12PB24CS04

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PRE-BOARD EXAMINATION

CLASS: XII **COMPUTER SCIENCE (083)** **Time allowed: 3 Hours**
Maximum Marks: 70

General Instructions:

- This question paper contains 37 questions.
- All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions
- The paper is divided into 5 Sections- 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.
- In case of MCQ, text of the correct answer should also be written.

Q No.	Section-A (21 x 1 = 21 Marks)	Marks
1	State True or False "Dictionaries in Python are mutable but Strings are immutable." **True**	1
2	str="R and Data Science" z=str.split() newstr="=".join([z[2].upper(),z[3],z[2]+z[3],z[1].capitalize()]) newstr is equal to a) 'DATA=Science=DataScience=And' b) 'DATA=DataScience=And' c) 'DATA=Science=And' d) 'DATA=Science==DataScience=And' **(a) 'DATA=Science=DataScience=And'**	1
3	Consider the given expression: **True and not AAA and not True or True** Which of the following will be correct output if the given expression is evaluated with AAA as False? (a) True (b) False (c) NONE (d) NULL **(a) True**	1
4	What shall be the output of the following statement? "TEST".split('T',1) (a) [' ', ' ES ' ,' '] (b) ['T', ' ES ' ,'T'] (c) [' ', ' EST '] (d) Error **(c) [' ', 'EST']**	1
5	What shall be the output for the execution of the following statement? **"ANTARTICA".strip('A')** (a). NTRCTIC (b). [' ', 'NT', 'RCTIC', ' '] (c). NTARTIC (d). Error **(c) NTARTIC**	1
6	Consider The following: t=(12,13,14,16,[2,3])	1

	What changes will be made in t after the execution of the following statement? t.append(4) (a) t=(12,13,14,16,[2,3],4) (b) t= (12,13,14,16,[2,3,4]) (c) t=(4,12,13,14,16,12,3) (d) It will give an error **(d) It will give an error**	
7	What will be the output? test = {1:'A', 2:'B', 3:'C'} del test[1] test[1] = 'D' del test[2] print(len(test)) (a) 0 (b) 1 **(c) 2** (d) Error	1
8	Predict the output of following code snippet: Lst = [10,20,30,40,50,60,70,80,90] print(Lst[::3]) **[10, 40, 70]**	1
9	Fill in the blanks: ----------command is used to remove attribute from the table in SQL (i) Update (ii) Remove (iii) Alter (iv) Drop **(iii) Alter**	1
10	Which of the following options is the correct Python statement to read and display the first 10 characters of a text file "poem.txt" ? (a) F=open('poem.txt') print(F.load(10)) (b) F=open('poem.txt') print(F.reader(10)) (c) F=open('poem.txt') print(F.read(10)) (d) F=open('poem.txt',) print(F.readline(10)) **(c) F = open('poem.txt') print(F.read(10))**	1
11	When will the else part of try-except-else be executed? a) always b) when an exception occurs c) when no exception occurs d) when an exception occurs in to except block **c) when no exception occurs**	1
12	Find and write the output of following python code: a=100 def show(): global a a=-80 def invoke(x=5): global a a=50+x show() invoke(2)	1

	invoke() print(a) **55**	
13	Fill in the blank: _____command is used for changing value of a column in a table in SQL. (a) update (b) remove (c) alter (d) drop **(a) update**	1
14	What will be the output of the query? **SELECT * FROM products WHERE product_name LIKE 'BABY%';** **(a) Details of all products whose names start with 'BABY'** (b) Details of all products whose names end with 'BABY' (c)Names of all products whose names start with 'BABY' (d)Names of all products whose names end with 'BABY'	1
15	To fetch the multiple records from the result set you may use-- method in SQL? a) fetch() b) fetchmany() c) fetchmultiple () d) None of the mentioned **b) fetchmany()**	1
16	Which function is used to display the total no of records from a table in a database? (a) total() (b) total(*) (c) count(*) (d) count() **(c) count(*)**	1
17	Fill in the blank: is a communication medium, classified as long-distance high speed unguided medium. (a) Optical fiber (b) Microwave (c) Satellite Link (d)WIMAX **(c) Satellite Link**	1
18	A system designed to protect unauthorized access to or from a private network is called----------. (a) Password (b) Firewall (c) Access wall (d) Network Security **(b) Firewall**	1
19	Which of the following establishes PAN? (a) Bluetooth (b) WWW (c) Telephone (d) Modem **(a) Bluetooth**	1
	Q20 and Q21 are Assertion(A) and Reason(R) based questions. Mark the correct choice as: **(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 the correct explanation for A** **(C)A is True but R is False** **(D)A is False but R is True**	
20	Assertion (A): CSV (Comma Separated Values) is a file format for data storage that looks like a text file. Reason (R): The information is organized with one record on each line and each field is separated by a comma. **(A) Both A and R are true and R is the correct explanation for A**.	1
21	Assertion(A). Data conversion is necessary during reading and writing in text file Reasoning.(R) Binary files store data in a binary format, which can be directly	1

	read and written without the need the data conversion **(B) Both A and R are true and R is not the correct explanation for A.**	
Q No	**Section-B (7 x 2=14 Marks)**	**Marks**
22	How are list different from dictionaries. Write two points. **Access Method: Lists use indices; dictionaries use keys.** **Purpose: Lists store ordered collections; dictionaries store data as key-value pairs for efficient retrieval.**	2
23	Give two examples of each of the following: (I) Membership operators (II) Identity operators **Membership Operators-in , not in** **Identity operators-is, is not**	2
24	Given a list L=[10,9,8,7,6] *(Answer using builtin functions only)* (I) A) Write a statement to arrange the list in descending order and store it in another list L1.. **L = [10, 9, 8, 7, 6]** **L1 = sorted(L, reverse=True)** OR B) To display the first three elements. **L = [10, 9, 8, 7, 6]** **first_three = L[:3]** (II) A) Write a statement to display the total number of elements in the list. **L = [10, 9, 8, 7, 6]** **total_elements = len(L)** OR B) Write a statement to reverse the elements of the list and store it in another list L1. **L = [10, 9, 8, 7, 6]** **L1 = L[::-1]**	2
25	What possible outputs are expected to be displayed on screen at the time of execution of the program from the following code? Select correct options from below. import random arr=['10','30','40','50','70','90','100'] L=random.randrange(1,3) U=random.randrange(3,6) for i in range(L,U+1): print(arr[i],"$",end="@") a)30 $@40 $@50 $@70 $@90 b)30 $@40 $@50 $@70 $@90 $@ c) 30 $@40 $@70 $@90 $@ d) 40 $@50 $@ **b,d**	2
26	Sona has written the following code to check whether the number is divisible by3.	2

	She could not run the code successfully. Rewrite the code and underline each correction done in the code.
	x=10
	for i range in (a):
	if i%3=0:
	print(i)
	else: pass
	x = 10
	for i **in** range(x):
	if i % 3 **==** 0:
	print(i)
	else:
	pass	

27	(I) A) Differentiate ORDER BY and GROUP BY with an example. **The ORDER BY clause is used to sort the result set (the rows returned by a query) in either ascending (ASC) or descending (DESC) order based on one or more columns.** **The GROUP BY clause is used to group rows that have the same values in specified columns. It is typically used with aggregate functions like COUNT(), SUM(), AVG(), etc., to perform operations on each group of rows.** **OR** B) Classify the following statements into DDL and DML a)delete b)drop table c)update d)create table **DDL Commands: DROP TABLE, CREATE TABLE (altering the structure of database objects).** **DML Commands: DELETE, UPDATE (modifying the data within tables)** (II) A) What do you understand by VARCHAR datatype in a table? Give a suitable example and differentiate the same with the data type CHAR. **VARCHAR is more flexible and space-efficient for variable-length data, while CHAR is best suited for fixed-length data where space usage consistency is important.** OR B) Categorize the following commands as Group by /Math function: count(), pow(), round(), avg() **Group by Functions: COUNT(), AVG()** **Math Functions: POW(), ROUND()**	2

28	A) Expand the following terms: i)MAN ii)HTML **MAN**: **Metropolitan Area Network** **HTML**: **HyperText Markup Language** **OR** B) What is URL ? **A URL (Uniform Resource Locator) is the address used to access resources on the internet. It specifies the location of a web resource (like a webpage, an image, or a file) and the method to retrieve it. URLs are used by browsers to find and display the requested resources.**	2
Q No.	**Section-C (3 x 3 = 9 Marks)**	**Marks**
29	A) Write a function linecount() in python which read a file 'data.txt' and count number of lines starts with character 'P'. **def linecount():** **count = 0** **open('data.txt', 'r')** **for line in file:** **if line.startswith('P'):** **count += 1** **return count** **OR** B) Write a function in python to count number of words ending with 'n present in a text file "ABC.txt" If ABC.txt contains "A story of a rich man And his son", the output of the function should be Count of words ending with 'n' is 2 **def count_words_ending_with_n(file_name):** **# Open the file in read mode** **with open(file_name, 'r') as file:** **content = file.read() # Read the content of the file** **# Split the content into words** **words = content.split()** **# Count words that end with 'n' (case insensitive)** **count=0** **for word in words** **if word.lower().endswith('n'))** **count=count+1** **print(f"Count of words ending with 'n' is ",count)**	3
30	A) A list, items contain the following record as list elements [itemno, itemname, stock]. Each of these records are nested to form a nested list. Write the following user defined functions to perform the following on a stack reorder . i. **Push(items)-** it takes the nested list as its argument and pushes a list object containing itemno and itemname where stock is less than 10	3

	ii. **Popitems()** -It pops the objects one by one from the stack reorder and also displays a message 'Stack empty' at the end. **items=[[101,'abc',8],[102,'gg',12],[103,'tt',5],[104,'yy',15]]** **reorder=[]** **def Push(items):** **for i in items:** **if i[2]<10:** **reorder.append([i[0],i[1]])** **Push(items)** **reorder [[101, 'abc'], [103, 'tt']]** **def Popitems():** **while len(reorder):** **print(reorder.pop())** **else:** **print("Stack empty")** **Popitems()** **OR** (B) Write a function RShift(Arr) in Python, which accepts a list Arr of numbers and places all even elements of the list shifted to left. Sample Input Data of the list Arr= [10,21,30,45,12,11], Output Arr = [10, 30, 12, 21, 45, 11] **def RShift(Arr):** **# Separate even and odd elements** **even_elements = [num for num in Arr if num % 2 == 0]** **odd_elements = [num for num in Arr if num % 2 != 0]** **# Combine even elements followed by odd elements** **Arr[:] = even_elements + odd_elements** **return Arr**	
31	Predict the output of the following code: d = {"apple": 15, "banana": 7, "cherry": 9} str1 = "" for key in d: str1 = str1 + str(d[key]) + "@" + "\n" str2 = str1[:-1] print(str2) **15@** **7@**	3

9@

OR

Predict the output of the following code:

```
mylist = [2,14,54,22,17]
tup = tuple(mylist)
for i in tup:
    print(i%3, end=",")
```

2,2,0,1,2,

Q No.	Section-D (4 x 4 = 16 Marks)	Marks
32	Consider the table EMPLOYEE as given below	4

pid	surname	firstname	gender	city	pincode	basicsalary
1	Sharma	Geeta	F	Udhamwara	182141	50000
2	Singh	Surinder	M	Kupwara Nagar	193222	75000
3	Jacob	Peter	M	Bhawani	185155	45000
4	Alvis	Thomas	M	Ahmed Nagar	380025	50000
5	Mohan	Garima	M	Nagar Coolangetta	390026	33000
6	Azmi	Simi	F	NewDelhi	110021	40000
7	Kaur	Manpreet	F	Udhamwara	182141	42000

A) Write the SQL Queries for (i) to (iv) based on ITEMS table

(i) Display the SurNames, FirstNames and Cities of people residing in Udhamwara city.

SELECT SurName, FirstName, City FROM ITEMS WHERE City = 'Udhamwara';

(ii) Display the Person Ids (PID), cities and Pincodes of persons in descending order of Pincodes.

SELECT PID, City, Pincode FROM ITEMS ORDER BY Pincode DESC;

(iii) Display the First Names and cities of all the females getting Basic salaries above 40000.

SELECT FirstName, City FROM ITEMS WHERE Gender = 'Female' AND BasicSalary > 40000;

(iv) Display the highest Basic Salary among all male staff.

SELECT MAX(BasicSalary) AS HighestSalary FROM ITEMS

WHERE Gender = 'Male';

OR

B) Write the output

(I) Select city, sum(basicsalary) as Salary from EMPLOYEE group by city;

```
city                Salary
-----------------------------------
Udhamwara        92000
Kupwara Nagar    75000
Bhawani          45000
Ahmed Nagar      50000
Nagar Coolangetta 33000
NewDelhi         40000
```

(II) Select * from EMPLOYEE where surname like '%Sharma%';

pid	surname	firstname	gender	city	pincode	basicsalary
1	Sharma	Geeta	F	Udhamwara	182141	50000

(III) Select surname,firstname,city from EMPLOYEE where basicsalary between 47000 and 55000;

```
Surname    firstname          city
-------------------------------------------------
Sharma     Geeta              Udhamwara
Alvis      Thomas             Ahmed Nagar
```

(IV) Select max(basicsalary) from EMPLOYEE;

```
max(basicsalary)
----------------------
75000
```

33	A csv file "furdata.csv" contains the details of furniture. Each record of the file contains the following data: ● Furniture id ● Name of the furniture ● Price of furniture For example, a sample record of the file may be: ['T2340', 'Table', 25000] Write the following Python functions to perform the specified operations on this	4

file:

a. add() – To accept and add data of a furniture to a CSV file furdata.csv. Each record consists of a list with field elements as fid, fname, fprice to store furniture id, furniture name and furniture price respectively

b. search() – To display the records of the furniture whose price is more than 10000.

```
import csv
# Function to add furniture data to the CSV file
def add():
    with open('furdata.csv', 'a', newline='') as file:
    writer = csv.writer(file)
    fid = input("Enter Furniture ID: ")
    fname = input("Enter Furniture Name: ")
    fprice = float(input("Enter Furniture Price: "))
    record = [fid, fname, fprice]
    writer.writerow(record)
    print("Furniture record added successfully!")

# Function to search and display furniture with price more than 10000
def search():
   with open('furdata.csv', 'r') as file:
   reader = csv.reader(file)

      print("\nFurniture with price greater than 10000:")
      found = False
      for row in reader:
          if float(row[2]) > 10000:
            print(f"Furniture ID: {row[0]}, Name: {row[1]}, Price: {row[2]}")
            found = True
      if not found:
         print("No furniture found with price greater than 10000.")
```

34 — Write the output of the SQL commands for (i) to (iv) on the basis of tables BOOKS and ISSUES. — 4

Table: BOOKS

Book_id	BookName	AuthorName	Publisher	Price	Qty
L01	Maths	Raman	ABC	70	20
L02	Science	Agarkar	DEF	90	15
L03	Social	Suresh	XYZ	85	30
L04	Computer	Sumita	ABC	75	7

	L05	Telugu	Nannayya	DEF	60	25
	L06	English	Wordsworth	DEF	55	12

Table: ISSUES

Book_id	Qty_issued
L02	13
L04	5
L05	21

(I) To display complete details (from both the tables) of those Books whose quantity issued is more than 5.

Select * from BOOKS, ISSUES where Qty>5 and BOOKS.Book_id=ISSUES.Book_id;

(II) To display the details of books whose quantity is in the range of 20 to 50 (both values included).

Select * from BOOKS where Qty between 20 and 50;

(III) To increase the price of all books by 50 which have "DEF" in their PUBLISHER names.

Update BOOKS set Price=Price+50 where Publisher like '%DEF%';

(IV) (A) To display names (BookName and AuthorName) of all books.

Select BookName, AuthorName from BOOKS;

OR

(B) To display the Cartesian Product of these two tables.

Select * from BOOKS, ISSUES;

35

A table, named STUDENT, in SCHOOL database, has the following structure: 4

Field	Type
Rollno	integer
Name	string
Clas	integer
Mark	integer

Write the following Python function to perform the specified operation:
AddStudent(): To input details of a student and store it in the table STUDENT. The function should then retrieve and display all records from the STUDENT table where the Mark is greater than 80.

Assume the following for Python-Database connectivity:
Host: localhost, User: root, Password:root

```
import mysql.connector
def AddStudent():
      mydb = mysql.connector.connect(host="localhost",user="root",
         password="root",database="SCHOOL")
     cursor = mydb.cursor()
      rollno = int(input("Enter Roll No: "))
      name = input("Enter Name: ")
      clas = int(input("Enter Class: "))
      mark = int(input("Enter Mark: "))
    query = "INSERT INTO STUDENT (Rollno, Name, Clas, Mark) VALUES
(%s, %s, %s, %s)"
      values = (rollno, name, clas, mark)
      cursor.execute(query, values)
      mydb.commit()
      print("Student record added successfully!")
      # Retrieve and display all records where Mark is greater than 80
      cursor.execute("SELECT * FROM STUDENT WHERE Mark > 80")
      results = cursor.fetchall()
      # Display the results
      if results:
         print("\nStudents with marks greater than 80:")
         for row in results:
            print(f"Rollno: {row[0]}, Name: {row[1]}, Class: {row[2]}, Mark:
{row[3]}")
    else:
          print("No students found with marks greater than 80.")
```

Q.No.	SECTION E (2 X 5 = 10 Marks)	Marks
36	Riya is a student of class 12.Her teacher assigned a task to Riya to create a Binary file named 'Book.dat' to store the details of books available in the department. The structure of "Book.dat" is [BookNo,Book_Name,Author,Price] For maintaining all records of books,Riya wants to write the following user defined functions: I) createFile() - to input data for a record and add to the binary file 'Book.dat'. (II) CountRec(Author)- to accept the Author name as parameter and count and return the number of books by the given Author stored in the binary file "Book.dat". (III) displayAbove() to read the data from the binary file and display the data of all those books whose price is above 1000. As a Python expert, help her to achieve this task.	5

```
import pickle
# Function to create the binary file and add book records
def createFile():
    with open('Book.dat', 'ab') as file:
     while True:
       book_no = int(input("Enter Book Number: "))
```

```
        book_name = input("Enter Book Name: ")
        author = input("Enter Author Name: ")
        price = float(input("Enter Price: "))
        book_record = [book_no, book_name, author, price]
        pickle.dump(book_record, file)
        cont = input("Do you want to add another record? (yes/no): ").lower()
           if cont != 'yes':
            break

# Function to count the number of books by a given author
def CountRec(author):
   count = 0
   with open('Book.dat', 'rb') as file:
         while True:
               book_record = pickle.load(file)
               if book_record[2].lower() == author.lower():
                  count += 1
              break
         print("The file does not exist.")
 return count

# Function to display books with price above 1000
def displayAbove():
         with open('Book.dat', 'rb') as file:
          print("Books with price above 1000:")
          found = False
          while True:
                book_record = pickle.load(file)
                if book_record[3] > 1000:
                        print(book_record)
                        found = True
                 break
          if not found:
             print("No books found with price above 1000.")
```

37 Vidya for all is an NGO. It is setting up its new campus at Jaipur for its web-based activities. The campus has four buildings as shown in the diagram below 5

Centre to centre distance between various buildings as per architectural drawings (in Mtrs.) is as follows:

Main building to Resource building	120m
Main building to Training building	40m
Main building to Accounts building	135m

Resource building to Training building	125m
Resource building to Accounts building	45m
Training building to Accounts building	110m

Number of computers in each building are as follows:

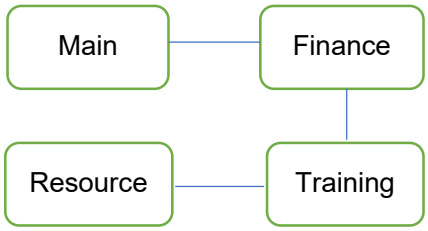
Main building	15
Resource building	25
Training building	250
Training building	10

(I) Suggest a cable layout of connection among the buildings.
(II) Suggest the most suitable place to house the server for this NGO. Also provide a suitable reason for your suggestion.
(III) Suggest the placement of the following devices with justification:
(a) Repeater (b)Hub/Switch
(IV) Write any one advantage of bus topology
(V) A) Expand MODEM

OR

B) Expand WLL

I)



II)Training building-maximum no. of computers

III)a)Repeater-can be placed between the buildings where distance is more than100m

b) hub- in all the buildings

IV)It is easy to connect or remove devices in this network without affecting any other devices.

V)MODEM Modulator-Demodulator

OR

WLL-Wireless in Local Loop

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