

COMPUTER SCIENCE

Time : 3 hrs

Max. Marks : 70

General Instructions

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each. One internal choice is given in Q35 against part c only.
8. All programming questions are to be answered using Python Language only.

Section A

1. State True or False

"The method that can be used to delete a range of values from a list is del". [1]

2. In which module, ceil() function resides ? [1]

- (a) pandas
(c) random

- (b) pyplot
(d) math

3. Given $L = [2, 3, 4, 5, 6]$. The output of `print(L[-1:-5])` is [1]

- (a) [6,5,4]
(c) []

- (b) Error
(d) [6,5]

4. The function returns True if all the characters in a string are digits. [1]
(a) isalnum() (b) isdigit()
(c) isnumber() (d) isalpha()
5. Given a tuple $t=(2,5,1,6,3)$. The statement $t.sort()$ returns [1]
(a) (1,2,3,5,6) (b) (6,5,3,2,1)
(c) Error (d) None of these
6. The $seek(n)$ places the file pointer at position n with reference to [1]
(a) Beginning (b) End
(c) Current position (d) Position 10
7. To see a list of all the databases in the system, the command may be used. [1]
(a) Show (b) Show databases
(c) Display databases (d) View databases
8. A set of possible data values is called [1]
(a) attribute (b) degree
(c) tuple (d) domain
9. in and $not\ in$ are Operators. [1]
(a) Arithmetic (b) Membership
(c) Logical (d) Identity
10. Rows of a relation are called [1]
(a) relation (b) tuples
(c) data structure (d) an entity
11. While opening a binary file the character has to be added to the mode of opening. [1]
(a) b (b) x
(c) u (d) b*
12. If a table carries 10 columns and 15 rows, what is its degree? [1]
(a) 10 (b) 150
(c) 15 (d) 25
13. Modulation and demodulation is performed by [1]
(a) microwave (b) satellite
(c) modem (d) gateway
14. $t1=(9,6,7,6)$ [1]
 $t2=(2,8,12,20)$
The output of the statement below is
`print(min(t1) + max(t2))`
(a) 26 (b) 25
(c) Error (d) None of these

15. Which among the following are constraints ?
- (a) Primary key
 - (b) Unique
 - (c) NOT NULL
 - (d) All of these

16. The attribute of the connection string specifies the password to connect to the database.
- (a) code
 - (b) password
 - (c) passwd
 - (d) All of these

Direction (Q.Nos. 17-18) are Assertion and Reason based questions.

17. **Assertion (A)** Pickling is a way to convey a Python object into character stream.

Reason (R) To perform pickling, the pickle module needs to be imported.

- (a) Both A and R are true and R is the correct explanation for A.
- (b) Both A and R are true but R is not the correct explanation for A.
- (c) A is true but R is false.
- (d) A is false but R is true. A.

18. **Assertion (A)** A recursive function does not require a loop.

Reason (R) A recursive function calls itself again and again until a certain condition is true.

- (a) Both A and R are true and R is the correct explanation for A.
- (b) Both A and R are true but R is not the correct explanation for A.
- (c) A is true but R is false.
- (d) A is false but R is true.

Section B

19. Observe the code given below and find the output :

```
s="oceanview"  
count=0  
for a in s:  
    if a in "stuv":  
        count+=1  
print(count)
```

20. What is the difference between video conferencing and chat?

Or

What is WWW?

21. (a) Given the following code :

```
d={'Bed':145000,'Almirah':9000,'Chair':1000}  
for v in d.keys():  
    if d[v]>100000:  
        d[v]-=10000  
print(d)
```

What will be the output of the print statement?

- (b) Write the value stored in the variable Num by each of the following statements. [1]
- $\text{Num} = 2 * 3 - 4$
 - $\text{Num} = 2 + 3 - 1 * 3$
 - $\text{Num} = (2 + 3) * 2$

22. Explain database and DBMS in detail. [2]

23. (a) Write the full forms of : [2]
- RJ45
 - XML

(b) Write one advantages of Bus topology compared to Star and one advantage of star topology compared to Bus .

24. What output will the following code produce? [2]

```
y=str(123)
x="hello"*3
print(x,y)
x="hello" + "world"
y=len(x)
print(y,x)
```

Or

Write function names for the following with respect to strings.

- To make the first letter of a string in capital
- To find the index of the 1st occurrence of a string in another.

25. What is DDL? Explain with its commands. [2]

Or

What is DML? Explain with its commands.

Section C

26. (a) Consider the following tables PERSON and ORDERS [1+2]

Table : PERSON

P_Id	Last_Name	First_Name	City
1	Sharma	Abhay	Mumbai
2	Gupta	Mohan	Delhi
3	Verma	Akhil	Mumbai

Table : ORDERS

O_Id	Order_No	P_Id
1	10050	3
2	25000	3
3	5687	1
4	45000	1
5	35000	15

With respect to the tables given above write a command to display the Lastname, Firstname and corresponding order number arranged by Lastname.

(b) With respect to the table PAYMENTS given below, write, output of the following questions.

TABLE : PAYMENTS

EmpId	Emp_Name	Salary	Department
1	Ridhi	20000	D1
2	Rohit	25000	D2
3	Rakesh	20000	D1
4	Roshan	44000	D3
5	Rohini	15000	D1
6	Radha	14000	D1

- To display the average of employees salary from PAYMENTS table.
- To count the total number of employees from PAYMENTS table Department wise
- To count distinct values of column Department from PAYMENTS table.
- To display department wise number of employees, but for only those departments where number of employees are more than 2.

27. Write a code in Python to open a Binary file "College.dat" containing records of students as per following structure. [3]

Roll Name SemPercentage

The code should display only records of students from the file where the percentage is greater than 30.

Or

Write a method countopen() to count and display the number of lines starting with the word 'OPEN' (including lower cases and upper cases) present in a text file "start.txt".

e.g. If the file "start.txt" contains the following lines:

Get the data value to be deleted,

Open the file for reading from it.

Read the complete file into a list

Delete the data from the list

Open the file

Open same file for writing into it

Write the modified list into file.

Close the file.

The method should display

Total lines started with word 'OPEN' is/are: 3

28. (a) Write SQL commands from (i) to (iv) on the basis of the table INTERIORS given below [3]

TABLE: INTERIORS

No	ITEMNAME	TYPE	DATEOFSTOCK	PRICE	DISCOUNT
1	Red rose	Double Bed	23/02/02	32000	
2	Soft touch	Baby cot	20/01/02	9000	15
3	Jerry's home	Baby cot	19/02/02	8500	10
4	Rough wood	Office Table	01/01/02	20000	10
5	Comfort zone	Double Bed	12/01/02	15000	20
6	Jerry look	Baby cot	24/02/02	7000	20
					19

No	ITEMNAME	TYPE	DATEOFSTOCK	PRICE	DISCOUNT
7	Lion king	Office Table			
8	Royal tiger	Sofa	20/02/02	16000	20
9	Park sitting	Sofa	22/02/02	30000	25
10	Dine Paradise	Dining Table	13/12/01	9000	15
11	White Wood	Double Bed	19/02/02	11000	15
12	James 007	Sofa	23/03/03	20000	20
13	Tom look	Baby cot	20/02/03	15000	15
			21/02/03	7000	10

- (i) To show all information about the Sofa from the INTERIORS table.
 - (ii) To list the ITEMNAME, which are priced at more than 10000 from the INTERIORS table.
 - (iii) To list ITEMNAME and TYPE of those items, in which DATEOFSTOCK is before 22/01/02 from the INTERIORS table in descending order of ITEMNAME.
 - (iv) To insert a new row in the INTERIORS table with the following data {14, 'TrueIndian', 'Office Table', '25/03/03', 15000, 20}
- (b) Write the command to display the sum of prices of items of type "cot".

29. Write a user defined function to accept a string and check whether it is palindrome or not. (A palindrome is a string that is same as its reverse) [3]

30. Explain the traversal operation in a stack. [3]
 Write the algorithm for Traversal of a stack to display its contents.
 You need not to write the actual code.

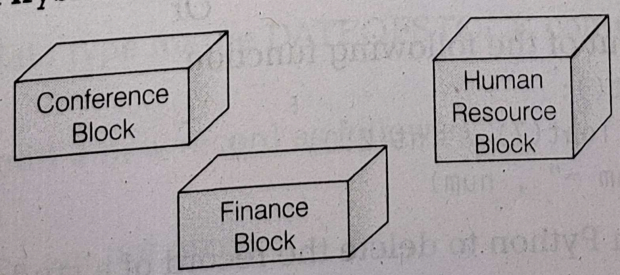
Or

Find the final contents of a stack that encounters the following tokens.
 Assume that an operand is pushed to stack and a binary operator pops two operands from stack and pushes the result to the stack.
 7,11,*,80,+,50,+

Section D

31. Tech Up Corporation (TUC) is a professional consultancy company. The company is planning to set up their 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 (v) below.

Physical locations of the blocks of TUC



Block to block distances (in metre)

Block (From)	Block (To)	Distance
Human Resource	Conference	60
Human Resource	Finance	120
Conference	Finance	80

Expected number of computers to be installed in each block

Block	Computers
Human Resource	125
Finance	25
Conference	60

- (i) What will the most appropriate block, where TUC should plan to install their server? [1]
- (ii) Draw a block to block cable layout to connect all the buildings in the most appropriate manner for efficient communication. [1]
- (iii) Write names of different types of Modems. [1]
- (iv) Which of the following devices will be suggested by you to connect each computer in each of the buildings? [1]
 - (a) Gateway
 - (b) Switch
 - (c) Modem
- (v) Company is planning to connect its Block in Hyderabad which is more than 20 km. Which type of network will be formed? [1]

32. (a) Underline the errors in the following code and write the correct code: [2+3]

```
s="WelcometoCS"
For a IN s :
    If a IN "aeiou" :
        print(a)
    else
        print("False")
```

(b) Write a code in Python to update the class of a student to 12 whose roll number is 22. The table structure is as follows :

RollNo	Name	Class	Perc
--------	------	-------	------

Note :
 Database : PythonDB
 Table: Student
 Host : localhost
 UserId: root
 Password: arihant

Or

(a) Write the output of the following function

```
def showOutput():
    num=4 + float(7) / int(2.0)
    print("num =" , num)
```

(b) Write a code in Python to delete the record of a student whose rollno is 33. The table structure is as follows

RollNo	Name	Class	Perc
--------	------	-------	------

Note :

Database : PythonDB

Table: Student

Host : localhost

UserId: root

Password: arihant

33. What is the use of `writerows()` function for CSV files? [5]

A binary file "Hotel.dat" exists storing details of hotel customers as per following structure:

RoomId CustomerName Days

Write a program in python for adding and displaying records from the binary file using following functions

- (a) `Reserve()` : To add data of customers to the binary file.
- (b) `ShowReservations()` : To open the file "Hotel.dat" and display all the records.

Or

What is `csv.reader()` function?

A binary file "Telephone.dat" exists storing details of BSNL customers as per following structure:

PhoneNo CustomerName ConnType

Write a program in python for adding and displaying record count from the binary file using following functions

- (a) `NewCustomer()` : To add data of customers to the binary file "Telephone.dat".

Note : The existing connection data should be preserved.

- (b) `PrintConnections()` : To open the file "Telephone.dat" and display the connections and number of connections.

Section E

34. Consider the following table

[1+1+2]

TABLE : INTERIORS

No	ITEMNAME	TYPE	DATEOFSTOCK	PRICE	DISCOUNT
1	Red rose	Double Bed	23/02/02	32000	15
2	Soft touch	Baby cot	20/01/02	9000	10
3	Jerry's home	Baby cot	19/02/02	8500	10

- (i) What should be the data type for the DATEOFSTOCK column?
- (ii) Write a command to add a new record as follows :
4, "Morris", "Sofa Set"
Rest of the field values are not given
- (iii) Write statements to :
 - (a) Write a command to display only the Column ITEMNAME , Net Amount(PRICE-DISCOUNT)
 - (b) Display only ITEMNAME and Discount column.