mark is test is in one line) Textbox rotation 1 mark	 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ 1 1
				3$\frac{1}{2}$ marks
			Quick revision guide Typing text (text & caps + initial) 1 mark Background colour of the textbox $\frac{1}{2}$ mark Positioning of textbox $\frac{1}{2}$ mark	 1 $\frac{1}{2}$ $\frac{1}{2}$
				2 marks
			Nyota Publishing Press Typing Text 1 mark Text $\frac{1}{2}$ mark case $\frac{1}{2}$ mark Positioning of textbox $\frac{1}{2}$ mark	 1 $\frac{1}{2}$
				1$\frac{1}{2}$ marks

Q.	Section		Activity	Marks
			Spine	
			Typing of text (text & case) 1 mark	1
			Rotating 1 mark	1
			Positioning of text box $\frac{1}{2}$ mark	$\frac{1}{2}$
			Background (fill pattern) $\frac{1}{2}$ mark	$\frac{1}{2}$
			Fitting in between $\frac{1}{2}$ mark	$\frac{1}{2}$
				$3\frac{1}{2}$ marks
			Star	
			Spine star	
			Resizing/ 1 star fitting inside the spine $\frac{1}{2}$ mark	$\frac{1}{2}$
			Shading $\frac{1}{2}$ mark	$\frac{1}{2}$
			Copying star/existence of the star $\frac{1}{2}$ mark	$\frac{1}{2}$
			Positioning $\frac{1}{2}$ mark	$\frac{1}{2}$
			Positioning star 2 $\frac{1}{2}$ mark	$\frac{1}{2}$ marks
				$2\frac{1}{2}$ marks
			BACK PAGE	
			Big rectangle	
			Outline (thick border) $\frac{1}{2}$ mark	$\frac{1}{2}$
			Fitting $\frac{1}{2}$ mark	$\frac{1}{2}$
			Filling/any fill $\frac{1}{2}$ mark	$\frac{1}{2}$
			Positioning $\frac{1}{2}$ mark	$\frac{1}{2}$
				2 marks
			Rounded rectangle	
			Outline (none) $\frac{1}{2}$ mark	$\frac{1}{2}$
			Filling (no fill)/ white $\frac{1}{2}$ mark	$\frac{1}{2}$
			Positioning/placement $\frac{1}{2}$ mark	$\frac{1}{2}$
			Sizing/fitting proportional to the rectangle $\frac{1}{2}$ mark	$\frac{1}{2}$
			Correct shape $\frac{1}{2}$ mark	$\frac{1}{2}$
				$2\frac{1}{2}$ marks
			Text in rounded rectangle	
			Typing text 4 paragraphs (existence and completeness @ 1 mark x 4	4
			Bullets (style & character) $\frac{1}{2}$ mark x 2	1
			Paragraphing (spacing) $\frac{1}{2}$ mark	$\frac{1}{2}$
			title case -last paragraph $\frac{1}{2}$ mark	$\frac{1}{2}$
				6 marks

Q.	Section		Activity	Marks
			ISBN rectangle Text ISBN 214s @ 1 mark Bars varying thickness @ 1mark Position of ISBN and Bars @ $\frac{1}{2}$mark No fill ISBN and bars @ $\frac{1}{2}$mark	 1 1 $\frac{1}{2}$ $\frac{1}{2}$ marks
				3 marks
			Text at bottom Copyright symbol $\frac{1}{2}$ mark Text and case 1 mark Positioning $\frac{1}{2}$ mark	 $\frac{1}{2}$ 1 $\frac{1}{2}$
				2 marks
			Printing 1 mark	**1 mark**