# DIRECTORATE OF GOVERNMENT EXAMINATIONS CHENNAI - 6 HSE SECOND YEAR EXAMINATIONS, MARCH - 2024 COMPUTER SCIENCE - ANSWER KEY

#### Instructions :

- 1. Only answers written in Blue Or Black ink should be evaluated
- 2. Choose the mist appropriate answer the given four alternatives and write the option code and the corresponding answer.
- 3. If any of the answer option code or answer is incorrect then only zero marks shall be awarded.

Maximum Marks = 70

#### PART – I

#### Answer all the questions.

15×1=15

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Qn.	Option	Answer	Marks
no.	code		
1	(c)	Big O	1
2	(c)	Abstract datatype	1
3	(b)	F5	1
4	(a)	Interface	1
5	(a)	Access control	1
6	(d)		1
7	(c)	Instantiation	1
8	(d)	x %4==0	1
9	(b)	σ	1
10	(a)	[10,20,35,40,50]	1
11	(b)	Flat File	1
12	(d)	Select	1
13	(a)	0134	1
14	(d)	Dashboard	1
15	(d)	ORDER BY	1

Answe	er any six questions. Question No.24 is compulsory.	6×2=12
Qn. No.	Answer	Marks
16	Abstract Data Type (ADT) is a type for object whose behavi	or is 2
	defined by a set of values and operations.	
17	1. Arithmetic operator,	
	2. Relational operator or comparative operator,	
	3. Logical operator,	2
	4. Assignment operator and	
	5. Conditional operator or Ternary operator	X
	Any 4	Only
18	To search an item in a data structure is known as searching	
	(or) Searching is the step – by – step procedure used to le	ocate
	specific data among collections of data using any search	
	algorithm.	2
	Types :	
	1. Linear search	
	2. Binary search	
19	1. User-defined functions	
	<ol> <li>Built-in functions</li> <li>Lambda functions and</li> </ol>	2
	4. Recursion functions	
20	Line Plot	
	Scatter Plot	
	• Histogram	2
	<ul><li>Box Plot</li><li>Bar chart</li></ul>	
	Pie chart	
21		
21		
	Hierarchical model     Network Model       1     Cl ill	
	1. Child record has only one parent.1. Child record may have many parent nodes.	
	One parent.Inary parent nodes.2. It represents one -to-2. It represents many-to-	2
	many relationships many relationships	
	3.Difficult to access data. 3.Easy to access data	
		)nly
22	Any 2 C A CSV file is human readable text file where each line has	
		other 2
	a number of fields, separated by commas or some of delimiter.	
23	The <b>fetchall</b> () method is used to fetch all rows from	ı the
	database table.	2

### Part - II

# Answer any six questions. Question No.24 is compulsory.

database table.

Qn. No.	Answer	Marks
24	<ul> <li>pop() function is used to delete a particular element from a list using its index value.</li> <li>pop() function is used to delete only one element from a list</li> <li>As soon as the element is deleted, this function shows the element which is deleted</li> </ul>	2
	Any 1 Only	

PART –III	
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Ans	PART wer any six questions. <b>Question n</b> o		= 18
Qn. No.	Answer		Marks
25	Pure FunctionThe return value of the purefunctions solely depends on itsarguments passed.	Impure FunctionThe return value of the impure functions does not solely depend on its	
	Hence, if you call the pure functions with the same set of arguments, you will always get the same return values.	arguments passed. Hence, if you call the impure functions with the same set of arguments, you might get the different return values.	3
	They do not have any side effects.	They have side effects.	
	They do not modify the arguments which are passed to them.	They may modify the arguments which are passed to them.	
		Any 3 Only	
26	The elements of a list can be acces <b>1.Multiple assignment:</b> This method which unpacks a l each element to a different name. Ex: lst :=[10,20] x,y:=lst x will become 10 and y will becom <b>2.Element Selection Operator:</b> brackets. Access the elements in operator. <b>Example:</b> lst [0]	ist into its elements and binds ne 20. It is expressed using square	3
	10	Any relevant example	

Qn. No.	Answer	Marks
27	<b>Asymptotic Notations</b> are languages that use meaningful statements about time and space complexity.	1
	<b>Big O</b> - Worst-case of an algorithm.	
	<b>Big</b> $\Omega$ - Best -case of an algorithm	2
	<b>Big</b> $\Theta$ - complexity case of an algorithm <b>(Or)</b>	
	lower bound = upper bound	
28	Program:	
	a=int(input("Enter the first number:"))	
	b=int(input("Enter the second number:"))	
	c=int(input("Enter the third number:"))	
	if (a>b) and (a>c):	
	print(a, " is the largest number")	3
	elif (b>c): print(b, " is the largest number ")	
	else:	
	print(c, " is the largest number ")	
	(Or any suitable program)	
29	(a) capitalize():	
29	Used to capitalize the first character of a string	
	Example:	
	>>> city="tamilnadu"	
	>>> print(city.capitalize())	
	Tamilnadu	
	(Or)	3
	(Any one suitable example)	5
	(b) swapcase():	
	It will change case of every character to its opposite case	
	vice-versa.	
	Example: >>>str1="tamil NADU"	
	>>> print(str1.swapcase())	
30	Constructor :	
50	Constructor is a special function that is automatically executed	
	when an object of a class is createdinit() method is used as	
	constructor	
	(Or)	
	definit(self, [args]):	
	<statements></statements>	3
	Destructory	-
	<b>Destructor:</b> Destructor is also a special method to destroy the objects.	
	del() method is used as destructor.	
	(Or)	
	defdel(self):	
	<statements></statements>	

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Qn. No.	Answer	Marks
31	<ol> <li>To automate certain tasks in a program.</li> <li>Extracting information from a data set.</li> <li>Less code intensive as compared to traditional programming language.</li> <li>Can bring new functions to applications and glue complex systems together</li> </ol>	3
32	(Any three points) The WHERE clause is used to extract only those records that fulfil a specified condition. Example: cursor.execute("SELECT DISTINCT (Grade) FROM student where gender='M'") (Or any suitable example)	3
33	Commit : Saves any transaction into the database permanently. Roll back : Restores the database to last commit state. Save point : Temporarily save a transaction so that you can rollback.	3

## PART - IV

### Answer all questions

### 5 X 5 = 25

Qn. No.	Answer	Marks
34 (a)	To facilitate data abstraction, you will need to create constructors and selectors.	2
	<ul> <li>Constructors are functions that build the abstract data type.</li> <li>Selectors are functions that retrieve information from the data type.</li> <li>For example</li> </ul>	2
	Let's take an abstract datatype called city. This city object will hold the city's name, and its latitude and longitude. city := makecity (name, lat, lon) ✓ Here the function makecity (name, lat, lon) is the constructor. When it creates an object city, the values name, lat and lon are sent as parameters. ✓ getname(city), getlat(city) and getlon(city) are selector functions that obtain information from the object city.	3
	(OR)	

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Qn. No.	Answer	Marks
34	◆ Binary search is also called half-interval search	2
(b)	algorithm.	
	✤ It finds the position of a search element within a sorted	
	array.	
	Any suitable example	3
	Explain with a suitable example	0
	(i) input() function:	
	In Python, input() function is used to accept data as	
	input at run time.	
	The syntax:	
	Variable = input ("prompt string") Suitable Example	
	(ii) print() function:	
	In Python, the print() function is used to display result	
35 (a)	on the screen.	5
55 (a)	The syntax:	5
	print ("String")	
	print (variable)	
	print ("String", variable)	
	print ("String1", variable, "String2", variable,	
	"String3")	
	(Any one syntax)	
	Suitable Example	
	(OR)	
	1. Local scope 2.Global scope	
	3. Enclosed scope	
35	4.Built-in Scope	
	Explain each with suitable example	5
(b)	(or)	
	Local Scope (Rules and Relevant Example)	
	Global Scope (Rules and Relevant Example)	
	• <b>Range()</b> is the function used to generate a series of	
	values in python	
	• Using <b>range()</b> function ,we can create list with	
	series of values .	
36 a)		5
	The <b>range()</b> function has three arguments	
	Syntax:	
	range( start , stop , [step])	
	Suitable example with explanation	

Qn. No.	Answer	Marks
36 (b)	Relational Algebra:	
	(i)Union(Symbol: ∪)	
	(ii) Intersection(Symbol: $\cap$ )	_
	(iii) Difference(Symbol: -)	5
	(iv) Cartesian Product(Symbol: X)	
	Explanation with one suitable example	
37 (a)	<ul> <li>Components of SQL:</li> <li>DML - DATA MANIPULATION LANGUAGE</li> <li>DDL -DATA DEFINITION LANGUAGE</li> <li>DCL -DATA CONTROL LANGUAGE</li> <li>TCL - TRANCATION CONTROL LANGUAGE</li> </ul>	2
	DQL - DATA QUERY LANGUAGE	
	DDL-CREATE, ALTER, DROP, TRUNCATE DML-INSERT, UPDATE, DELETE, DCL-GRANT, REVOKE TCL-COMMIT, ROLL BACK, SAVE POINT DQL-SELECT	3
	(Explain)	
	(OR)	
37 (b)	<ul> <li>Features of Python over C++</li> <li>Python uses Automatic Garbage Collection whereas C++ does not.</li> <li>C++ is a statically typed language, while Python is a dynamically typed language.</li> <li>Python runs through an interpreter, while C++ is</li> </ul>	
	pre-compiled.	
	• Python code tends to be 5 to 10 times shorter than that written in C++. In Python, there is no need to declare types explicitly where as it should be done in C++	5
	• In Python, a function may accept an argument of any type, and return multiple values without any kind of declaration beforehand. Whereas in C++ return statement can return only one value.	
	(Write any 5)	

Qn. No.	Answer	Marks
38 (a)	There are two ways to read a CSV file.	
	1. Use the csv module's reader function	
	2. Use the DictReader class.	
	1. CSV Module's Reader Function:	
	> The csv.reader() method is designed to take each	
	line of the file and make a list of all columns.	
	Using this method one can read data from csv files	
	of different formats like quotes (" "), pipe ( ) and	
	comma (,).	
	The syntax for csv.reader() is	
	csv.reader(fileobject, delimiter, fmtparams)	
	Any Suitable Example	5
		5
	2. Reading CSV File Into A Dictionary:	
	To read a CSV file into a dictionary can be done by using DistBasedon which greates an abject which	
	using DictReader which creates an object which	
	maps data to a dictionary.	
	<ul> <li>DictReader works by reading the first line of the</li> </ul>	
	CSV and using each comma separated value in this	
	line as a dictionary key.	
	> The columns in each subsequent row then behave	
	like dictionary values and can be accessed with the	
	appropriate key.	
	Any Suitable Example	
	(OR)	
38 (b)	• <b>Home Button</b> $\rightarrow$ If you ever want to return back to the	
	original view, you can click on this.	
	<ul> <li>Forward/Back buttons → These buttons can be used</li> <li>like the Forward and Back buttons in your browser</li> </ul>	
	<ul> <li>like the Forward and Back buttons in your browser.</li> <li>Pan Axis → To click it, and then click and drag your</li> </ul>	
	graph around.	
	• <b>Zoom</b> $\rightarrow$ The Zoom button lets you click on it, then	
	click and drag a square that you would like to zoom	
	into specifically. Zooming in will require a left click	5
	and drag. You can alternatively zoom out with a right	U
	click and drag.	
	■ <b>Configure Subplots</b> → This button allows you to	
	configure various spacing options with your figure	
	and plot.	
	<ul> <li>Save Figure → This button will allow you to save your</li> </ul>	
	figure in various forms.	
	(Any five buttons. No need to draw the buttons/icons)	