BHAVAN'S TRIPURA VIDYAMANDIR
PRE-BOARD EXAMINATION 2024-2025
Class:-12
Subject:-Computer Science with Python (083)

Time Allowed: **3 Hrs**   Maximum Marks:**70 Marks**

Name of the student: Roll: Stream: Sec:

General Instructions:
- *Please check this question paper contains **37** questions.*
- *The question paper has **5** sections: **Section A, B, C, D and E***
- ***Section-A,** consists of **21** questions **(1 to 21)**, each question carries **1** Mark.*
- ***Section-B,** consists of **7** questions **(22 to 28)**, each question carries **2** Marks.*
- ***Section-C,** consists of **3** questions **(29 to 31)**, each question carries **3** Marks.*
- ***Section-D,** consists of **4** questions **(32 to 35)**, each question carries **4** Marks.*
- ***Section-E,** consists of **2** questions **(36 to 37)**, each question carries **5** Marks.*
- *All Programming questions are to be answered using **Python Language** only.*

SECTION-A   1 X 21 =21

1. **State true or false:** There is no conceptual limit to the size of a list.

2. _____ is used for point-to-point communication or unicast communication such as radar and satellite.
   a) RADIOWAVES   b) BLUETOOTH   c) MICROWAVES   d) INFRARED WAVES

3. What is the best way to represent attributes in a large database?
   a) All of these   b) Concatenation c) Dot Representation   d) Relational-and

4. What is the mean of L in LEGB rule for scope resolution?
   a) Local   b) Library   c) Least   d) Last

5. Out of the following, find those identifiers, which cannot be used for naming Variables or Functions in a Python program:
   Price*Qty, class, For, do, 4thCol, totally, Row31, _Amount

6. What is the full form of CSMA/CA?
   a) Collision Sense Multiple Access/Collision Act
   b) Carrier Sense Multiple Access/Collision Avoidance
   c) Carrier Sense Multiple Access/Collision Act
   d) Collision Sense Multiple Access/Collision Avoidance

7. Information stored on a storage device with a specific name is called a _____.
   a) array   b) file   c) file pointer   d) tuple

8. The SQL statements to access and manipulate data in existing table is/are:
   a) System Control Statements   b) Session Control Statements
   c) DDL   d) DML

9. Aggregate functions are also known as
   a) group functions   b) Add function   c) group method   d) sum function

10. What is following code doing?
```
file = open("contacts.txt", "a")
name = input ("Please enter name.")
phno = input ("Please enter phone number.")
file.write(name + ','+ phno + "\n")
file.close()
```

11. **State true or false:** In Python, a variable is a placeholder for data.

12. When a stack is empty and an element's deletion is tried from the stack, it is called an_____.
   a) UNDERFLOW   b) OVERFLOW   c) NOFLOW   d) EXTRAFLOW

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13. Write a query to display the Sum, Average, Highest and Lowest salary of the employees grouped by department number and sub-grouped by the job.

14. Internet is an example of _____ topology.
    a) Mesh   b) Star   c) Tree   d) Bus

15. What is the output of the following code?
```
t = (10, 20, 30, 40, 50, 60, 70)
pnint(t[5:-1])
```
    a) (10, 20, 30, 40, 50, 60, 70)   b) Blank output()
    c) (10, 20, 30, 40, 50)   d) (10, 30, 50, 70)

16. _____ function is used to arrange the elements of a list in ascending order.
    a) ascending ()   b) sort ()   c) asort ()   d) arrange ()

17. Traditionally, Internet checksum is
    a) 24-bit   b) 16-bit   c) 32-bit   d) 8-bit

18. Which of the following wireless transmission media is best suited for MAN?
    a) Radio Link   b) Microwave   c) Infrared   d) Bluetooth

Q19 to 21 are ASSERTION AND REASONING based questions. Mark the correct choice.
  (a) Both A and R are true and R is the correct explanation for A.
  (b) Both A and R are true and R is not correct explanation for A.
  (c) A is true but R is false.
  (d) A is false but R is true.

19. **Assertion (A):** The list can contain data of different types.
   Reasoning(R): We can use slice [:] operator to access the data of the list.

20. **Assertion (A):** The Python write excel file is used to perform multiple operations on a spreadsheet using the **xlwt** module.
   Reasoning(R): xlwt module can also be used to write text, numbers, and formulas to multiple worksheets.

21. **Assertion (A):** A parameter is a value listed inside the parentheses in the function definition.
   Reasoning(R): An argument is a value that is sent to the function when it is called.

SECTION- B   2 X 7=14

22. What is demodulation? How is it different from modulation?

23. List the most common parameters and the usage that are passed to communicate with the database.

24. Determine the hierarchy of operations and evaluate following expression.
```
A = 3*4//5 + 5//7 + 8 - 2 + 4//2
```
OR
If you are asked to label the Python loops as determinable or non-determinable, which label would you give to which loop? Justify your answer.

25. What are immutable and mutable types? List immutable and mutable types of python.
OR
Write a program that takes any two lists L and M of the same size and adds their elements together to form a new list N whose elements are sums of the corresponding elements in L and M. For instance, if L = [3, 1, 4] and M = [1, 5, 9], then N should equal [4, 6, 13].

26. Differentiate ORDER BY and GROUP BY with an example.

27. Define Commit and Rollback Commands.

28. Differentiate between text file and CSV file.

29. What is the significance of having functions in a program?

OR

 What is the utility of: **i.** default arguments   **ii.** Keyword arguments

30. Consider the following table structure

Table: Faculty with fields as

F_ID (Primary Key)
F_NAME
L_NAME
HIRE_DATE
SALARY

Write the Python code to create the above table.

OR

Write the disadvantages of SQL.

31. Write a function countmy() in python to read the text file "DATA.TXT" and count the number of times "my" occurs in the file. For example if the file DATA.TXT contains-"This is my website. I have displayed my preference in the CHOICE section ".-the countmy() function should display the output as: "my occurs 2 times".

OR

What do you understand by the local and global scope of variables? How can you access a global variable inside the function, if the function has a variable with the same name?

SECTION- D   **4 X 4 = 16**

32. Write Addnew(Book) and Remove(Book) methods in Python to Add a new Book and Remove a Book from a List of Books, considering them to act as PUSH and POP operations of the data structure stack.

OR

Write a program to print a string in reverse order.

33. For the text file nanthem.txt shown below, write a program to find the most commonly occurring word. Also, list the frequencies of words in the text file.

Jan gan man adhinayaka jaya he

Bharat bhagya vidhata

Panjab sindh Gujarat Maratha

Dravid Utkal banga

Vindhye Himachal Yamuna Ganga

Uchchal jaladhi tarang

Tava shubh name jage,

Tava shubh ashish mange,

Gahe tava jaya gatha.

OR

Explain the components of data communication.

34. **i)** Write a method in python to read lines from a text file DIARY.TXT and display those lines which start with the alphabets P.

ii) observe the following code and answer the follow

```
f1=open("mydata","a")
_____#blank1
f1.close()
```

(a) What type of file is mydata

(b) Fill in the blank1 with statement to write "abc" in the file "mydata"

35. Write SQL commands for (i) to (v) on the basis of table EMPLOYEE

TABLE: EMPLOYEE

S NO	NAME	BASIC	DEPARTMENT	DATO FAPP	AGE	SEX
1	KARAN	8000	PERSONNEL	27/03/97	35	M
2	DIVAKAR	9500	COMPUTER	20/01/98	34	M
3	DIVYA	7300	ACCOUNTS	19/02/97	34	F
4	ARUN	8350	PERSONNEL	01/01/95	33	M
5	SABINA	9500	ACCOUNTS	12/01/96	36	F
6	JOHN	7400	FINANCE	24/02/97	36	M
7	ROBERT	8250	PERSONNEL	20/02/97	39	M
8	RUBINA	9450	MAINTENANCE	22/02/98	37	F
9	VIKAS	7500	COMPUTER	13/01/94	41	M
10	MOHAN	9300	MAINTENANCE	19/02/98	37	M

i) Which command will be used to list the names of the employees, who are more than 34 years old sorted by NAME.
a. SELECT NAME FROM EMPLOYEE WHERE AGE>34 ORDER BY NAME;
b. SELECT * FROM EMPLOYEE WHERE AGE>34 ORDER BY NAME;
c. SELECT NAME FROM EMPLOYEE WHERE AGE>34;
d. SELECT NAME FROM EMPLOYEE AGE>34 ORDER BY NAME;
ii) Write a query to display a report, listing NAME, BASIC, DEPARTMENT and annual salary. Annual salary equals to BASIC * 12.
iii) Insert the following data in the EMPLOYEE table 11, 'VIJAY', 9300, 'FINANCE', '13/7/98', 35, "M"
iv) Write a query to count the number of employees, who are either working in PERSONNEL or COMPUTER department.

OR

v) Write the degree and cardinality of the table EMPLOYEE.

OR

Consider the following tables GAMES and PLAYER and answer (b) and (c) parts of this question:

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

a. What do you understand by primary key and candidate keys?

b. 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. To display the content of the GAMES table in ascending order of Schedule Date.

   iv. To display sum of PrizeMoney for each type of GAMES.

c. Give the output of the following SQL queries:

   i. SELECT COUNT (DISTINCT Number) FROM GAMES;

   ii.SELECT MAX(ScheduleDate), MIN (ScheduleDate) FROM GAMES;

   iii. SELECT Name, GameName FROM GAMES G, PLAYER P WHERE (G.Gcode= P.Gcode AND G.PrizeMoney>10000);
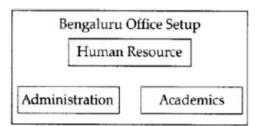
   iv.SELECT DISTINCT Gcode FROM PLAYER;

SECTION- E   5 X 2 = 10

36. G.R.K International Inc. is planning to connect its Bengaluru Office Setup with its Head Office in Delhi. The Bengaluru Office G.R.K. International Inc. is spread across an area of approx. 1 square kilometres consisting of 3 blocks. Human Resources, Academics and Administration. You as a network expert have to suggest answers to the four queries (i) to (v) raised by them.

Note Keep the distances between blocks and number of computers in each block in mind, while providing them the solutions

.

Shortest distances between various blocks

Human Resources to Administration	100 m
Human Resources to Academics	65 m
Academics to Administration	110 m
Delhi Head Office to Bengaluru Office Setup	2350 km

Number of computers installed at various blocks

Block	Number of Computers
Human Resources	156
Administration	20
Academics	100
Delhi Head Office	20

i. Suggest the most suitable block in the Bengaluru Office Setup to host the server. Give a suitable reason with your suggestion.

ii. Suggest the cable layout among the various blocks within the Bengaluru Office Setup for connecting the blocks.

iii. Suggest a suitable networking device to be installed in each of the blocks essentially required for connecting computers inside the blocks with fast and efficient connectivity.

iv. Suggest the most suitable media to provide secure, fast and reliable data connectivity between Delhi Head Office and the Bengaluru Office Setup.

v. Expand the following
    WAN
    LAN

37. i) Mr.Harsh want to interface python with mysql and write some code help him to write the code

```
import_____.connector                        #Line1
mydb=mysql.connector._____(host="localhost",user="root",
passwd="tiger",database="school")                      #Line2
cursor=mydb._____()                             #Line3
cursor._____(" select * from stud")     #Line4
data=cursor._____()           # Line 5 To retrieved all records
count=cursor._____           #Line6 To count total rows
```

ii) Write the Python code to display the present databases in MySQL.

OR

i) How to retrieve data from a table?

ii) How to create a database in MySQL through Python?

iii) What is a cursor? Explain how to initiate the same.