OSDAV Public School, Kaithal

December Examination (2024-25)

Class :XII

Subject :Computer Science **SET-B**

Time: 3 Hrs . **M.M. : 70**

General Instructions:-

- This question paper contains 35 questions.
- The paper is divided into 5 Sections- A, B, C, D and E.
- Section A consists of 18 questions (1 to 18). Each question carries 1 Mark.
- Section B consists of 7 questions (19 to 25). Each question carries 2 Marks.
- Section C consists of 3 questions (26 to 30). Each question carries 3 Marks.
- Section D consists of 4 questions (31 to 32). Each question carries 4 Marks.
- Section E consists of 2 questions (33 to 35). Each question carries 5 Marks.

Q No.	Section-A (21 x 1 = 21 Marks)	Marks
1.	State True or False: The Python interpreter handles logical errors during code execution.(False)	(1)

2.	Identify the output of the following code snippet:
	`text = "PYTHONPROGRAM"`
	`text=text.replace('PY','#')`
	`print(text)`
	(A) #THONPROGRAM
	(B) ##THON#ROGRAM
	(C) #THON#ROGRAM
	(D) #YTHON#ROGRAM
		(1)

3.	Which of the following expressions evaluates to False? (A) not(True) and False (B) True or False (C) not(False and True) (D) True and not(False)	(1)

4.	What is the output of the expression?
	`country='International'`
	`print(country.split("n"))`
	(A) ('I', 'ter', 'atio', 'al')
	(B) ['I', 'ter', 'atio', 'al']
	(C) ['I', 'n', 'ter', 'n', 'atio', 'n', 'al']
	(D) Error
		(1)

5.	What will be the output of the following code snippet?
	`message= "World Peace"`
	`print(message[-2::-2])=>ce_lo`
		(1)

6.	What will be the output of the following code?
	`tuple1 = (1, 2, 3)`
	`tuple2 = tuple1`
	`tuple1 += (4,)`
	`print(tuple1 == tuple2)`
	(A) True (B)False (C)tuple1 (D)Error
		(1)

7.	If my_dict is a dictionary as defined below, then which of the following statements will raise an exception? `my_dict = {'apple': 10, 'banana': 20, 'orange': 30}` (A) my_dict.get('orange') (B) print(my_dict['apple', 'banana']) (C) my_dict['apple']=20 (D) print(str(my_dict))	(1)
8.	What does the del list[x] method do in Python? (A) Removes the element at index x from the list (B) Removes the first occurrence of value x from the list (C) Removes all occurrences of value x from the list (D) Removes the last occurrence of value x from the list	(1)
9.	State whether the following statement is True or False: The **finally** block in Python is executed only if no exception occurs in the **try** block.=>False	(1)

10.	Write the missing statement to complete the following code:
	`file = open("example.txt", "r")`
	`data = file.read(100)`
	`file.seek(0)` `#Move the file pointer to the beginning of the file`
	`next_data = file.read(50)`
	`file.close()`
		(1)

11.	What will be the output of the following code?
	`c = 20`
	`def add():`
	`  global c`
	`  c = c + 2`
	`  print(c,end='#')`
	`add()`
	`c=15`
	`print(c,end='%')`
	(A) 22%15#
	(B) 15#22%
	(C) 22#15%
	(D) none
		(1)

12.	Which SQL command can change the cardinality of an existing relation? => insert	(1)

13.	What will be the output of the query? `SELECT * FROM products WHERE product_name LIKE '%App';` (A) Details of all products whose names start with 'App' (B) Details of all products whose names end with 'App' (C) Names of all products whose names start with 'App' (D) Names of all products whose names end with 'App'	(1)
14	In which datatype the value stored is not padded with spaces to fit the specified length. (A) DATE (B) VARCHAR (C) FLOAT (D) CHAR	(1)
15.	Which switching technique breaks data into smaller packets for transmission, allowing multiple packets to share the same network resources=>Packet Switching	(1)
16.	Which protocol is used to secure transactions over the Internet? (A) HTTP (B) FTP (C) PPP (D) HTTPS	(1)
	Q17 and Q18 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**	
17.	Assertion (A): Positional arguments in Python functions must be passed in the exact order in which they are defined in the function signature. Reasoning (R): This is because Python functions automatically assign default values to positional arguments. **(A) Both A and R are true and R is the correct explanation for A**	(1)
18.	Assertion (A): A SELECT command in SQL can have both WHERE and HAVING clauses. Reasoning (R): WHERE and HAVING clauses are used to check conditions, therefore, these can be used interchangeably. **(A) A is True but R is False**	(1)
Q No	**Section-B (7 x 2=14 Marks)**	**Marks**
19	How is a mutable object different from an immutable object in Python? Identify one mutable object and one immutable object from the following: (1,2), [1,2], {1:1,2:2}, '123'=>	(2)

	Mutable objects are those whose state or value can be changed after they are created. Examples of mutable objects in Python include lists, dictionaries, and sets. [1,2], **Immutable objects** are those whose state or value cannot be changed after they are created. Examples of immutable objects in Python include integers, floats, strings, and tuples. (1,2),	
20.	Give two examples of each of the following: (I) Arithmetic operators=>+,-,*,%,/,// (II) Relational operators=>,<,>=,<=,==	(2)
21	If L1=[1,2,3,2,1,2,4,2, . . .], and L2=[10,20,30, . . .], then *(Answer using builtin functions only)* A) Write a statement to count the occurrences of 4 in L1.=> L1.count(4) B) Write a statement to insert all the elements of L2 at the end of L1 L1.extend(L2)	(2)

22.	Identify the correct output(s) of the following code. Also write the minimum and the maximum possible values of the variable b.
	`import random`
	`a="Wisdom"`
	`b=random.randint(1,6)`
	`for i in range(0,b,2):`
	`print(a[i],end='#')`
	`Max value of b:-1,6`
	(A) W# (B) W#i#
	(C) W#s# (D) W#i#s#
		(2)

23.	The code provided below is intended to swap the first and last elements of a given tuple. However, there are syntax and logical errors in the code. Rewrite it after removing all errors. Underline all the corrections made.
	`def swap_first_last(tup)`
	`if len(tup) < 2:`
	`return tup`
	`else:`
	`new_tup = (tup[-1],) + tup[1:-1] + (tup[0])`
	`return new_tup`
	`result = swap_first_last((1, 2, 3, 4))`
	`print("Swapped tuple: " result)`
		(2)

24.	• What constraint should be applied on a table column so that NULL is not allowed in that column, but duplicate values are allowed. =>Not Null • Write an SQL command to make the column M_ID the PrimaryKey of	(2)

	an already existing table, named MOBILE. =>Alter table mobile modify M_ID Primary Key	
25.	A) List one advantage and one disadvantage of star topology. Advantage High Fault Tolerance Highly Scalable Disadvantage Malfunctioning of the central component Expensive Installation	(2)
Q N.	**Section-C (3 x5 = 15 Marks)**	**Marks**

26	Write a Python function that displays all the words containing @**cmail** from a text file "Emails.txt".
	def Raincount():
	f=open(“Emails.txt”,r):
	str=f.read()
	w=str.split()
	for a in w:
	if “**@cmail”** in a:
	print(a)
	OR
	Write a Python function that finds and displays all the words longer than5 characters from a text file "Words.txt".
	def wordcount():
	f=open(“words.txt”,r):
	str=f.read()
	w=str.split()
	for a in w:
	if len(a)>5:
	print(a)
		(3)

27.	Write the definition of a user-defined function `push_even(N)` which accepts a list of integers in a parameter `N` and pushes all those integers which are even from the list `N` into a Stack named `EvenNumbers`. Write function pop_even() to pop the topmost number from the stack and returns it. If the stack is already empty, the function should display "Empty". Write function Disp_even() to display all element of the stack without deleting them. If the stack is empty, the function should display 'None'. For example: If the integers input into the list `VALUES` are: [10, 5, 8, 3, 12]=> Then the stack EvenNumbers` should store:[10, 8, 12]	**(3)**

```
def push_even(N):
        EvenNumbers = []
        for num in N:
              if num % 2 == 0:
                  EvenNumbers.append(num)
        return EvenNumbers
VALUES = []

for i in range(5):
     VALUES.append(int(input("Enter an integer: ")))
```

```
def pop_even():
         if not EvenNumbers:
            print("Underflow")
        else:
            print(EvenNumbers.pop())
```

```
def Disp_even():
            if not EvenNumbers:
              print("None")
           else:
              print(EvenNumbers[-1])
```

28

Predict the output of the following code:

```
d = {"apple": 15, "banana": 7, "cherry": 9}
str1 = ""
for key in d:
    str1 = str1 + str(d[key]) + "@"
str2 = str1[:-1]
print(str2)
```

15@7@9

OR

```
line=[4,9,12,6,20]
for I in line:
   for j in range(1,I%5):
       print(j,'#',end="")

    print()
```

1 #2 #3 #

1 #2 #3 #

1 #

29

Write a function INDEX_LIST(S), where S is a string. The function returns a list named „indexList" that stores the indices of all consonants of S. For example: If S is "Computer", then indexList should be [0,2,3,5,7]

```
def  INDEX_LIST(S):
    l=[]
    for a in S:
        if a Not in "aeiouAEIOU":
                l.append(s.index(a))
     print(l)
```

30

(3)

Consider the table Rent_cab, given below :

Table : Rent_cab

Vcode	VName	Make	Color	Charges
101	Big car	Carus	White	15
102	Small car	Polestar	Silver	10
103	Family car	Windspeed	Black	20
104	Classic	Studio	White	30
105	Luxury	Trona	Red	9

Based on the given table, write SQL queries for the following :

(i) Add a Not null constraint to a column name Vcode.

Alter Rent_cab modify vcode Not Null

(ii) Update the color of the cabs as white where charges >=15

Update Rent-Cab set color="white where charges>=15

(iii) Delete all the cabs whose color is "White".

Delete from Rent_Cab where color ="White

Q N.	**Section-D (2 x 4 = 8 Marks)**	**Marks**

31	Consider the table ORDERS as given below O_Id C_Name Product Quantity Price 1001 Jitendra Laptop 1 12000 1002 Mustafa Smartphone 2 10000 1003 Dhwani Headphone 1 1500 Note: The table contains many more records than shown here. (I) Write the following queries: • To display the total Quantity for each Product, excluding Products with total Quantity less than 5. Select Quality,sum(quality) from orders group by quantity having sum(quality)<5; • To display the orders table sorted by total price in descending order. Select * from orders order by price desc; • To display the distinct customer names from the Orders table. Select distinct(c_name) from orders; • Display the sum of Price of all the orders for which the quantityis null Select sum(price) from orders where quantity=NULL Or Saman has been entrusted with the management of Law University Database. He needs to access some information from FACULTY and COURSES tables for a survey analysis. Help him extract the following information by writing the desired SQL queries as mentioned below. Table: **FACULTY** F_ID FName LName Hire_Date Salary 102 Amit Mishra 12-10-1998 12000 103 Nitin Vyas 24-12-1994 8000 104 Rakshit Soni 18-5-2001 14000 105 Rashmi Malhotra 11-9-2004 11000 106 Sulekha Srivastava 5-6-2006 10000 Table: **COURSES** C_ID F_ID CName Fees C21 102 Grid Computing 40000 C22 106 System Design 16000 C23 104 Computer Security 8000 C24 106 Human Biology 15000 C25 102 Computer Network 20000 C26 105 Visual Basic 6000 (i)To display complete details (from both the tables) of those Faculties whose salary is less than 12000. Select * from facuty,courses where salary<12000 and faculty.f_id= course.f_id; (II) To display the details of courses whose fees is in the range of 20000 to 50000 (both values included).	**4**

	Select * from courses where salary between 20000 and 50000 (III) To increase the fees of all courses by 500 which have "Computer" in their Course names. Update courses set fees+=500 where cname like"%computer%" (IV) (A) To display names (FName and LName) of faculty taking System Design. Select Fname,Lname from Faculty,courses where cname="system Design and faculty.f_id= course.f_id; **OR** (B) To display the Cartesian Product of these two tables.	

32	A csv file "Happiness.csv" contains the data of a survey. Each record of the file contains the following data:
	• Name of a country
	• Population of the country
	• Sample Size (*Number of persons who participated in the survey in that country*)
	• Happy (*Number of persons who accepted that they were Happy*)
	For example, a sample record of the file may be:
	['Signiland', 5673000, 5000, 3426]
	Write the following Python functions to perform the specified operations on this file:
	(I) Read all the data from the file in the form of a list and display all those records for which the population is more than 5000000.
	Count the number of records in the file.
	Def readcsv():
	F=open("Happiness.csv",r)
	a=csv.reader(f)
	c=0
	for i in a:
	if i[2]>5000000:
	c+=1
	print(i)
	print("total records more than 500000", c)
		4

Q.N.	**SECTION E (3x5=15 Marks)**	**Marks**
33	A table, named STATIONERY, in ITEMDB database, has the following structure:	5

Field	Type
itemNo	int(11)
itemName	varchar(15)
price	float
qty	int(11)

Write the following Python function to perform the specified operation: AddAndDisplay(): To input details of an item and store it in the table STATIONERY. The function should then retrieve and display all records from the STATIONERY table where the Price is greater than 120.

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

```
import mysql.connector
def AddAndDisplay():
    db = mysql.connector.connect(
        host="localhost",
        user="root",
        password="Pencil",
        database="ITEMDB"
      )
    cursor = db.cursor()
    item_no = int(input("Enter Item Number: "))
    item_name = input("Enter Item Name: ")
    price = float(input("Enter Price: "))
    qty = int(input("Enter Quantity: "))
    insert_query = "INSERT INTO STATIONERY VALUES ({}, {}, {}, {})"
    insert_query = insert_query.format(item_no, item_name, price, qty)
    cursor.execute(insert_query)
    db.commit()
    select_query = "SELECT * FROM STATIONERY WHERE price > 120"
    cursor.execute(select_query)
    results = cursor.fetchall()
    for record in results:
      print(record)

AddAndDisplay()
```

34	Surya is a manager working in a recruitment agency. He needs to manage the records of various candidates. For this, he wants the following information of each candidate to be stored: - Candidate_ID – integer - Candidate_Name – string - Designation – string - Experience – float You, as a programmer of the company, have been assigned to do this job for Surya. (I) Write a function to input the data of a candidate and append it in a binary file. (II)Write a function to update the data of candidates whose experience is more than 10 years and change their designation to "Senior Manager".	(5)

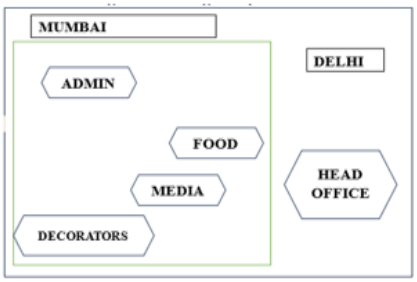
```
def input_candidates():
   candidates = []
   n = int(input("Enter the number of candidates you want to add: "))
   for i in range(n):
      candidate_id = int(input("Enter Candidate ID: "))
      candidate_name = input("Enter Candidate Name: ")
      designation = input("Enter Designation: ")
      experience = float(input("Enter Experience (in years): "))
      candidates.append([candidate_id, candidate_name, designation,
experience])
```

```
   with open('candidates.bin', 'ab') as file:
    for candidate in candidates:
       pickle.dump(candidate, file)
   print("Candidate data appended successfully.")
append_candidate_data(candidates_list)
```

```
pickle.dump(candidate, file)
```

```
import pickle
def display_non_senior_managers():
    try:
       with open('candidates.bin', 'rb') as file:
          while True:
            try:
              candidate = pickle.load(file)
              if candidate[2] != 'Senior Manager': # Check if not Sen
Manager
              print(f"Candidate ID: {candidate[0]}")
              print(f"Candidate Name: {candidate[1]}")
              print(f"Designation: {candidate[2]}")
              print(f"Experience: {candidate[3]}")
              print("--------------------")
```

35 Event Horizon Enterprises is an event planning organization. It is planning to set up its India campus in Mumbai with its head office in Delhi. The Mumbai campus will have four blocks/buildings - ADMIN, FOOD, MEDIA, DECORATORS. You, as a network expert, need to suggest the best network-related solutions for them to resolve the issues/problems mentioned in points (I) to (V), keeping in mind the distances between various blocks/buildings and other given parameters.



		5

Block to Block distances (in Mtrs.)

From	To	Distance
ADMIN	FOOD	42 m
ADMIN	MEDIA	96 m
ADMIN	DECORATORS	48 m
FOOD	MEDIA	58 m
FOOD	DECORATORS	46 m
MEDIA	DECORATORS	42 m

Distance of Delhi Head Office from Mumbai Campus = 1500 km
Number of computers in each of the blocks/Center is as follows:

ADMIN	30
FOOD	18
MEDIA	25
DECORATORS	20
DELHI HEAD OFFICE	18

(I) Suggest the most appropriate location of the server inside the MUMBAI campus. Justify your choice.=>Admin

(II) Which hardware device will you suggest to connect all the computers within each building?=> Switch

(III) Draw the cable layout to efficiently connect various buildings within the MUMBAI campus. Which cable would you suggest for the most efficient data transfer over the network?=> Star

(IV) Is there a requirement of a repeater in the given cable layout? Why/ Why not?No , As distance is very less

(V) A) What would be your recommendation for enabling live visual communication between the Admin Office at the Mumbai campus and the DELHI Head Office from the following options:

a) Video Conferencing
b) Email
c) Telephony
d) Instant Messaging

OR

B) What type of network (PAN, LAN, MAN, or WAN) will be set up among the computers connected in the MUMBAI campus?=>LAN

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- Section C consists of 3 questions (26 to 30). Each question carries 3 Marks.
- Section D consists of 4 questions (31 to 32). Each question carries 4 Marks.
- Section E consists of 2 questions (33 to 35). Each question carries 5 Marks.

Q No.	Section-A (18 x 1 = 18 Marks)	Marks
1.	State True or False: The Python interpreter handles syntax errors during code execution.=>True	(1)

2.	Identify the output of the following code snippet:
	`text = "PYTHONPROGRAM"`
	`text=text.partition('PY')`
	`print(text)`
	(A) (“PY”,”THON”,”PROGRAM”
	(B) (“ “,”PY”,”,” THONPROGRAM”)
	(C) [“ “,”PY”,”,” THONPROGRAM”]
	(D) NONE
		(1)

3.	Which of the following expressions evaluates to TRUE? (A) not(True) and False (B) True or False (C) False and True (D) True and not(TRUE)	(1)

4.	What is the output of the expression?
	`country='International'`
	`print(country.split("na"))`
	(A) ('Inter',”na”,”tional')
	(B) ('Inter',”na”,”tio”,”na”,”l')
	(C) ['Inter', 'tio', 'l']
	(D) ('Inter',” tio”,,” l”)
		(1)

5.	What will be the output of the following code snippet?
	`message= "World Peace"`
	`print(message[::-2])=>eaPdrW`
		(1)

6.	What will be the output of the following code? tuple1 = (1, 2, 3) tuple2 = (1, 2, 3) print(tuple1 is tuple2) (A) True (B)False (c)tuple1 (D)Error	(1)

7.	If my_dict is a dictionary as defined below, then which of the following statements will raise an exception? `my_dict = {'apple': 10, 'banana': 20, 'orange': 30}` (A) my_dict.get('orange') (B) del(my_dict["watermelon"]) (C) my_dict['apple']=20 (D) print(str(my_dict))	(1)
8.	What does the list.remove(x) method do in Python? (A) Removes the element at index x from the list (B) Removes the first occurrence of value x from the list (C) Removes all occurrences of value x from the list (D) Removes the last occurrence of value x from the list	(1)
9.	State whether the following statement is True or False: The **`finally`** block in Python is executed only if no exception occurs in the **`try`** block.=> False	(1)

10.	Write the missing statement to complete the following code:
	`file = open("example.txt", "r")`
	`data = file.read(100)`
	`_file.seek(0)#Move the file pointer to the beginning of the file`
	`next_data = file.read(50)`
	`file.close()`
		(1)

11.	What will be the output of the following code?
	`c = 10`
	`def add():`
	`  global c`
	`  c = c + 2`
	`  print(c,end='#')`
	`add()`
	`c=15`
	`print(c,end='%')`
	(A) 12%15# (B) 15#12% (C) 12#15% (D) none
		(1)

12.	Which SQL command can change the degree of an existing relation?=>Alter	(1)
13.	What will be the output of the query? `SELECT * FROM products WHERE product_name LIKE 'App%';` (A) Details of all products whose names start with 'App' (B) Details of all products whose names end with 'App' (C) Names of all products whose names start with 'App' (D) Names of all products whose names end with 'App'	(1)
14	In which datatype the value stored is padded with spaces to fit the specified length. (A) DATE (B)VARCHAR (C)FLOAT (D)CHAR	(1)

15.	Which network device is used to connect two networks that use different protocols? (A) Modem (B)Gateway (C) Switch (D)Repeater	(1)
16.	Which protocol is used to transfer files over the Internet? (A) HTTP (B)FTP (C)PPP (D)HTTPS	(1)
	Q17 and Q18 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**	
17.	Assertion (A): Positional arguments in Python functions must be passed in the exact order in which they are defined in the function signature. Reasoning (R): This is because Python functions automatically assign default values to positional arguments. **(A) Both A and R are true and R is the correct explanation for A**	(1)
18.	Assertion (A): A SELECT command in SQL can have both WHERE and HAVING clauses. Reasoning (R): WHERE and HAVING clauses are used to check conditions, therefore, these can be used interchangeably. **(A) A is True but R is False**	(1)
Q No	**Section-B (7 x 2=14 Marks)**	**Marks**
19	How is a mutable object different from an immutable object in Python? Identify one mutable object and one immutable object from the following: (1,2), [1,2], {1:1,2:2}, '123' **Mutable objects** are those whose state or value can be changed after they are created. Examples of mutable objects in Python include lists, dictionaries, and sets. [1,2], **Immutable objects** are those whose state or value cannot be changed after they are created. Examples of immutable objects in Python include integers, floats, strings, and tuples. (1,2),	(2)

20.	Observe the following code carefully and rewrite it after removing all syntactical errors. Underline all the corrections made.
	def 1func():
	a=input("Enter a number"))
	if a>=33 :
	print("Promoted to next class")
	else:
	print("Repeat")
		(2)

21	If L1=[1,2,3,2,1,2,4,2, . . .], and L2=[10,20,30, . . .], Then *(Answer using builtin functions only)* A) Write a statement to sort the elements of list L1 in ascendingorder. L1.sort() B) Write a statement to reverse the elements of list L2. L2.reverse()	(2)

22	Identify the correct output(s) of the following code. Also write the minimum and the maximum possible values of the variable b.
	`import random`
	`a="Wisdom"`
	`b=random.randint(1,6)`
	`for i in range(0,b,2):`
	`print(a[i],end='#')`
	`min,max b=1,6`
		(2)

	(A) W# / (B) W#i# (C) W#s# / (D) W#i#s#	
23.	Predict the output of the following code d={"IND":"DEL","SRI":"COL","CHI":"BEI"} str1=" " for i in d: str1=str1+str(d[i])+"@" str2=str1[:-1] print(str2) -=>DEL@COL@BEI	(2)
24.	• What constraint should be applied on a table column so that duplicate values are not allowed in that column, but NULL is allowed. • =>Primary Key • Write an SQL command to make the column M_ID the PrimaryKey of an already existing table, named MOBILE. =>Alter table mobile modify M_ID Primary Key	(2)
25.	Expand the term SMTP. What is the use of SMTP? Simple Mail Transfer Protocol, Simple Mail Transfer mechanism (SMTP) is a mechanism for exchanging email messages between servers. It is an essential component of the email communication process and operates at the application layer of the TCP/IP protocol stack. SMTP is a protocol for transmitting and receiving email messages.	(2)
Q No.	**Section-C (3 x5 = 15 Marks)**	**Marks**
26.	Write a method SHOWLINES() in Python to read lines from text file "TESTFILE.TXT" and display the lines which do not contain 'ke' and also do not end with vowel.	(3)

	Example: If the file content is as follows:
	An apple a day keeps the doctor aside.
	We all pray for everyone"s safety.
	A marked difference will come in our country.
	The SHOWLINES() function should display the output as:
	We all pray for everyone"s safety.
	def showlines():
	f=open("testfile.txt",r):
	str=f.readlines()
	for a in str:
	if "ke" in a and a[-1] in "aeiouAEIOU":
	print(a)
	OR
	Write a function RainCount() in Python, which should read the content of a text file "TESTFILE.TXT" and then count and display the count of occurrence of independent word RAIN (case-insensitive) in the file.
	Example: If the file content is as follows:
	It rained yesterday
	It might rain today
	I wish it rains tomorrow too
	I love Rain
	The RainCount() function should display the output as: Rain -2
	def Raincount():
	f=open("testfile.txt",r):
	str=f.read()
	w=str.split()
	for a in w:
	if a.lower()="rain":
	c+=1
	print(c)	

27	You have a stack named **BooksStack** that contains records of books. Each book record is represented as a list containing **book_title**, **author_name**, and **publication_year**. Write the following user-defined functions in Python to perform the specified operations on the stack **BooksStack**: (I)push_book(BooksStack, new_book): This function takes the stack BooksStack and a new book record new_book as arguments and pushes the new book record onto the stack. (II)pop_book(BooksStack): This function pops the topmost book record from the stack and returns it. If the stack is already empty, the function should display "Underflow".	3

```
def push_book(BooksStack, new_book):
     BooksStack.append(new_book)
```

```
def pop_book(BooksStack):
    if not BooksStack:
       print("Underflow")
    else:
       return(BookStack.pop())
```

28 — Predict the output of the following code: — 3

```
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@
9@
```

OR

```
line=[4,9,12,6,20]
for I in line:
   for j in range(1,I%5):
       print(j,'#',end="")
   print()
```

```
1 #2 #3 #
1 #2 #3 #
1 #
```

29 — Write a function INDEX_LIST(S), where S is a string. The function returns a list named „indexList" that stores the indices of all vowels of S. For example: If S is "Computer", then indexLIst should be [1,4,6] — 3

```
def  INDEX_LIST(S):
    l=[]
    for a in S:
        if a in "aeiouAEIOU":
              l.append(s.index(a))
     print(l)
```

30

Consider the table Rent_cab, given below :

Table : Rent_cab

Vcode	VName	Make	Color	Charges
101	Big car	Carus	White	15
102	Small car	Polestar	Silver	10
103	Family car	Windspeed	Black	20
104	Classic	Studio	White	30
105	Luxury	Trona	Red	9

Based on the given table, write SQL queries for the following :

(i) Add a primary key to a column name Vcode.

Alter Rent_cab modify vcode primary key

(ii) Increase the charges of all the cabs by 10%.

Update Rent-Cab set charges=charges+charges*.10

(iii) Delete all the cabs whose maker name is "Carus".

Delete from Rent_Cab where make=”Carus”

3

Q N.	Section-D (2 x 4 = 8Marks)	Marks

31

Consider the table ORDERS as given below and Write the output

O_Id	C_Name	Product	Quantity	Price
1001	Jitendra	Laptop	1	12000
1002	Mustafa	Smartphone	2	10000
1003	Dhwani	Headphone	1	1500

(A)Select c_name, sum(quantity) as total_quantityfrom orders group by c_name;

O_Id	C_Name	Product	Quantity	Price
1001	Jitendra	Laptop	1	12000
1002	Mustafa	Smartphone	2	10000
1003	Dhwani	Headphone	1	1500

(B)Select * from orders where product like%phone%';

O_Id	C_Name	Product	Quantity	Price
1002	Mustafa	Smartphone	2	10000
1003	Dhwani	Headphone	1	1500

(B) Select o_id, c_name, product, quantity, pricefrom orders where price between 1500 and 12000

O_Id	C_Name	Product	Quantity	Price
1001	Jitendra	Laptop	1	12000
1002	Mustafa	Smartphone	2	10000
1003	Dhwani	Headphone	1	1500

D)Select max(price) from orders;.

12000

31.	Or Saman has been entrusted with the management of Law University Database. He needs to access some information from FACULTY and COURSES tables for a survey analysis. Help him extract the following information by writing the desired SQL queries as mentioned below. Table: **FACULTY** **F_ID** | **FName** | **LName** | **Hire_Date** | **Salary** 102 | Amit | Mishra | 12-10-1998 | 12000 103 | Nitin | Vyas | 24-12-1994 | 8000 104 | Rakshit | Soni | 18-5-2001 | 14000 105 | Rashmi | Malhotra | 11-9-2004 | 11000 106 | Sulekha | Srivastava | 5-6-2006 | 10000 Table: **COURSES** **C_ID** **F_ID** **CName** **Fees** C21 | 102 | Grid Computing | 40000 C22 | 106 | System Design | 16000 C23 | 104 | Computer Security | 8000 C24 | 106 | Human Biology | 15000 C25 | 102 | Computer Network | 20000 C26 | 105 | Visual Basic | 6000 A) To display complete details (from both the tables) of those Faculties whose salary is less than 12000. Select * from facuty,courses where salary<12000 and faculty.f_id= course.f_id; B) To display the details of courses whose fees is in the range of 20000to 50000 (both values included). Select * from courses where salary between 20000 and 50000 C) To increase the fees of all courses by 500 which have "Computer"in their Course names. Update courses set fees+=500 where cname like"%computer%" D) (A) To display names (FName and LName) of faculty taking System Design. Select Fname,Lname from Faculty,courses where cname="system Design and faculty.f_id= course.f_id; **OR** (B) To display the Cartesian Product of these two tables.	(4)

32	A csv file "Happiness.csv" contains the data of a survey. Each record of thefile contains the following data:
	• Name of a country,Population of the country
	• Sample Size (*Number of persons who participated in the survey inthat country*)
	• Happy (*Number of persons who accepted that they were Happy*)
	For example, a sample record of the file may be:
	[Signiland', 5673000, 5000, 3426]
	Write the following Python functions to perform the specified operations onthis file:
	(I) Read all the data from the file in the form of a list and display all those records for which the population is more than 5000000.
	Count the number of records in the file.
	Def readcsv():
	F=open("Happiness.csv",r)
	a=csv.reader(f)
	c=0
	for i in a:
	if i[2]>5000000:
	c+=1
	print(i)
	print("total records more than 500000", c)
		4

Q.N.	**SECTION E (3x5=15 Marks)**	**Marks**
33	A table, named STATIONERY, in ITEMDB database, has the following structure: Field | Type itemNo | int(11) itemName | varchar(15) price | float qty | int(11) Write the following Python function to perform the specified operation: AddAndDisplay(): To input details of an item and store it in the table STATIONERY. The function should then retrieve and display all records from the STATIONERY table where the Price is greater than 120. Assume the following for Python-Database connectivity:Host: localhost, User: root, Password: Pencil **import mysql.connector** **def AddAndDisplay():** **db = mysql.connector.connect(** **host="localhost",**	**5**

```
        user="root",
        password="Pencil",
        database="ITEMDB"
    )
  cursor = db.cursor()
  item_no = int(input("Enter Item Number: "))
  item_name = input("Enter Item Name: ")
  price = float(input("Enter Price: "))
  qty = int(input("Enter Quantity: "))
  insert_query = "INSERT INTO STATIONERY VALUES ({}, {}, {}, {})"
  insert_query = insert_query.format(item_no, item_name, price, qty)
  cursor.execute(insert_query)
  db.commit()
  select_query = "SELECT * FROM STATIONERY WHERE price > 120"
  cursor.execute(select_query)
  results = cursor.fetchall()
  for record in results:
    print(record)

AddAndDisplay()
```

34

Surya is a manager working in a recruitment agency. He needs to managethe records of various candidates. For this, he wants the following information of each candidate to be stored:
- Candidate_ID – integer
- Candidate_Name – string
- Designation – string
- Experience – float

You, as a programmer of the company, have been assigned to do this jobfor Surya.

(I) Write a function to input the data of a candidate and append it in a binary file.

(II)Write a function to update the data of candidates whose experienceis more than 10 years and change their designation to "Senior Manager".

5

```
def input_candidates():
   candidates = []
   n = int(input("Enter the number of candidates you want to add: "))
   for i in range(n):
      candidate_id = int(input("Enter Candidate ID: "))
      candidate_name = input("Enter Candidate Name: ")
      designation = input("Enter Designation: ")
      experience = float(input("Enter Experience (in years): "))
      candidates.append([candidate_id, candidate_name, designation,
experience])
    with open('candidates.bin', 'ab') as file:
     for candidate in candidates:
        pickle.dump(candidate, file)
    print("Candidate data appended successfully.")
append_candidate_data(candidates_list)
```

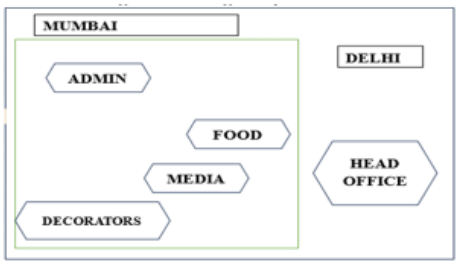
```
def update_senior_manager():
   updated_candidates = []
   try:
     with open('candidates.bin', 'rb') as file:
       while True:
         try:
           candidate = pickle.load(file)
           if candidate[3] > 10: # If experience > 10 years
              candidate[2] = 'Senior Manager'
           updated_candidates.append(candidate)
```

```
pickle.dump(candidate, file)
```

```
import pickle
def display_non_senior_managers():
    try:
       with open('candidates.bin', 'rb') as file:
          while True:
            try:
              candidate = pickle.load(file)
              if candidate[2] != 'Senior Manager': # Check if not Senior
Manager
               print(f"Candidate ID: {candidate[0]}")
               print(f"Candidate Name: {candidate[1]}")
               print(f"Designation: {candidate[2]}")
               print(f"Experience: {candidate[3]}")
               print("--------------------")
```

35

Event Horizon Enterprises is an event planning organization. It is planningto set up its India campus in Mumbai with its head office in Delhi. The Mumbai campus will have four blocks/buildings - ADMIN, FOOD, MEDIA, DECORATORS. You, as a network expert, need to suggest the bestnetwork-related solutions for them to resolve the issues/problemsmentioned in points (I) to (V), keeping in mind the distances between various blocks/buildings and other given parameters.



Block to Block distances (in Mtrs.)

From	To	Distance
ADMIN	FOOD	42 m
ADMIN	MEDIA	96 m
ADMIN	DECORATORS	48 m
FOOD	MEDIA	58 m
FOOD	DECORATORS	46 m
MEDIA	DECORATORS	42 m

5

Distance of Delhi Head Office from Mumbai Campus = 1500 km
Number of computers in each of the blocks/Center is as follows:

ADMIN	30
FOOD	18
MEDIA	25
DECORATORS	20
DELHI HEAD OFFICE	18

(I) Suggest the most appropriate location of the server inside the MUMBAI campus. Justify your choice.=>Admin

(II) Which hardware device will you suggest to connect all the computers within each building?=> Switch

(III) Draw the cable layout to efficiently connect various buildings within the MUMBAI campus. Which cable would you suggest for the most efficient data transfer over the network?=> Star

(IV) Is there a requirement of a repeater in the given cable layout? Why/ Why not?No , As distance is very less

(V) A) What would be your recommendation for enabling live visual communication between the Admin Office at the Mumbai campusand the DELHI Head Office from the following options:

a) Video Conferencing
b) Email
c) Telephony
d) Instant Messaging

OR

B) What type of network (PAN, LAN, MAN, or WAN) will be set up among the computers connected in the MUMBAI campus?=>LAN