



Standard 12

COMPUTER SCIENCE

Time: 3.00 Hours

Marks: 70

15x1=15

I) Answer all the questions.

II) Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.

- 1) The values which are passed to a function definition are called as
a) Subroutines b) Functions c) Arguments d) Parameters
- 2) Which of the following functions that build the abstract data type?
a) Constructors b) Destructors c) Recursive d) Nested
- 3) Containers for mapping names of variables to objects is called
a) Scope b) Binding c) Namespace d) Mapping
- 4) The Θ notation in asymptotic evaluation represents.
a) Base case b) Average case c) Worst Case d) Null case
- 5) Which symbol is used to print more than one item on a single line?
a) Semi colon b) Comma c) Colon d) #
- 6) Which is the most comfortable loop?
a) for b) do while c) While d) If ... elif
- 7) A named blocks of code that are designed to do one specific job is called as
a) Modular programming b) Function
c) Definition d) Arguments
- 8) Which of the following is the slicing operator?
a) [] b) { } c) () d) < >
- 9) What is the output of following python code?
a = [1, 2, 3, 4]
a.append ([5, 6, 7, 8])
print (len(a))
a) 49 b) 5 c) 8 d) Type Error
- 10) Which of the following class declaration is correct?
a) class class_name b) class class_name ()
c) class class_name : d) class class_name []
- 11) A table is known as
a) entity b) attribute c) tuple d) relation
- 12) Which command lets to change the structure of the table?
a) SELECT b) ALTER c) MODIFY d) ORDER BY
- 13) The command used to skip a row in a CSV file is
a) next () b) skip () c) omit () d) bounce ()
- 14) Which python module helps to parse command - line options and arguments?
a) OS module b) getopt module c) sys module d) csv module
- 15) Which function is used to make a pie chart with Matplotlib
a) plt.pie () b) plt.bar () c) plt.plot () d) plt.circle ()

II) Answer any six questions. Q.No. 24 is compulsory.

6x2=12

- 16) Why scope should be used for variable. State the reason.
- 17) What is instantiation?
- 18) What is normalization?
- 19) Write the difference between table constraint and column constraint.

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- 20) What is the output of the following Code?
`str1 = "Tamil Nadu"`
`print (str1.swapcase())`
- 21) Write the expansion of 1) SWIG 2) MinGW
- 22) Which method is used to connect a database? Give an example.
- 23) List the types of visualizations in Matplotlib.
- 24) How will you sort more than one column from a csv file? Give an example.

III. Answer any six questions. Q.No. 33 is compulsory.

6x3=18

- 25) Differentiate concrete data type and abstract data type.
- 26) Define Enclosed Scope with example.
- 27) Write a short notes on Escape sequences with example.
- 28) Write a python program to display the given pattern
- ```

1
1 2
1 2 3
1 2 3 4

```
- 29) Write the rules of local scope
- 30) What are the difference between List and Dictionary
- 31) What is use of Where clause? Give a python statement using the Where clause. `cl a u s e`.
- 32) What are the applications of scripting language.
- 33) What is the output of the following python program?  
`str1 = "COMPUTER"`  
`str2 = "SCIENCE"`  
`str3 = str1[:2] + str2 [len(str2) - 2:]`  
`print (str3)`

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IV. Answer all the questions.

5x5=25

- 34) a) What are called Parameters and write a note on Parameter without Type and Parameter with Type  
(OR)  
b) Write the benefits in using Modular programming.
- 35) a) Explain the characteristics of an algorithm  
(OR)  
b) Write a detail note on for loop with example.
- 36) a) Explain the scope of variables with an example.  
(OR)  
b) What are the ways to insert an element in a list? Explain with example.
- 37) a) Explain the different types of data model.  
(OR)  
b) What is constraint. Write the different types of constraint and their functions.
- 38) a) Write the different methods to read a CSV file in python.  
(OR)  
b) Write in brief about SQLite and the steps used to use it.

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## HALF YEARLY EXAMINATION 2023

## TENKASI DISTRICT

## XII Computer Science

## Answer Key

- I. 1. C) Arguments
2. a) constructors
3. C) Namespace
4. c) worst case
5. ~~a) #~~ B) comma
6. a) for
7. b) function
8. (a) [ ]
9. ~~(a) 8~~ b) 5
10. c) class class\_name:
11. d) relation
12. b) ALTER
13. a) next()
14. b) getOpt module
15. a) PIP file C)

II. 16) The scope of variable is that part of the code where it is visible. - 2 marks

17) The process of creating object is called as "class instantiation" - 1 marks

Syntax: Object name = class\_name(). - 1 marks.

18. \* Normalization which divides the data in such a way that repetition is minimized  
 \* It is an integral part of RDBMS in order to reduce data redundancy and improve data

Integrity. - 2 marks

19. Table constraints apply to a group of one or more columns.

Column constraint can be applied only to individual

Column

20. ~~TAMIL~~ ~~TAMIL~~ ~~Acad~~

20. TAMIL NADU

- 2 marks

21. 1) SWIG - Simplified Wrapper Interface Generator  
2) Mingw - Minimalist GNU for Windows

- 2 marks

22. Create connection using connect () method and pass the name of the database file.

- 1 mark

Example: `import sqlite3`

`connection = sqlite3.connect ("academy.db")`

`cursor = connection.cursor ()`

- 1 mark

23. \* Line Plot

\* Box Plot

\* Scatter Plot

\* Bar chart

\* Histogram

\* pie chart.

(Any 4) - 2 marks

24.

\* To sort by more than one column you can use itemgetter with multiple indices - 1 mark

Syntax:  
`Sorted list = sorted (data, key=operator.itemgetter (col_number), reverse = True)` - 1 mark

III. 25. Concrete datatype

1. concrete datatype is a datatype whose representation is known.

2. ADT offer a high level view of a concept independent of its implementation

abstract datatype.

Abstract datatype the representation of a datatype is unknown.

CDT are direct implementations of a relatively simple

concept. - 3 marks

26)

A variable which is declared inside a function which <sup>contains</sup> another function definition with <sup>in</sup> it, the inner function can also access the variable of the outer function. This scope is called local scope.

- 2 marks

3

: Example :

1. Disp():
2. a := 10
3. Disp():
4. Print a
5. Disp():
6. Print a
7. Disp():

- 1 mark

27) The backslash "\ " is a special character, also called the "escape" character. It is used in representing certain whitespace characters.

\t - tab

\r - carriage return

\n - new line

- 1 mark

Any Example.

- 1 mark

28)

```
i=1;
while (i<=5):
 for j in range(1,i):
 print(j, end=' ')
 print(end='\n')
 i+=1.
```

- 3 marks

(OR) Any suitable program.

29)

\* A variable with local scope can be accessed only within the function/block that it is created in.

\* When a variable is created inside the function/block, the variable becomes local to it.

\* A local variable only exists while the function is executing.

\* The formal arguments are also local to function.

- Any 3 points

- 3 marks

30)

List

Dictionary

It is ordered set of elements

It is a data structure that is used

for matching one element (key) with another value.



2. The Index values can be used to access a particular element. Dictionary key represents index.

3. Lists are used to lookup a value. Dictionary is used to take one value and look up another value.

(OR) Any 3 differences

— 3 marks

31) \* The WHERE clause is used to extract only those records that fulfill a specified condition. (or) WHERE clause is used to filter the records. — 2 marks

EXAMPLE:

Any suitable Python statement — 1 mark

- 32)
1. To automate certain tasks in a program
  2. Extracting information from a dataset
  3. Less code intensive as compared to traditional programming language.
  4. Can bring new functions to applications and glue complex systems together.

— 3 marks

33) COCE — 3 marks

IV 34) a) Parameters:

\* Parameters are the variables in a function definition and arguments are the values which are passed to a function definition. — 1 mark

Parameters without tylo.

(requires:  $b > 0$ )

(returns: a to the power of b)

let rec pow a b: =

if b = 0 then 1

else a \* pow b (a-1)

1 mark

\* Explanation. — 1 mark

5

Parameters with type.

(requires:  $b \geq 0$ )

(returns: a to the power of b)

let rec pow (a:int) (b:int):int =

if  $b = 0$  then 1else  $a * \text{pow } b (a-1)$  1 mark

\* EXPLANATION. 1 mark

(OR)

(b)

\* Less code to be written

\* The code is stored across multiple files

\* Code is short, simple and easy to understand

\* the scoping of variables can easily be controlled

\* The same code can be used to many applications. (OR) Any 5 points

5 marks

85) a)

1. Input

2. Output

3. Finiteness

4. Definiteness

5. Effectiveness

6. Correctness

7. Simplicity

8. Unambiguous

9. Feasibility

10. Portable

11. Independent

(Explain Any Five) - 5 marks

(OR)

b)

For loop definition - 1 mark

Syntax: } 2 marks

Example: } " "

86) a)

Scope Definition

Local Scope

Rules of local variable

Global scope.

Rules of global variable.

Example:

5 marks

Local - 2 1/2 marks

Global - 2 1/2 marks

- b) Append → It is used to add a single element  
 Extend → " " " " " " more than one element  
 Syntax: List.append (elements to be added)  
 List.extend (Elements to be added)  
 Insert → ~~Insert~~ It is used to insert an element  
 at any position.  
 List.insert (Position Index, element)  
 Example: Def: 2 marks Example: 1 mark  
 Syntax: 2 marks

- 37) a) Data model: -  
 1. Hierarchical Model  
 2. Relational " "  
 3. Network Database model  
 4. F-R model  
 5. object model  
 with explanation - 5 marks

- b) \* It is a condition applicable on a  
 field or set of fields - 1 mark  
 1. unique key constraint  
 2. Primary " "  
 3. Default constraint  
 4. Check " "  
 With Explanation - 4 marks

- 38) a) 1. use the csv module's reader function  
 2. use the DictReader class. -  
 With Example + explanation - 5 marks

- b) SQLite - Definition  
 steps - 2 marks

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