

- b. file = open("c:\ \core.txt", "w")
- c. file = open(r"c: \ core.txt", "w")
- d. file = open(file = "c:\core.txt", "w")
- e. file = open(file = "c: \ \ core.txt", "w")
- f. file = open(//c:\ res.txt")

- a) c, f
- b) a, e
- c) d, f
- d) b, c

7. Which of the following is a SQL aggregate function? [1]

- a) JOIN
- b) LEN
- c) AVG
- d) LEFT

8. Which of the following is not a legal method for fetching records from database from within Python? [1]

- a) fetchtwo()
- b) fetchall()
- c) fetchone()
- d) fetchmany()

9. To read twelve characters from a file object infi, we use [1]

- a) infi.read(12)
- b) infi.readline(12)
- c) infi.read(13)
- d) infi.readlines(12)

10. A pointer variable which contains the location of the first/topmost element of the stack is called _____. [1]

- a) Final
- b) Top
- c) Last
- d) First

11. Pick one the following statements to correctly complete the function body in the given code snippet. [1]

```
def f(number):  
# Missing function body  
print(f(5))
```

- a) return "number"
- b) return number
- c) print("number")
- d) print(number)

12. Which method should I use to convert String "Python programming is fun" to "Python Programming Is Fun"? [1]

- a) upper()
- b) capitalize()
- c) istitle()
- d) title()


```

v2 = '6'
for i in t
l [ i ] += v2
v1 = v1 - 1
print(t * t)
print(t [v1])
print(t [v2:]

```

- i. Underline the corrections.
- ii. Write the reason/error next to it in the comment form.

OR

Determine which of the arithmetic expressions are valid. If invalid, explain the reason, [(a, b, c) are integers, (p, q, r) are float and (x, y, z) are float].

- i. $p/q + a - c$
- ii. $q(a + b - z/4)$
- iii. $p/q + a - c$
- iv. $x/y + p * a/b$
- v. $a * + b$
- vi. $a + b * c * 2$

20. Give the full form for the following: [2]

- i. FM
- ii. AM
- iii. NFS
- iv. FTP

21. Write Python code to create a table faculty with the following fields. [2]
 Id, LastName, FirstName, Locationid, phone, rank, startdate
 Rank should be one of the following
 ASSO, FULL, ASST, INST

22. What will be the output of the following? Explain. [2]

```

def f1():
    n = 44
def f2():
    n = 77
    print("Value of n", n)
    print("Value of n", n)

```

23. Answer: [2]

- (i) How to create a connection object?
- (ii) Which method creates and returns a cursor object that may be used to execute SQL commands?

24. Write a Python program that creates a tuple storing first 9 terms of Fibonacci series. [2]

OR

Python is dynamic typed. Explain it.

25. What is the difference between readline() and readlines() function? [2]

OR

Explain seek() method.

Section C

26. Answer: [3]

- (i) Write a method in python to display the elements of list thrice if it is a number and display the element terminated with # if it is not a number.

For example, if the content of list is as follows :

List = ['41', 'DROND', 'GIRIRAJ', '13', 'ZARA']

The output should be

414141

DROND#

GIRIRAD#

131313

ZARA#

- (ii) Correct the following code

i. x = 5

print(x)

y = 10

print(y)

a = x + y

print(a)

ii. sub = "Math"

marks = 80

print("Value of subject and marks are", sub + marks)

iii. x = 5

b = x + 5

x = Try

d = x/20

27. What is the difference between the formal parameters and actual parameters? [3]
What are their alternative names? Also, give a suitable Python code to illustrate both.

28. You want to group the result set based on some column's value. Also, you want [3]
that the grouped result should appear in a sorted order. In which order will you

write the two clauses (for sorting and for grouping). Give example to support your answer.

OR

- i. A table, ITEM has been created in a database with the following fields
ITEMCODE, ITEMNAME, QTY, PRICE
Give the SQL command to add a new field, DISCOUNT (of type Integer) to the ITEM table.
- ii. Categorize following commands into DDL and DML commands?
INSERT INTO, DROP TABLE, ALTER TABLE, UPDATE...SET
29. Write a Python program that read the data from file 'original.dat' and delete the line(s) having word (passed as an argument). Then write these data after removing lines into file 'duplicate.dat'. [3]
30. What is the significance of having functions in a program? [3]

OR

How are following two statements different?

```
import math
```

```
from math import *
```

Section D

31. A linear stack called status contains the following information: [5]
Phone number of Employee
Name of Employee
Write the following methods to perform given operations on the stack status:
i. **Push_element ()** To Push an object containing Phone number of Employee and Name of Employee into the stack.
ii. **Pop_element ()** To Pop an object from the stack and to release the memory.
32. Consider the following tables CABHUB and CUSTOMER and answer the following parts of this question : [5]

Table: CABHUB

Vcode	VehicleName	Make	Color	Capacity	Charges
100	Innova	Toyota	WHITE	7	15
102	SX4	Suzuki	BLUE	4	14
104	C Class	Mercedes	RED	4	35
105	A-Star	Suzuki	WHITE	3	14
108	Indigo	Tata	SILVER	3	12

Table: CUSTOMER

CCode	CName	Vcode
1	Hemant Sahu	101
2	Raj Lai	108

3	Feroza Shah	105
4	Ketan Dhal	104

Give the output of the following SQL queries :

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

OR

Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables.

TRAINER

TID	TNAME	CITY	HIREDATE	SALARY
101	SUNAINA	MUMBAI	1998-10-15	90000
102	ANAMIKA	DELHI	1994-12-24	80000
103	DEEPTI	CHANDIGARH	2001-12-21	82000
104	MEENAKSHI	DELHI	2002-12-25	78000
105	RICHA	MUMBAI	1996-01-12	95000
106	MANIPRABHA	CHENNAI	2001-12-12	69000

COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	AGDCA	12000	2018-07-02	101
C202	ADCA	15000	2018-07-15	103
C203	DCA	10000	2018-10-01	102
C204	DDTP	9000	2018-09-15	104
C205	DHN	20000	2018-08-01	101
C206	0 LEVEL	18000	2018-07-25	105

- i. Display the Trainer Name, City & Salary in descending order of their Hiredate.
- ii. To display the TNAME and CITY of Trainer who joined the Institute in the month of December 2001.
- iii. To display TNAME, HIREDATE, CNAME, STARTDATE from tables TRAINER and COURSE of all those courses whose FEES is less than or equal to 10000. (iv) To display number of Trainers from each Ans. city.
- iv. SELECT TID, TNAME, FROM TRAINER WHERE CITY NOT IN ('DELHI', 'MUMBAI');
- v. SELECT DISTINCT TID FROM COURSE;
- vi. SELECT TID, COUNT(*), MIN (FEES) FROM COURSE. GROUP BY TID HAVING COUNT(*)>1;

vii. SELECT COUNTS), SUM(FEES) FROM COURSE WHERE STARTDATE<
'2018-09- 15';

33. Answer (i) & (ii) OR (iii) & (iv)

[5]

- (i) Write a program to search the name and address of person having age more than 30 in the data list of person.
- (ii) What would be written in the file errorlog.txt after the following code is run?
- ```
def f(datum):
 try:
 return 127/(42 - datum)
 except zeroDivisionError:
 logfile = open ("errorlog.txt", 'w')
 logfile.write ("datum was 42\n")
 logfile.close()
f(42) # calling function f()
```
- (iii) Write a method in python to read lines from a text file INDIA.TXT, to find and display the occurrence of the word "India".

#### INDIA.TXT

"India is the fastest-growing economy. India is looking for more investments around the globe. The whole world is looking at India as a great market. Most of the Indians can foresee the heights that India is capable of reaching."  
The output should be 4

- (iv) What is the output of the following code program. Explain?
- ```
>>> out = file ("output.txt",'w')  
>>> out.write ("Hello, world!\n")  
>>> out.write ("How are you ?")  
>>> out.close ()  
>>> file("output.txt").read()
```

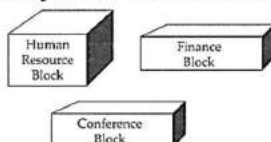
Section E

34. Read the text carefully and answer the questions:

[4]

Trine Tech Corporation (TTC) is a professional consultancy company. The company is planning to set up its new offices in India with its hub at Hyderabad. As a network adviser, you have to understand their requirement and suggest to them the best available solutions. Their queries are mentioned as (i) to (iv) below.

Physical Locations of the blocks of TTC



Block to Block distances (in Mtrs.)

Block (From)	Block (To)	Distance
Human Resource	Conference	110
Human Resource	Finance	40

Conference	Finance	80
------------	---------	----

Expected Number of Computers to be installed in each block

Block	Computers
Human Resource	25
Finance	120
Conference	90

- What will be the most appropriate block, where TTC should plan to install their server?
- Draw a block diagram showing a cable layout to connect all the buildings in the most appropriate manner for efficient communication.
- What will be the best possible connectivity out of the following, you will suggest connecting the new setup of offices in Bengaluru with its London based office.
 - Satellite Link
 - Infrared
 - Ethernet Cable

OR

Which of the following device will be suggested by you to connect each computer in each of the buildings?

- Switch
- Modem
- Gateway

35. Read the text carefully and answer the questions:

[4]

Consider the following tables GAMES and PLAYER:

Table: GAMES

GCode	Game Name	Type	Number	Prize Money	Schedule Date
101	Carom Board	Indoor	2	5000	23-Jan-2004
102	Badminton	Outdoor	2	12000	12-Dec-2003
103	Table Tennis	Indoor	4	8000	14-Feb-2004
105	Chess	Indoor	2	9000	01-Jan-2004
108	Lawn Tennis	Outdoor	4	25000	19-Mar-2004

Table: PLAYER

PCode	Name	GCode
1	Nabi Ahmad	101
2	Ravi Sahai	108
3	Jatin	101

4	Nazneen	103
---	---------	-----

- (i) What do you understand by primary key and candidate keys?
- (ii) Write SQL commands for the following statements:
 - i. To display the name of all GAMES with their GCodes.
 - ii. To display details of those GAMES which are having PrizeMoney more than 7000.
- (iii) Write SQL commands for the following statements:
 - i. To display the content of the GAMES table in ascending order of Schedule Date.
 - ii. To display sum of PrizeMoney for each type of GAMES.

SOLUTION

Section A

1. **(b)** False
Explanation: False
2. **(d)** Ascending
Explanation: The Order by clause by default sorts the retrieved data in ascending order. To sort the data in descending order DESC keyword is used.
3. **(a)** Line 4
Explanation: The num list has 5 elements only. Since, the list indexing starts from 0, the print(num[5]) statement looks for sixth element of the list which does not exist.
4. **(a)** fetchall()
Explanation: fetchall()
5. **(c)** VB Script
Explanation: VB Script and Java Script are examples of client-side scripting languages. Rest all are server-side scripting languages.
6. **(d)** b, c
Explanation: Only file = open("c:\ \core.txt", "w") and file = open(r"c: \ core.txt", "w") are correct statements to open file since the file path should be a proper string and we do not need to provide file keyword before file path.
7. **(c)** AVG
Explanation: AVG is used to find average
8. **(a)** fetchtwo()
Explanation: There is no fetchtwo() method .
9. **(a)** infi.read(12)
Explanation: infi.read(12) function returns 12 bytes read from the infi file.
10. **(b)** Top
Explanation: The top is the pointer variable that contains the first or topmost element of the stack.
11. **(b)** return number
Explanation: return number
12. **(d)** title()
Explanation: title()
13. **(b)** 1.0
Explanation: 1.0, precedence gives to ()
14. **(c)** 1111
Explanation: 1111, 1's complement arithmetic to get the sum.
15. **(d)** (iii) and (iv)
Explanation: (iii) and (iv)
16. **(a)** ping
Explanation: Ping is used to test connectivity to other hosts
17. **(c)** A is true but R is false.
Explanation: The flush() function flushes the write buffer of the file stream and isatty() function returns True if the file stream is interactive otherwise it return False.

18. (c) A is true but R is false.

Explanation: String handling in Python is a straightforward task since Python provides built-in functions and operators to perform operations in the string. Example : count(), find(), replace(), etc.

Section B

19. l = ['a', 'b', 'c', 'd']

t = (0, 1, 2, 3)

v1 = 6

v2 = '6'

for i in t : # : missing

l[i] += v2

print(t+1) # a tuple cannot be multiplied with a tuple,

print(t[:v1]) # v1 is 6, index out of range, however with slice it will work

print(t [int(v2):]) # a tuple slice can contain only integers

OR

i. p/q + a - c valid

ii. q (a + b - z/4) invalid because operator missing between q and a

iii. p/q + a - c valid

iv. x/y + p* a/b valid

v. a* + b invalid because use of two operators together

vi. a + b*c*2 valid

20. i. **FM:** Frequency Modulation

ii. **AM:** Amplitude Modulation

iii. **NFS:** Network File Server

iv. **FTP:** File Transfer Protocol

21. import MySQLdb

db=MySQLdb.connect("localhost", "Fact", "Faculty24", "Instd")

cursor=db.cursor()

cursor.execute("DROP TABLE IF EXISTS FACULTY")

sql="""Create Table Faculty(Id Number(3) PRIMARY KEY, LastName CHAR(20) NOT NULL , FirstName

CHAR(30) NOT NULL , locationid Number(6) , phone char(10) , rank char(4) check (rank IN('ASSO', 'FULL',

'ASST', 'INST')), startdate DATE)"""

cursor.execute(sql)

db.close()

22. Firstly call the function

f1()

f2()

Then output will be look like as:

Value of n 77

Value of n 77

23. Answer:

(i) connection_object = mysql.connector.connect (host = HostName, user = UserName, passwd = password)

(ii) The cursor method of connection object, i.e., connection.cursor() method.

```
24. def make_fibonacci(n):
```

```
    fib = []
```

```
    a,b =0, 1
```

```
    for i in range(n):
```

```
        a, b = b, a+b
```

```
    fib.append(a)
```

```
    return tuple(fib)
```

```
print(make_fibonacci(8))
```

OR

A language is dynamically typed if the type is associated with run-time values and not named variables/fields etc. This means that you as a programmer can write a little quicker because you do not have to specify types every time. Python is a dynamically type language. It does not know about the type of the variable until the code is run, so declaration is no use. It stores that value at some memory location and then binds that variable name to that memory container.

We have assigned three values to three variables:

```
>>> a = 10
```

```
>>> name = "Neha"
```

```
>>> x = 34.6
```

But what types are these variables? Let's use the type() module to find out:

Syntax

```
type(variable_name)
```

25. The readline() function reads from a file in read mode and returns the next line in the file or a blank string if there are no more lines. The data returned by read() is of string type.

The readlines() function, also reads from a file in read mode and returns a list of all lines in the file. The data returned by readlines() is of list type.

OR

The seek() method moves the current file pointer position to the specified position.

Syntax : (offset [, from_what]). The offset argument indicates the number of bytes to be moved. The from_what argument specifies the reference position from where the bytes are to be moved. The values for from_what argument can be 0(beginning of the file); default value, 1(current position of the pointer) or 2(end of the file).

Section C

26. Answer:

(i) List=['41', 'DROND', 'GIRIRAJ', '13', 'ZARA']

```
for w in List:
```

```
    if w.isdigit(): # for numeric digits
```

```
        print(w*3)
```

```
    else:
```

```
        print (w+"#") #for string
```

(ii) i. `x = 5`

`print(x)`

`y = 10`

`print(y)`

`a = x + y`

`print(a)`

ii. `sub = "Math"`

`marks = 80`

`print("Value of subject and marks are" , sub, marks)`

iii. `x = 5`

`b = x + 5`

`x = "Try"`

`d = x/20`

27. **Actual Parameter** is a parameter, which is used in a function call statement to send the value from the calling function to the called function. It is also known as Argument.

A formal Parameter is a parameter, which is used in a function header of the called function to receive the value from the actual parameter. It is also known as Parameter. The key difference between Actual Parameters and Formal Parameters is that Actual Parameters are the values that are passed to the function when it is invoked while Formal Parameters are the variables defined by the function that receives values when the function is called.

For example,

```
def addEm(x, y, z):
```

```
    print(x + y + z)
```

```
addEm(6, 16, 26)
```

In the above code, actual parameters are 6, 16 and 26; and formal parameters are x, y and z.

28. When we use GROUP BY clause (for grouping of data) and ORDER BY clause (for sorting data) together, the ORDER BY clause always follows other clauses. That is, the GROUP BY clause will come before the ORDER BY clause. For example In this query,

```
SELECT user_id, SUM(score) AS total_score FROM user_score GROUP BY  
user_id ORDER BY user_id ASC;
```

OR

i. `ALTER TABLE ITEM ADD Discount INT;`

ii. DDL means 'Data Definition Language'. It is used to create and modify the structure of database objects in SQL. So, DDL commands are DROP TABLE, ALTER TABLE.

DML is 'Data Manipulation Language' which is used to manipulate data itself. So, DML commands are INSERT INTO, UPDATE...SET.

29. `import os`

```
def Delete (word):
```



```

file1=open('original.dat', 'rb')
nfile=open('duplicate.dat', 'wb')
while True:
    line=file1.readline()
    if not line:
        break
    else:
        if word in line:
            pass
        else:
            print(line)
            nfile.write(line)
file1.close()
nfile.close()

```

30. Creating functions in programs is very useful. It offers the following advantages:

- i. The program is easier to understand. The main block of the program becomes compact as the code of functions is not part of it, this is easier to read and understand.
- ii. Redundant code is in one place, so making changes is easier. Instead of writing code again when we need to use it more than once, we can write the code in the form of a function and call it more than once. If we later need to change the code, we change it in one place only. Thus it saves our time also.
- iii. Reusable functions can be put in a library in modules. We can store the reusable functions in the form of modules. These modules can be imported and used when needed in other programs.
- iv. You use functions in programming to bundle a set of instructions that you want to use repeatedly because of their complexity, are better self-contained in a sub-program and called when needed. That means that a function is a piece of code written to carry out a specified task.

OR

When **import math** statement is used, a new namespace sets up in our working environment with the same name as that of the math module and code of the module is interpreted and executed. All the defined functions, constants and variables of the math module are available to our program. There is no need to import the objects of modules everytime they are used.

Whereas when we use **from math import *** statement no new namespace is created. Only the functions and variables of the imported module are added to the namespace of the program. If there are two variables with same name, one in the program and other in the imported module then the variable of the imported module is hidden by the program variable. We need to import every object we are using in the code.

Section D

```

31. def Push_element(Status, Top):
    phone_no = int(input("Enter phone number:"))
    emp_name = input("Enter employee name:")
    St = (phone_no, emp_name)

```

```

Status.append(St)
Top = Top + 1
return Top
def Pop_element(Status, Top):
    Slen = len(Status)
    if (Slen <= 0):
        print("Status is empty")
    else:
        phone_no, emp_name = Status.Pop()
        Top = Top-1
        print("Phone number %s and name %s deleted"%(phone_no, emp_name))
    return Top

```

32. i. 4

ii.	35	12
-----	----	----

iii. Invalid query

iv. SX4

C Class

OR

i. SELECT TNAME, CITY, SALARY FROM TRAINER ORDER BY HIREDATE

ii. SELECT TNAME, CITY FROM TRAINER WHERE HIREDATE BETWEEN '2001-12-01' AND '2001-12-31'

SELECT TNAME, CITY FROM TRAINER WHERE HIREDATE >= '2001-12-01' AND HIREDATE <= '2001-12-31';

iii. SELECT TNAME, HIREDATE, CNAME, STARTDATE FROM TRAINER.COURSE WHERE TRAINER.TID= COURSE.TID AND FEES <= 10000;

iv. SELECT CITY, COUNT(*)) FROM TRAINER GROUP BY CITY;

v.	TIDTNAME	
	103	DEEPTI
	106	MANIPRABHA

vi. DISTINCT TID

101

103

102

104

105

vii.	TIDCOUNT(*)		MIN(FEES)
	101	2	12000

viii.	COUNT(*)	SUM(FEES)
	4	65000

33. Answer (i) & (ii) OR (iii) & (iv)

(i) file1 = open ("datalist.dat")

rec = print "Name Address"

```

while rec:
    rec = file1.readline().split()
    age = int (rec [2])
    if age > 30
    print rec[0], rec[1]
    file1.close()

```

(ii) "datum was 42" will be written in the errorlog.txt file.

As when f(42) function is called, zeroDivisionError is invoked by 127/(42-42) and the exception block is executed and "datum was 42\n" is written in the file by the write() function.

(iii)def display1():

```

count = 0
file = open('INDIA.TXT', 'r')
for LINE in file:
    Words = LINE.split()
    for W in Words:
        if W == " India":
            count = count+1
    print(count)
    file.close()

```

(iv)Hello, world!

How are you?

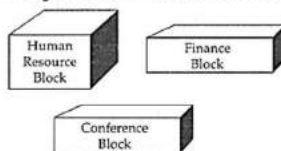
the first line will open the file in write mode. The next two lines will write the text to the file. The fourth line will close the file. In the fifth line, the file() function gives the reference of the file output.txt to read () function which reads the text from the file.

Section E

34. Read the text carefully and answer the questions:

Trine Tech Corporation (TTC) is a professional consultancy company. The company is planning to set up its new offices in India with its hub at Hyderabad. As a network adviser, you have to understand their requirement and suggest to them the best available solutions. Their queries are mentioned as (i) to (iv) below.

Physical Locations of the blocks of TTC



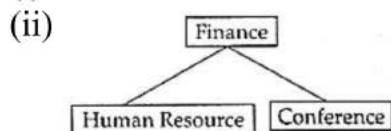
Block to Block distances (in Mtrs.)

Block (From)	Block (To)	Distance
Human Resource	Conference	110
Human Resource	Finance	40
Conference	Finance	80

Expected Number of Computers to be installed in each block

Block	Computers
Human Resource	25
Finance	120
Conference	90

(i) Finance block because it has the maximum number of computers.



(iii) Satellite link will be the best possible connectivity.

OR

The Switch will be suggested to connect each computer in each of the buildings.

35. Read the text carefully and answer the questions:

Consider the following tables GAMES and PLAYER:

Table: GAMES

GCode	Game Name	Type	Number	Prize Money	Schedule Date
101	Carom Board	Indoor	2	5000	23-Jan-2004
102	Badminton	Outdoor	2	12000	12-Dec-2003
103	Table Tennis	Indoor	4	8000	14-Feb-2004
105	Chess	Indoor	2	9000	01-Jan-2004
108	Lawn Tennis	Outdoor	4	25000	19-Mar-2004

Table: PLAYER

PCode	Name	GCode
1	Nabi Ahmad	101
2	Ravi Sahai	108
3	Jatin	101
4	Nazneen	103

(i) Primary Key is a unique and non-null key, which is used to identify a tuple uniquely. If a table has more than one such attributes which identify a tuple uniquely than all such attributes are known as candidate keys.

(ii) i. SELECT GameName, GCode FROM GAMES;

ii. SELECT * FROM Games WHERE PrizeMoney > 7000;

(iii) i. SELECT * FROM Games ORDER BY ScheduleDate;

ii. SELECT SUM(Prizemoney) FROM Games GROUP BY Type;