

MAXIMUM MARKS: 70

TIME: 3 hours

GENERAL INSTRUCTIONS:

1. Number of questions are 6.
3. Answer the questions in sequence.
4. Read the question carefully before attempting it.

Q1	a)	Draw a flow chart and write pseudo code to find the greatest of 3 numbers.	2
	Ans	<p style="text-align: center;">Flow chart</p> <pre> graph TD Start([START]) --> Input[/INPUT A,B,C/] Input --> Cond1{IF A>B AND A>C} Cond1 -- YES --> PrintA[/PRINT A IS THE GREATEST/] Cond1 -- NO --> Cond2{IF B>A AND B>C} Cond2 -- YES --> PrintB[/PRINT B IS THE GREATEST/] Cond2 -- NO --> PrintC[/PRINT C IS THE GREATEST/] PrintA --> Stop([STOP]) PrintB --> Stop PrintC --> Stop </pre>	
	b)	Write pseudo code to Check if the number is positive or negative or zero and display an appropriate message.	2
	Ans	<p>Pseudo code: Input a number If number is greater than and equal to zero then check, if number is zero then display 'zero' otherwise display 'positive number'. Otherwise display 'negative number'.</p>	

c)	<p>write the output of the following:</p> <p>a) <code>a,b=20,30</code> <code>a = a+5</code> <code>b=b+10</code> <code>a,b= b,a</code> <code>print (a)</code> <code>print (b)</code></p> <p>b) <code>print ("WELCOME\n","TO\n","PYTHON")</code></p> <p>c) Which of the following are invalid identifiers. a) 99flag b) As\$swer c) For d) While</p> <p>d) <code>a=3</code> <code>b=6</code> <code>b+=a</code> <code>print (b)</code></p>	4
Ans	<p>a) 40 25</p> <p>b) WELCOME TO PYTHON</p> <p>c) a,b</p> <p>d) 9</p>	
d)	<p>Write logical expression for the following:</p> <p>1) Name is riya and age is between 10 and 15</p> <p>2) CITY is either 'Delhi' or 'Mumbai' but not 'Kolkata'</p>	2
Ans	<p>1) <code>Name=="riya"</code> and <code>age>=10</code> and <code>age<=15</code></p> <p>2) <code>(CITY=='Delhi' or CITY=='Mumbai')</code> and <code>CITY != 'Kolkata'</code></p>	
e)	Write the output of the following program on execution if <code>x = 90</code> ,	2

		<pre> if x>60: if x>25: print ('ok') if x>90: print ("good") elif x>40: print ("average") else: print ("no output") </pre>	
	Ans	<p>Ok</p> <p>Good</p>	
Q2	a)	<p>Write the output of the following:</p> <pre> L=[] L1=[] L2=[] for i in range(6,10): L.append(i) for i in range(10,4,-2): L1.append(i) for i in range(len(L1)): L2.append(L[i]+L1[i]) L2.append(len(L)-len(L1)) print (L2) </pre>	2
	Ans	[16, 15, 14, 1]	
	b)	<p>Suppose L=["Good",5,["students", "words"],'few']</p> <p>Consider the above list and answer the following:</p> <p>1) L[2:]</p> <p>2) L[2][1]</p>	1
	Ans	<p>1. L[3:]</p> <p> [['students','words'],'few']</p> <p>2. L[2][1]</p> <p> ["students"]</p>	
	c)	<p>Write the output of the following:</p> <pre> L=['a','z','p','c','m'] L.remove('c') print (L) print (L.pop()) </pre>	1

	Ans	<code>['a', 'z', 'p', 'm']</code> <code>m</code>	
	d)	What will be the output of the following programming code? <pre>str="My Python Programming" print (str[[-5:-1]]) print (str[1:5])</pre>	1
	Ans	1 <code>str[-4:-1]</code> <code>'min'</code> 2 <code>str[1:5]</code> <code>'y Py'</code>	
	e)	Consider the string <code>str="Green Revolution"</code> . Write statements in python to implement the following: i) To replace all the occurrences of letter 'a' in the string with "*" ii) To display the starting index for the substring 'vo'. iii) To remove 'Gre' from the left of the sting. iv) To check whether string contains 'vol' or not. v) To repeat the string 3 times.	5
	Ans	i) <code>str.replace('e','*')</code> <code>'Gr**n R*volution'</code> ii) <code>str.find('vo')</code> 8 iii) <code>str.lstrip('Gre')</code> <code>'n Revolution'</code> iv) <code>'vol' in str</code> True v) <code>str*3</code> <code>'Green RevolutionGreen RevolutionGreen Revolution'</code>	
	f)	What will be the output of following python code, justify your answer. <pre>x = 5 y = 0 print ('A') try: print ('B') A = x/y print ('C') except ZeroDivisionError: print ('F') except : print ('D') finally:</pre>	2

		<code>print ('over')</code>	
	Ans	<p>The code will produce the following output:</p> <pre> A B F over </pre>	
Q3	a)	What are docstrings? How are they useful?	2
	Ans	<p>A docstring is just a regular python triple-quoted string that is the first thing in a function body / a module / a class. When executing a function body (or module/class), the docstring doesn't do anything like comments, but python stores it as part of the function documentation. This documentation can later be displayed using help() function.</p>	
	b)	WAP to accept a number, find and display whether it's a Armstrong number or not.	2
	Ans	<pre> num=int(input("Enterno")) digit =int(input("enter digit on a no")) f = num sum = 0 while(f!=0): a = f%10 f = f/10 sum = sum+(a**digit) if (sum==num): print ("it is a Armstrong no",num) else: print ("it is not a Armstrong no",num) </pre>	
	c)	<p>Write a program to generate the following series.</p> <pre> 1 2 3 1 2 1 </pre>	2
	Ans	<pre> for i in range(3,0,-1): for j in range(1,i+1): print (j,end=' ') print () </pre>	
	d)	Write a program to input numbers according to the user's choice and store it in a tuple and find maximum and minimum values in the tuple.	2
	Ans	<pre> n = input("no of elements") i=1 </pre>	

		<pre> t1=tuple() while i<=n: a=input("number") t1=t1+(a,) i=i+1 print (max(t1)) print (min(t1)) </pre>	
	e)	<p>Write a program to input 'n' student and grade to store it in a dictionary and to input any name and to print the grade of that particular name.</p> <p>Answer</p> <pre> def main(): student=dict() n=input("enter total no of students") i = 1 while i<=n: a=raw_input("enter name") b=raw_input("enter grade") student[a]=b i = i+1 name = input("enter name") f = 0 l = student.keys() for i in l: if (cmp(i,name)==0): print ("Grade=",student[i]) f= 1 if f==0: print ("given name does not exist") </pre>	3
Q4	a)	Write at least two points of differences between compiler and interpreter.	2
	Ans	<p>The difference between a compiler and an interpreter is described as follows:</p> <p>Interpreter: Translates a program written in a high-level language into the machine language by converting and executing it line by line. The Interpreter is very useful for error-debugging as it displays errors while translating a program into the machine language. It cannot execute a program until all the errors are resolved</p> <p>Compiler: Works the same way as the interpreter. However, the main difference between the interpreter and the compiler is that the compiler converts the entire program into the machine language in one go and also reports all the errors in the program along with the line numbers. When all the errors are rectified, the program is recompiled and after that compiler is no longer needed in the memory.</p>	

	b)	Fill the appropriate answer: a) 1024 ZB= b) 1024 KB	1																																																																								
	Ans	a) 1024 TB =1 PETA BYTE b) 1024 KB =1 MEGA BYTE																																																																									
	c)	Write short note on ASCII.	1																																																																								
	Ans	ASCII American Standard Code for Information Interchange (ASCII) is a character encoding based on the English alphabet. ASCII codes represent text in computers, communications equipment, and other devices that work with text. Most modern character encodings which support many more characters than did the original have a historical basis in ASCII. Work on ASCII began in 1960. The first edition of the standard was published in 1963 a major revision in 1967, and in 1986. It currently defines codes for 128 characters where 33 are non-printing, and 94 are printable characters (excluding the space).																																																																									
	d)	1. Convert decimal number (0.375) to its equivalent binary number. 2. Add 10001 to 11101	2																																																																								
	Ans	1. 0.011 2. 101110																																																																									
	e)	Verify the following using truth table: $X+Y.Z=(X+Y).(X+Z)$	2																																																																								
	Ans	<div><div>Ans: $X+Y.Z=(X+Y).(X+Z)$</div><div>[Given]</div><table><tr><th>X</th><th>Y</th><th>Z</th><th>Y.Z</th><th>X+Y.Z</th><th>(X+Y)</th><th>(X+Z)</th><th>(X+Y).(X+Z)</th></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr></table><div>The values for highlighted columns are same. Hence, L.H.S. = R.H.S.</div></div>	X	Y	Z	Y.Z	X+Y.Z	(X+Y)	(X+Z)	(X+Y).(X+Z)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	0	0	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	0	1	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	
X	Y	Z	Y.Z	X+Y.Z	(X+Y)	(X+Z)	(X+Y).(X+Z)																																																																				
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	f)	Write the equivalent Boolean expression for the following logic circuit	2
		<pre> graph LR P --> OR1((OR)) Q --> OR1 Q --> OR2((OR)) R --> NOT1[NOT] NOT1 --> OR2 OR1 --> AND1((AND)) OR2 --> AND1 AND1 --> F </pre>	
	Ans	$F(P,Q,R) = (P+Q)(Q'+R)$	
Q5	a)	What is an IP address?	1
	Ans	<p>IP address allows computer or any other digital device to communicate with another through Internet. An internet protocol is a set of rules that govern internet activity and facilitate complete a variety of actions on the World Wide Web.</p> <p>An IP address consists of four numbers, each of which contains one to three digits, separated by single dot (.). Each of the four numbers can range 0 to 255.</p> <p>Examples of an IP address- 78.125.0.209. Every machine that is on the internet has a unique IP number.</p>	
	b)	What are the merits of social networking?	2
	Ans	<ul style="list-style-type: none"> • Lowest cost form of marketing • Huge potential audience and the possibility of messages going viral • Offers a closer connection with your clients • Source of instant feedback 	
	c)	What is Cyber Trolling? Write down Medium/Ways of Trolling.	2
	Ans	<p>The internet troll is a modern version of the mythological version. They hide behind their computer screens, and actively go out of their way to cause trouble on the Internet.</p> <p>YouTube video comments, Blog Comments, Forums, Email, Fb, Twitter, Instagram, Social Networking sites and Anonymous ways of networking.</p>	
	d)	Name three data security concepts.	1
	Ans	The three concepts are: encryption, user authentication and data backup.	
	e)	What is information technology security?	1
	Ans	IT Security is a term which is more concerned with the protection of hardware, software and a network of an organisation, from the perils of disaster and external attacks (through virus, hacking etc.).	
	f)	What do you mean by hacker?	1
	Ans	Hacker means an expert computer programmer who enjoys finding out the inner	

		workings of computer systems or Networks. Some have a reputation for using their expertise to illegally break into secure programs in computers hooked up to the internet or other networks.																																					
	g)	What is the support being provided to web browser?	2																																				
	Ans	Web browser supports the HTML version that is used to create the website in a very simple manner without using the complex tools. - Web browser supports rapid development of the websites and tools that can be used for the creation of it. - It provides a way to develop the non-standard dialects of HTML that provides the interoperability support. - Web browser provides standard libraries through which the support can be given to make the standard based HTML pages. - It provides the support for other languages like JavaScript, HTML or XHTML that can be rendered by the web browsers.																																					
Q6	a)	What are SQL constraints? Define constraints NOT NULL and CHECK.	2																																				
	Ans	Constraints are the rules enforced on data or columns on table. These are used to restrict the values that can be inserted in a table. This ensures the accuracy and reliability of the data in the database. Following are most commonly used constraints available in SQL: • NOT NULL Constraint: Ensures that a column cannot have NULL value. • CHECK Constraint: The CHECK constraint ensures that all values in a column satisfy certain conditions. For example , to restrict the salary column that it should contain salary more than 10000.																																					
	b)	Consider the following tables CARDEN and CUSTOMER and answer (A) and (B) parts of question: TABLE: CARDEN <table><tr><th>Ccode</th><th>CarName</th><th>Make</th><th>Color</th><th>Capacity</th><th>Charges</th></tr><tr><td>501</td><td>A-Star</td><td>Suzuki</td><td>RED</td><td>3</td><td>14</td></tr><tr><td>503</td><td>Indigo</td><td>Tata</td><td>SILVER</td><td>3</td><td>12</td></tr><tr><td>502</td><td>Innova</td><td>Toyota</td><td>WHITE</td><td>7</td><td>15</td></tr><tr><td>509</td><td>SX4</td><td>Suzuki</td><td>SILVER</td><td>4</td><td>14</td></tr><tr><td>510</td><td>C Class</td><td>Mercedes</td><td>RED</td><td>4</td><td>35</td></tr></table>	Ccode	CarName	Make	Color	Capacity	Charges	501	A-Star	Suzuki	RED	3	14	503	Indigo	Tata	SILVER	3	12	502	Innova	Toyota	WHITE	7	15	509	SX4	Suzuki	SILVER	4	14	510	C Class	Mercedes	RED	4	35	6
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TABLE:CUSTOMER

CCode	Cname	Ccode
1001	HemantSahu	501
1002	Raj Lal	509
1002	Feroza Shah	503
1004	Ketan Dhal	502

(A) Write SQL commands for the following statements:

- (i) To display the names of all the silver colored Cars.
- (ii) To display name of car, make and capacity of cars in descending order of their sitting capacity.
- (iii) To display the highest charges at which a vehicle can be hired from CARDEN.
- (iv) To display the customer name and the corresponding name of the cars hired by them.

(B) Give the output of the following SQL queries:

- (i) SELECT COUNT(DISTINCT Make) FROM CARDEN;
- (ii) SELECT MAX(Charges),MIN(Charges) FROM CARDEN;
- (iii) SELECT COUNT(*),Make FROM CARDEN;
- (iv) SELECT CarName FROM CARDEN WHERE Capacity=4;

Ans

- (A)** (i) SELECT CarName FROM carden WHERE Color LIKE 'Silver';
(ii) SELECT CarName,Make,Capacity FROM carden ORDER BY Capacity;
(iii) SELECT MAX(Charges) FROM carden;
(iv) SELECT Cname,CarName FROM carden,customer
WHERE carden.Ccode=customer.Ccode;

(B)

- (i) COUNT(DISTINCT Make)
4
- (ii) MAX(Charges) MIN(Charges)
35 12
- (iii) COUNT(*) Make
5 Suzuki
- (iv) CarName
SX4
C Class

c)	What is meant by the term NoSQL?	1										
Ans	NoSQL databases are especially useful for working with large sets of distributed data. NoSQL means not SQL or unlike SQL. NoSQL databases are built to allow the insertion of data without a predefined schema.											
d)	What is relation? What is the difference between a tuple and an attribute?	1										
Ans	A relation is like a table in which data are arranged in the form of rows and columns. The rows of a table are called tuples. The columns of a table are called attributes.											
e)	What is Data integrity?	1										
Ans	Data integrity refers to maintaining and assuring the accuracy and consistency of data over its entire life cycle.											
f)	Define FOREIGN Key.	1										
Ans	A foreign key is a key which is used to link two tables together. This is also called a referencing key. Foreign Key is a column or a combination of columns whose values match a Primary Key in a different table. The relationship between two tables matches the Primary Key in one of the tables with a Foreign Key in the second table. If a table has a primary key defined on any field(s), then you cannot have two records having the same value of that field(s).											
g)	What is the difference between DDL and DML command?	2										
	<table><tr><th>DDL Commands</th><th>DML Commands</th></tr><tr><td>1) DDL stands for Data Definition Language.</td><td>1. DML stands for Data Manipulation Language.</td></tr><tr><td>2) These commands allow us to perform tasks related to data definition, i.e., related to the structure of the database objects (relations/databases).</td><td>2) These commands are used to manipulate data, i.e., records or rows in a table or relation.</td></tr><tr><td>3) The examples of DDL commands are, Create, Alter, Drop, Grant, Revoke etc.</td><td>3) The examples of DML commands are, Insert into, Update, Delete, Select etc.</td></tr><tr><td>4) DDL is not further classified.</td><td>4) DML are further classified into two types: a) Procedural DMLs b) Non-Procedural DMLs</td></tr></table>	DDL Commands	DML Commands	1) DDL stands for Data Definition Language.	1. DML stands for Data Manipulation Language.	2) These commands allow us to perform tasks related to data definition, i.e., related to the structure of the database objects (relations/databases).	2) These commands are used to manipulate data, i.e., records or rows in a table or relation.	3) The examples of DDL commands are, Create, Alter, Drop, Grant, Revoke etc.	3) The examples of DML commands are, Insert into, Update, Delete, Select etc.	4) DDL is not further classified.	4) DML are further classified into two types: a) Procedural DMLs b) Non-Procedural DMLs	
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	Ans	A relation is like a table in which data are arranged in the form of rows and columns. The rows of a table are called tuples. The columns of a table are called attributes.	

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