KENDRIYA VIDYALAYA SANGATHAN, CHENNAI REGION
CLASS: XII SESSION: 2024-25
PREBOARD
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 In Python, a dictionary is an ordered collection of items(key:value pairs).	1
2	State the output of the following L1=[1,2,3] L2=L1 L1.append(7) L2.insert(2,14) L1.remove(1) print(L1) i) [1,3,7] ii) [2,3,7] iii) [1,14,3,7] iv) [2,14,3,7]	1
3	The following expression will evaluate to print(2+(3%5)**1**2/5+2) i) 5 ii) 4.6 iii) 5.8 iv) 4	1
4	What is the output of the expression? food='Chinese Continental' print(food.split('C')) i) ('', 'hinese ', 'ontinental') ii) ['', 'hinese ', 'ontinental'] iii) ('hinese ', 'ontinental') iv) ['hinese ', 'ontinental']	1
5	What will be output of the following code snippet? Msg='Wings of Fire!' print (Msg[-9: :2])	1
6	What will be the output of the following: T1=(10) print(T1*10) i) 10 ii) 100 iii)(10,10) iv(10,)	1
7	If farm is a t as defined below, then which of the following will cause an exception? farm={'goat':5,'sheep':35,'hen':10,'pig':7} i) print(str(farm)) ii) print(farm['sheep','hen']) iii) print(farm.get('goat)) iv) farm['pig']=17	1

8	What does the replace('e','h') method of string does? i) Replaces the first occurrence of 'e' to 'h' ii) Replaces the first occurrence of 'h' to 'e' iii) Replace all occurrences of 'e' to 'h' iv) Replaces all occurrences of 'h' to 'e'	1
9	If a table has 1 primary key and 3 candidate key, how many alternate keys will be in the table. i) 4 ii) 3 iii)2 iv)1	1

10	Write the missing statement to complete the following code
	`file = open("story.txt")`
	`t1 = file.read(10)`
	`_____#Move the file pointer to the beginning of the file`
	`t2= file.read(50)`
	`print(t1+t2)`
	`file.close()`
		1

11	Which of the following keyword is used to pass the control to the except block in Exceptional handling? i) pass ii) finally iii) raise iv)throw	1

12	What will be the output of the following code:
	`sal = 5000`
	`def inc_sal(per):`
	`  global sal`
	`  inc = sal * (per / 100)`
	`  sal += inc`
	`inc_sal(10)`
	`print(sal,end='%')`
	`sal=6000`
	`print(sal,end='$')`
	i) 5000%6000$
	ii) 5500.0%6000$
	iii) 5000.0$6000%
	iv) 5500%5500$
		1

13	State the sql command used to add a column to an existing table?	1
14	What will be the output of the following query? Mysql> SELECT * FROM CUSTOMER WHERE CODE LIKE '_A%' A) Customer details whose code's middle letter is A B) Customers name whose code's middle letter is A C) Customers details whose code's second letter is A D) Customers name whose code's second letter is A	1
15	Sushma created a table named Person with name as char(20) and address as varchar(40). She inserted a record with "Adithya Varman" and address as "Vaanam Illam, Anna Nagar IV Street". State how much bytes would have been saved for this record. i)(20,34) ii)(30,40) iii)(14,40) iv)14,34)	1
16	_____ gives the number of values present in an attribute of a relation. a)count(distinct col) b)sum(col) c)count(col) d)sum(distinct col)	1
17	The protocol used identify the corresponding url from ip address is _____ a)IP b)HTTP c)TCP d)FTP	1
18	The device used to convert analog signal to digital signal and vice versa is .. a)Amplifier b)Router c)Modem d)Switch	1
19	In _____ switching technique, data is divided into chunks of packets and travels through different paths and finally reach the destination.	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) : A function can have multiple return statements Reason (R) : Only one return gets executed Values are returned as a tuple.	1
21	Assertion (A) : DROP is a DDL command Reason(R) : It is used to remove all the content of a database object	1

Q No.	Section-B (7 x 2=14 Marks)	Marks
22	Differentiate list and tuple with respect to mutability. Give suitable example to illustrate the same .	2
23	Give two examples of each of the following a) Assignment operators b) Logical operators	2
24	If L1 = [13,25,41,25,63,25,18,78] and L2= [58,56,25,74,56] (i) A) Write a statement to remove fourth element from L1 Or B) Write the statement to find maximum element in L2 (ii) (A) write a statement to insert L2 as the last element of L1 OR (B) Write a statement to insert 15 as second element in L2	2

25	Identify the correct output(s) of the following code. Also write the minimum and the maximum possible values of the variable Lot
	
	`import random`
	`word='Inspiration'`
	`Lot=2*random.randint(2,4)`
	`for i in range(Lot,len(word),3):`
	`  print(word[i],end='$')`
	
	i) iain ii) in
	iii) itn$ iv) ain$
		2

26	Identify Primary Key and Candidate Key present if any in the below table name Colleges. Justify	2
27	(I) (A) What constraint/s should be applied to the column in a table to make it as alternate key? OR (B) What constraint should be applied on a column of a table so that it becomes compulsory to insert the value (II) (A) Write an SQL command to assign F_id as primary key in the table named flight	2

Cid	Name	Location	Year	Strength	AffiUniv	PhoneNumber
1	St. Xavier's College	Mumbai	1869	10000	University of Mumbai	022-12345678
2	Loyola College	Chennai	1925	5000	University of Madras	044-87654321
3	Hansraj College	New Delhi	1948	4000	Delhi University	011-23456789
4	Christ University	Bengaluru	1969	8000	Christ University	080-98765432
5	Lady Shri Ram College	New Delhi	1956	2500	Delhi University	011-34567890

	OR (B)Write an SQL command to remove the column remarks from the table name customer.	
28	List one advantage and disadvantage of star and bus topology OR Define DNS and state the use of Internet Protocol.	2

Q No.	Section-C (3 x 3 = 9 Marks)	Marks
29	(A) Write a function that counts no of words beginning with a capital letter from the text file RatanJi.txt Example: If you want to Walk Fast, Walk Alone. But - if u want to Walk Far, Walk Together Output: No of words starting with capital letter : 10 OR (B) Write a function that displays the line number along with no of words in it from the file Quotes.txt Example : None can destroy iron, but its own rust can! Likewise, none can destroy a person, but their own mindset can The only way to win is not be afraid of losing. Output: Line Number No of words Line 1: 9 Line 2: 11 Line 3: 11	3
30	(A) There is a stack named Uniform that contains records of uniforms Each record is represented as a list containing uid, uame, ucolour, usize, uprice. Write the following user-defined functions in python to perform the specified operations on the stack Uniform : (I) Push_Uniform(new_uniform):adds the new uniform record onto the stack (II) Pop_Uniform(): pops the topmost record from the stack and returns it. If the stack is already empty, the function should display “underflow”. (III) Peep(): This function diplay the topmost element of the stack without deleting it.if the stack is empty,the function should display ‘None’. OR (a) Write the definition of a user defined function push_words(N) which accept list of words as parameter and pushes words starting with A into the stack named InspireA (b) Write the function pop_words(N) to pop topmost word from the stack and return it. if the stack is empty, the function should display “Empty”.	3
31	**Predict the output of the Python code given below:**	3

```
Con1="SILENCE-HOPE-SUCCEss@25"
Con2=""
i=0
while i<len(Con1):
    if Con1[i]>='0'  and Con1[i]<='9':
       Num=int(Con1[i])
       Num-=1
       Con2=Con2+str(Num)
    elif Con1[i]>='A'  and Con1[i]<='Z':
       Con2=Con2+Con1[i+1]
    else:
       Con2=Con2+'^'
    i+=1
print(Con2)
```

Q No.	Section-D (4 x 4 = 16 Marks)	Marks
32	Consider the following table named Vehicle and state the query or state the output Table:- Vehicle	4

VID	LicensePlate	VType	Owner	Cost	Contact	State
1	MH12AB1234	Car	Raj Kumar	65	9876543210	Maharastra
2	DL3CDE5678	Truck	Arjith Singh	125	8765432109	New Delhi
3	KA04FG9012	Motor cycle	Prem Sharma		9123456789	Karnataka
4	TN07GH3456	SUV	Shyad Usman	65	9987654321	Tamil Nadu
5	KA01AB1234	Car	Devid jhon	65	9876543210	Karnataka
6	TN02CD5678	Truck	Anjali Iyer	125	8765432109	Tamil Nadu
7	AP03EF9012	Motor cycle	Priya Reddy		9123456789	Andhra Pradesh

(A)

(i) To display number of different vehicle type from the table vehicle

(ii) To display number of records entered vehicle type wise whose minimum cost is above 80

(iii)To set the cost as 45 for those vehicles whose cost is not mentioned

(iv)To remove all motor cycle from vehicle

OR

(B)

(i) SELECT VTYPE,AVG(COST) FROM VEHICLE GROUP BY VTYPE;

(ii) SELECT OWNER ,VTYPE,CONTACT FROM VEHICLE WHERE OWNER LIKE "P%";

(iii)SELECT COUNT(*) FROM VEHICLE WHERE COST IS NULL;

(iv)SELECT MAX(COST) FROM VEHICLE;

33	A CSV file "Movie.csv" contains data of movie details. Each record of the file contains the following data: 1.Movie id 2.Movie name 3.Genere 4.Language 5.Released date For example, a sample record of the file may be: ["tt0050083",' '12 Angry Men is','Thriller'.'Hindi','12/04/1957'] Write the following functions to perform the specified operations on this file	4

(i) Read all the data from the file in the form of the list and display all those records for which language is in Hindi.
(ii) Count the number of records in the file.

34 Salman has been entrusted with the management of Airlines Database. He needs to access some information from Airports and Flights tables for a survey. Help him extract the following information by writing the desired SQL queries as mentioned below. 4

Table - Airports

A_ID	A_Name	City	IATACode
1	Indira Gandhi Intl	Delhi	DEL
2	Chhatrapati Shivaji Intl	Mumbai	BOM
3	Rajiv Gandhi Intl	Hyderabad	HYD
4	Kempegowda Intl	Bengaluru	BLR
5	Chennai Intl	Chennai	MAA
6	Netaji Subhas Chandra Bose Intl	Kolkata	CCU

Table - Flights

F_ID	A_ID	F_No	Departure	Arrival
1	1	6E 1234	DEL	BOM
2	2	AI 5678	BOM	DEL
3	3	SG 9101	BLR	MAA
4	4	UK 1122	DEL	CCU
5	1	AI 101	DEL	BOM
6	2	6E 204	BOM	HYD
7	1	AI 303	HYD	DEL
8	3	SG 404	BLR	MAA

i) To display airport name, city, flight id, flight number corresponding flights whose departure is from delhi
ii) Display the flight details of those flights whose arrival is BOM, MAA or CCU
iii) To delete all flights whose flight number starts with 6E.
iv) (A) To display Cartesian Product of two tables
OR
(B) To display airport name,city and corresponding flight number

35 A table named Event in VRMALL database has the following structure: 4

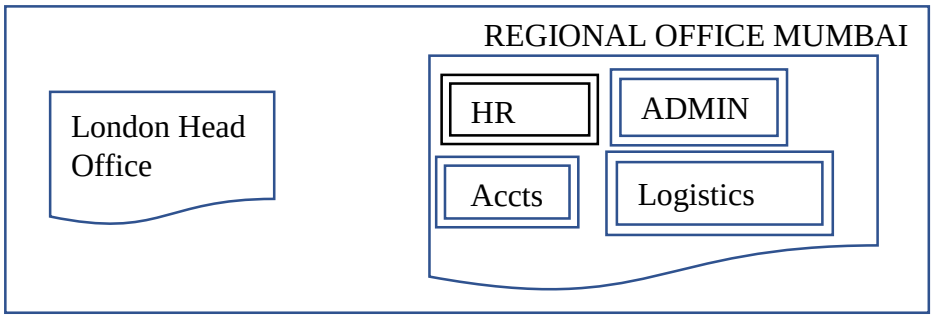
Field	Type
EventID	int(9)
EventName	varchar(25)
EventDate	date
Description	varchar(30)

Write the following Python function to perform the specified operations:
Input_Disp(): to input details of an event from the user and store into the table Event. The function should then display all the records organised in the year 2024.

Assume the following values for Python Database Connectivity
Host-localhost, user-root, password-tiger

Q No.	Section-E (2 x 5 = 10 Marks)	Marks
36	Ms Joshika is the Lab Attendant of the school. She is asked to maintain the project details of the project synopsis submitted by students for upcoming Board Exams. The information required are: -prj_id - integer -prj_name-string -members-integer -duration-integer (no of months)	5

	As a programmer of the school u have been asked to do this job for Joshika and define the following functions. i) Prj_input() - to input data of a project of student and append to the binary file named Projects ii) Prj_update() - to update the project details whose member are more than 3 duration as 3 months. iii) Prj_solo() - to read the data from the binary file and display the data of all project synopsis whose member is one.	
37	P&O Nedllyod Container Line Limited has its headquarters at London and regional office at Mumbai. At Mumbai office campus they planned to have four blocks for HR, Accts, Logistics and Admin related work. Each block has number of computers connected to a network for communication, data and resource sharing As a network consultant, you have to suggest best network related solutions for the issues/problems raised in (i) to (v), keeping in mind the given parameters	5



Distances between various blocks/locations:

Admin to HR	500m
Accts to Admin	100m
Accts to HR	300m
Logistics to Admin	200m
HR to logistics	450m
Accts to logistics	600m

Number of computers installed at various blocks are as follows:

Block	No of computers
ADMIN	95
HR	70
Accts	45
Logistics	28

i) Suggest the most appropriate block to place the sever in Mumbai office. Justify your answer.

ii) State the best wired medium to efficiently connect various blocks within the Mumbai Office.

iii) Draw the ideal cable layout (block to block) for connecting these blocks for wired connectivity.

iv) The company wants to conduct an online meeting with heads of regional office and headquarter. Which protocol will be used for the effective voice communication?

v) Suggest the best place to house the following

a) Repeater b) Switch