O.S.D.A.V.Public School,kaithal
Preboard Examination(2024-25)
Class : XII **Set A**
Subject : Computer Science

Time: 3 hr **M.M.: 70**

General Instructions:-

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- This question paper contains 8 printed pages with five sections from A to E.
- All questions are compulsory.
- Section A has 18 questions carrying 01 mark each.
- Section B has 07 Very Short Answer type questions carrying 02 marks each.
- Section C has 05 Short Answer type questions carrying 03 marks each.
- Section D has 03 Long Answer type questions carrying 05 marks each.
- Section E has 02 questions carrying 04 marks each

Q.N.	Section A(18X1=18)	Marks
1	State True or False "In Python, data type of a variable depends on its value"=> True	1
2	Which of the following data type in Python supports concatenation? a) int b) float c) bool d) str	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 will be the output of the following: T1=(10) print(T1*10) i)10 ii) 100 iii)(10,10) iv(10,)	1
5	What is the output of the expression? St1=”abc@pink@city” print(St1.split("@")) (a) (“abc”, “@”, “pink”, “@”, “city”) (b) [“abc”, “@”, “pink”,”@’,”city”] (c) [“abc”, “pink”, “city”] (d) Error	1
6	If farm is a dictionary 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’]) iii)print(farm.get(‘goat)) iv) print(farm[‘dog’])	1
7	Which of the following options will not result in an error when performed in python where tp = (5,2,7,0,3) ? (a) Tp[1] = 2 (b) tp.append(2) (c) tp1 = tp+tp (d) tp.sum( )	1
8	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
9	Which of the following modes in the file opening statement creates a new file if the file does not exists? a) a+ b) r+ c) w+ d) None of these	1

10	What will be the output of following expression? (5<10) and (10< 5) or (3<18) and not 8<18 (a) True (b) False (c) Error (d) No output	1
11	What will be the output of the following Python code ? v = 20 def Change(n): global v v, n = n, v print(v, n, sep = "#", end = "@") Change(50) print(v) (a) 20#50@20 (b) 50#20@50 (c) 50#50#50 (d) 20@50#20	1
12	Fill in the blank: _____command is used to add a new column in a table in SQL. a) update b) remove c) alter d)drop	1
13	Count(*) method count (a) NULL values only (b)Empty Values (c) ALL the values (d) None of these	1
14	Fill in the blank: For each attribute of a relation, there is a set of permitted values, called the _____of that attribute. (a) cardinality (b) degree (c) domain (d) tuple	1
15	_____ 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
16	The device used to convert analog signal to digital signal and vice versa is .. a)Amplifier b)Router c)Modem d)Switch	1
	Q17 and 18 are ASSERTION AND REASONING 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 c) A is True but R is False d) A is false but R is True	
17	Assertion (A):- print(f1()) is a valid statement even if the function f1() has no return statement. Reasoning (R):- A function always returns a value even if it has no return statement. a) Both A and R are true and R is the correct explanation for A	1
18	Assertion (A) : DROP is a DDL command Reason(R) : It is used to remove all the content of a database object a)Both A and R are true and R is the correct explanation for A	1

	Section B(2X7=14)	
19	(a) Given is a Python string declaration: myexam="INDIA PAKISTAN" Write the output of: print(myexam[-2:2:-2])=> ASKPA (b) Write the output of the code given below: d1 = {"name": "Aman", 27:"Ram"} d2 = {27:'age','age':28} d1.update(d2) print(d1.values())=>"Aman","age",28	2
20	(A) Write the Python statement for each of the following tasks using built-in functions/methods only: (i) To remove the item whose key is "NISHA" from a dictionary named Students. For example, if the dictionary Students contains {"ANITA": 90, "NISHA": 76, "ASHA": 92}, then after removal the dictionary should contain {"ANITA" :90, "ASHA": 92} Del d["Nisha"] (ii) To display the number of occurrences of the substring "is" in a string named message. For example if the string message contains "This is his book", then the output will be 3. message.count("is")	2

21	Predict the output of the Python code given below:
	List1 = list("Examination")
	List2 =List1[1:-1]
	for i in List2:
	j=List2.index(i)
	if j%2==0:
	List3.append(i)
	print(List3)
	=> ['x', 'm', 'n', 't', 'o']
		2

22	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='$') i) i$ain$ ii) in iii) itn$ iv) ain$ Min Lot=> 4 Max Lot=> 8	2
23	Predict the output of the Python code given below: def Alpha(N1,N2): if	2

	N1>N2:
	print(N1%N2)
	else:
	print(N2//N1,'#',end=' ')
	NUM=[10,23,14,54,32]
	for C in range (4,0,-1):
	A=NUM[C]
	B=NUM[C-1]
	Alpha(A,B)
	1 # 12
	1 # 3	

24	Name the aggregate functions which work only with numeric data, and those that work with any type of data. Sum(),Min(),Max(),Avg()	2
25	Nirmala is a bit confused between the terms Web server and Web browsers. Help her in understanding both the terms with the help of suitable examples. A **web browser** is an application software that can process and display a web page on the internet. The web browser is capable to make a request for web services and documents to web server. It acts an interface between the server and the client. As web browser is a software, thus it is to be installed on the client computer and used to surf the internet for websites and web pages. Popular examples of web browsers include Google Chrome, Microsoft Internet Explorer, Microsoft Edge, Mozilla Firefox, Opera Mini, etc. What is a Web Server? A **web server** is a dedicated computer that sends web based documents to the client's computer when request through the web browser. A web server accepts HTTP request from the client's browser, processes it to find the required document, and then sends a suitable response to client machine. Apache Server is an example of a web server.	2
	Section C	

26	Write a function that counts no of words beginning with capital letter from the text file RatanJi.txt
	def amn():
	a=open('RatanJI.txt','r')
	count=0
	b=a.read()
	c=b.split(' ')
	for i in c:
	if i[0].isupper():
	count=count+1
	print(count)
	amn()
		3

27	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 displays the topmost element of the stack without deleting it.if the stack is empty,the function should display 'None'.
	
	uniformStack=[ ]
	def Push_Uniform(new_uniform):
	uniformStack.append(new_uniform)
	
	def pop_book():
	if not uniformStack:
	print("Underflow")
	else:
	return(uniformStack.pop())
	def peep(uniformStack):
	if not uniformStack:
	print("None")
	else:
	print(uniformStack [-1])
		3

28	Predict the output of the Python code given below:
	Con1="Work hard in 2025"
	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)
	o^^^^^^^^^^^1-114
		3

29	Table : Projects P_id | Pname | Language | Startdate | Enddate P001 | School Management System | Python | 2023-01-12 | 2023-04-03 P002 | Hotel Management System | C++ | 2022-12-01 | 2023-02-02 P003 | Blood Bank | Python | 2023-02-11 | 2023-03-02 P004 | Payroll Management System | Python | 2023-03-12 | 2023-06-02 Based on the given table,write SQLqueries for the following : i)Add the constraint,Not Null at column Language in the existing tableProjects. ALTER TABLE PROJECTS ADD LANGUAGE CHAR(15) NOT NULL; (ii)To change the startdate =Null where language is Python of the project UPDATE PROJECTS SET STARTDATE=NULL WHERE LANGUAGE=" Python " (iii)To delete the column endate from table Projects. ALTER TABLE PROJECTS DROP COLUMN endate ;	3
30	Write SQL commands for the statements (i) to (iv) **Table: ACTIVITY** **ACode ActivityName ParticipantsNum PrizeMoney ScheduleDate** 1001 Relay 100X4 16 10000 23-Jan-2004 1002 High Jump 10 12000 12-Dec-2003 1003 Shot Put 12 8000 14-Feb-2004 1005 Long Jump 12 9000 01-Jan-2004 1008 Discuss Throw 10 15000 19-Mar-2004 Write the output for following-: i) Select prizemoney from Activity order by scheduledate desc; 15000 8000 10000 9000 12000 ii) Select ParticipantsNum , sum(PrizeMoney) from ACTIVITY group by ParticipantsNum ; ParticipantsNum sum(PrizeMoney) 16 10000 10 27000 12 17000 iii) Select avg(PrizeMoney) from Activity where scheduledate is greater than 15-feb-2024. 15000 or iv) To remove records belonging to Acode 1001 to 1003 (both) inclusive from Activity table. Delete from activity where Acode between 1001 and 1003;	3
	Section D	

31	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
	(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.
	`import csv`
	`def display_hindi_movies():`
	`  with open('Movie.csv', mode='r') as file:`
	`  csv_reader = csv.reader(file)`
	`  for row in csv_reader:`
	`  if row[3] == 'Hindi':`
	`  print(row)`
	`def count_records():`
	`  with open('Movie.csv', mode='r') as file:`
	`  csv_reader = csv.reader(file)`
	`  count = 0`
	`  for row in csv_reader:`
	`  count += 1`
	`  print(f'Total number of records: {count}')`
	`# Call the functions`
	`display_hindi_movies()`
	`count_records()`
	
	Or
	(a) Why it is important to close a file before exiting?
	If a program terminates abruptly without closing a file, the file may become corrupted, especially if it was being written to. Closing the file properly finalizes any pending write operations and prevents corruption.
	(b) Write a program in Python that defines and calls the following user defined functions :
	Add_Book : Takes the details of the books and adds them to a csv file 'Book.cv. Each record consists of a list with field elements as book_ID, B_name and pub to store book ID, book name and publisher respectively.
	Search_Book : Takes publisher name as input and counts and displays number of books published by them.
	`import csv`
	
	`def Add_Book():`
	`  """`
		4

```
    Takes book details as input and adds them to 'Book.csv' file.
    """
    with open('Book.csv', 'a', newline='') as csvfile:
        writer = csv.writer(csvfile)
        book_id = input("Enter Book ID: ")
        book_name = input("Enter Book Name: ")
        publisher = input("Enter Publisher: ")
        writer.writerow([book_id, book_name, publisher])

def Search_Book():
    """
    Takes a publisher name and counts the number of books published by them.
    """
    publisher_name = input("Enter Publisher Name to Search: ")
    count = 0
    with open('Book.csv', 'r', newline='') as csvfile:
        reader = csv.reader(csvfile)
        for row in reader:
            if row[2] == publisher_name:
                count += 1
    print(f"Number of books published by {publisher_name}: {count}")
```

32

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

```
Select a_name, city, F_id, F_no from Airports,Flights  where
Airports.A_id=Flights.F_id
```

	ii) Display the flight details of those flights whose arrival is BOM, MAA or CCU SELECT * FROM flights WHERE arrival IN ('BOM', 'MAA', 'CCU'); iv) To delete all flights whose flight number starts with 6E. Delete from flights where F_no like “6E%”; v) To display Cartesian Product of two tables. SELECT * FROM Airports CROSS JOIN Flight;	
33	(B) To display airport name,city and corresponding flight number A table named Event in VRMALL database has the following structure: 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 def Input_Disp(): import mysql.connector mydb = mysql.connector.connect(host = "localhost", user = "root", passwd = "tiger", database = "VRMALL") mycursor = mydb.cursor() mycursor.execute("INSERT INTO STUDENT VALUES(5, 'COMPUTER FEST', “12/12,2024”, 'ANNUAL')") mydb.commit() print("Records added") mycursor.execute("SELECT * FROM STUDENT WHERE YEAR(DATE)=2024')") A=mycursor.fetchall() for I in a : print(a) mydb.close()	4
	SECTION E	
34	Amit 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	5

You, as a programmer of the company, have been assigned to do this job for Amit.

(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 12 years and change their designation to "Sr. Manager".

(iii) Write a function to read the data from the binary file and display the data of all those candidates who are not "Sr. Manager".

```
import pickle
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])
    return candidates

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

 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)
                except EOFError:
                    break  # End of file reached
    except FileNotFoundError:
        print("No candidate data found. Please add candidates first.")
        return
```

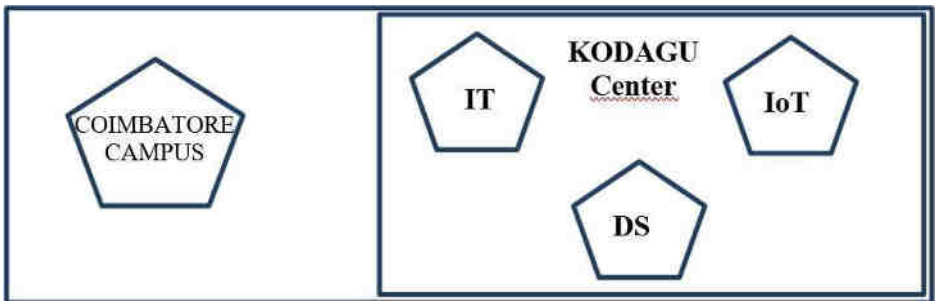
```
    with open('candidates.bin', 'wb') as file:
        for candidate in updated_candidates:
            pickle.dump(candidate, file)

    print("Candidates updated to Senior Manager where applicable.")

update_senior_manager()
```

35

Total-IT Corporation, a Karnataka based IT training company, is planning to set up training centers in various cities in next 2 years. Their first campus is coming up in Kodagu district. At Kodagu campus, they are planning to have 3 different blocks, one for AI, IoT and DS (Data Sciences) each. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant of this company, you have to suggest the best network related solutions for them for issues/problems raised in question nos. (i) to (v), keeping in mind the distances between various blocks/locations and other given parameters



Distance between various blocks/locations:

Block	Distance
IT to DS	28m
IT to IoT	55m
DS to IoT	32 m

Kodagu Campus to Coimbatore Campus 304 km

Number of computers:

Block	Number of Computers
IT	75
DS	50
IoT	80

(i) Suggest the most appropriate block/location to house the SERVER in the Kodagu campus (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.=>IOT due to 80-20 rule

(ii) Suggest a device/software to be installed in the Kodagu Campus to take care of data security.=> Firewall

(iii) Suggest the best wired medium and draw the cable layout (Block to Block) to most efficiently connect various blocks within the Kodagu Campus.

Ethernet

5

	(iv) Suggest the placement of the following devices with appropriate reasons: a) Switch/Hub=> in every builiding b) Router=> In IOT (v) Suggest an efficient transmission media between Coimbatore and Kodagu centre.=> Optical Fire	

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- Section D has 03 Long Answer type questions carrying 05 marks each.
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Q.N.	Section A(18X1=18)	Marks
1	State True or False "In Python, data type of a variable does not depends on its value"=>False	1
2	Which of the following data type in Python do not supports concatenation? a) int b) float c) bool d) str	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) 3.2	1
4	What will be the output of the following: T1=(10,) print(T1*10) i)10 ii) 100 iii)(10,10,10,10,10,10,10,10,10,10) iv(10,)	1
5	What is the output of the expression? St1="abc@pink@city" print(St1.partition("@")) (a) ("abc", "@", "pink", "@", "city") (b) ("abc", "@", "pink@city") (c) ["abc", "pink", "city"] (d) Error	1
6	If farm is a dictionary 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
7	Which of the following options will not result in an error when performed in python where tp = (5,2,7,0,3) ? (a) tp[1] = 2 (b) tp.append(2) (c) a=sum(tp) (d) tp1=tp*tp	1
8	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
9	Which of the following modes in the file opening statement generates an error if the file does not exists? a) a+ b) r+ c) w+ d) None of these	1

10	What will be the output of following expression? (5<10) or (10> 5) and (3<18) or not (8<18) (a) True (b) False (c) Error (d) No output	1
11	What will be the output of the following Python code ? v = 50 def Change(n): global v v, n = n, v print(v, n, sep = "#", end = "@") Change(20) print(v) (a) 20#50@20 (b) 50@20#50 (c) 50#50#50 (d) 20@50#20	1
12	Fill in the blank: _____command is used to delete a column in a table in SQL. a) update b) remove c) alter d)delete	1
13	Count( ) method count (a) NULL values only (b)Empty Values (c) ALL the values (d) None of these	1
14	Fill in the blank: For each relation, number of rows/tuples in a table is called _____. (a) cardinality (b) degree (c) domain (d) tuple	1
15	_____ gives the number of unique values present in an attribute of a relation. a)count(distinct col) b)sum(col) c)count(col) d)sum(distinct col)	1
16	The device used to regenerate the signal is.. a)Amplifier b)Router c)Modem d)Switch	1
	Q17 and 18 are ASSERTION AND REASONING 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 c) A is True but R is False d) A is false but R is True	1
17	Assertion (A):- print(f1()) is a valid statement even if the function f1() has no return statement. Reasoning (R):- A function always returns a value even if it has no return statement. a) Both A and R are true and R is the correct explanation for A	1
18	Assertion (A) : DROP is a DDL command Reason(R) : It is used to remove all the content of a database object a) Both A and R are true and R is the correct explanation for A	1

	Section B	
19	(a) Given is a Python string declaration: myexam="Russia Ukrain" Write the output of: print(myexam[-2:2:-2]) (b) Write the output of the code given below: d1 = {"name": "Aman", "age": 26} d2 = {27:'age','age':28} d1.update(d2) print(d1.values())=>(”aman”,”age”,26)	2

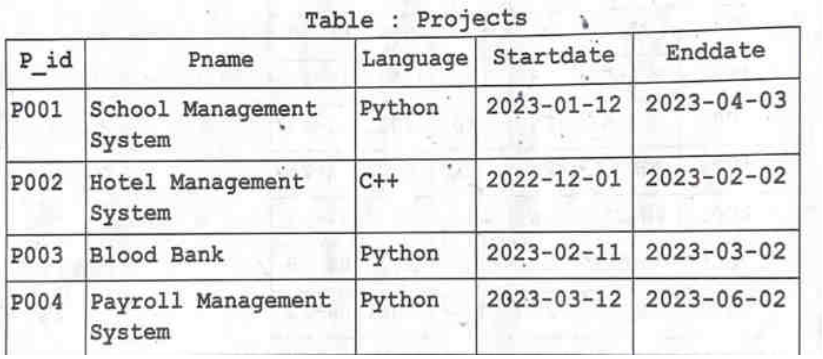
20	Predict the output of the Python code given below:
	List1 = list("Examination")
	List2 =List1[1:-1]
	for i in List2:
	j=List2.index(i)
	if j%2==0:
	List1.remove(i)
	print(List1)
	['E', 'a', 'i', 'a', 'i', 'n']
		2

21	Write the output displayed on execution of the following Python code :
	LS=["HIMALAYA", "NILGIRI", "ALASKA", "ALPS"]
	D={}
	for S in LS:
	if len(S)>4:
	D[S]=len(S)
	for K in D :
	print (K,D[K], sep = "#")
	HIMALAYA#8
	NILGIRI#7
	ALASKA#6
		2

22	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='$') i) i$ain$ ii) in iii) itn$ iv) ain$ Min Lot=> 4 Max Lot=> 8	2
23	Predict the output of the Python code given below:	2

	def Alpha(N1,N2):
	if N1>N2:
	print(N1%N2)
	else:
	print(N2//N1,'#',end=' ')
	NUM=[20,33,24,64,22]
	for C in range (4,0,-1):
	A=NUM[C]
	B=NUM[C-1]
	Alpha(A,B)
	2 # 16
	1 # 13	

24	Consider the following two commands with reference to a table, named Students, having a column named Section: (a) Select count(Section) from Students; (b) Select count(*) from Students; Count(section) count except null values and count(*) counts all values including null Values If these two commands are producing different results, (i) What may be the possible reason? (ii) Which command, (a) or (b), might be giving higher value? B will have maximum value	2
25	Nirmala is a bit confused between the terms Web server and Web browsers. Help her in understanding both the terms with the help of suitable examples. A **web browser** is an application software that can process and display a web page on the internet. The web browser is capable to make a request for web services and documents to web server. It acts an interface between the server and the client. As web browser is a software, thus it is to be installed on the client computer and used to surf the internet for websites and web pages. Popular examples of web browsers include Google Chrome, Microsoft Internet Explorer, Microsoft Edge, Mozilla Firefox, Opera Mini, etc. What is a Web Server? A **web server** is a dedicated computer that sends web based documents to the client's computer when request through the web browser. A web server accepts HTTP request from the client's browser, processes it to find the required document, and then sends a suitable response to client machine. Apache Server is an example of a web server.	2
	Section C	

26	Table : Projects  Based on the given table,write SQLqueries for the following : i)Add the constraint,primary key at column P_id in the existing table Projects. ALTER TABLE PROJECTS MODIFY P_ID INT PRIMARY KEY; (ii)To change the language to Python of the project whose id is P002. UPDATE PROJECTS SET LANGUAGE=" Python " WHERE P_ID =P002 (iii)To delete the table Projects from MySQL database along with its data (iii)To delete the column endate from table Projects. ALTER TABLE PROJECTS DROP COLUMN endate DELETE FROM	3

27	Write a function that displays the line number along with no of words in it from the file Quotes.txt
	def amn():
	a=open('RatanJI.txt','r')
	count=0
	b=a.readlines()
	for i in b:
	count=count+1
	w=len(i.split())
	print(i,w)
	amn()
		3

28	(a) Write the definition of a user defined function push_words(N) which accept list of words as parameter and pushes words starting with 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"
	InspireA =[ ]
	def Push_words(n):
	InspireA.append(A)
	
	def pop_book():
	if not InspireA:
	print("Underflow")
	else:
	return(InspireA.pop())
		3

P_id	Pname	Language	Startdate	Enddate
P001	School Management System	Python	2023-01-12	2023-04-03
P002	Hotel Management System	C++	2022-12-01	2023-02-02
P003	Blood Bank	Python	2023-02-11	2023-03-02
P004	Payroll Management System	Python	2023-03-12	2023-06-02

```
def peep(InspireA):
    if not InspireA :
        print("None")
    else:
        print(InspireA [-1])
```

.

29 | Predict the output of the Python code given below: | 3

```
Con1="OSDAV202425"
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)
```

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30 | Write SQL commands for the statements (i) to (iv) | 3

Table: ACTIVITY

ACode	ActivityName	ParticipantsNum	PrizeMoney	ScheduleDate
1001	Relay 100X4	16	10000	23-Jan-2004
1002	High Jump	10	12000	12-Dec-2003
1003	Shot Put	12	8000	14-Feb-2004
1005	Long Jump	12	9000	01-Jan-2004
1008	Discuss Throw	10	15000	19-Mar-2004

Write the output for following-:

i) Select prizemoney from Activity order by scheduledate desc;

15000
8000
10000
9000
12000

ii) Select ParticipantsNum , sum(PrizeMoney) from ACTIVITY group by ParticipantsNum ;

ParticipantsNum	sum(PrizeMoney)
16	10000
10	27000
12	17000

iii) Select avg(PrizeMoney) from Activity where scheduledate is greater than 15-feb-2024.

15000

or

iv) To remove records belonging to Acode 1001 to 1003 (both) inclusive from Activity table.

Delete from activity where Acode between 1001 and 1003;.

Section D

31 (4)

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.

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

Select a_name, city, F_id, F_no from Airports,Flights where Airports.A_id=Flights.F_id

ii) Display the flight details of those flights whose arrival is BOM, MAA or CCU

SELECT * FROM flights WHERE arrival IN ('BOM', 'MAA', 'CCU');

iv) To delete all flights whose flight number starts with 6E.

Delete from flights where F_no like “6E%”;

v) To display Cartesian Product of two tables.

SELECT * FROM Airports CROSS JOIN Flight;

32 (4)

(B) To display airport name,city and corresponding flight number

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

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
	`def Input_Disp():`
	`import mysql.connector`
	`mydb = mysql.connector.connect(host = "localhost", user = "root", passwd = "tiger", database = "VRMALL")`
	`mycursor = mydb.cursor()`
	`mycursor.execute("INSERT INTO STUDENT VALUES(5, 'COMPUTER FEST', “12/12,2024”, 'ANNUAL')")`
	`mydb.commit()`
	`print("Records added")`
	`mycursor.execute("SELECT * FROM STUDENT WHERE YEAR(DATE)=2024')")`
	`A=mycursor.fetchall()`
	`for I in a :`
	`print(a)`
	`mydb.close()`	

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
	(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.
	`import csv`
	`def display_hindi_movies():`
	`with open('Movie.csv', mode='r') as file:`
	`csv_reader = csv.reader(file)`
	`for row in csv_reader:`
	`if row[3] == 'Hindi':`
	`print(row)`
	`def count_records():`
	`with open('Movie.csv', mode='r') as file:`
	`csv_reader = csv.reader(file)`
	`count = 0`
	`for row in csv_reader:`
	`count += 1`
		4

```
        print(f'Total number of records: {count}')
# Call the functions
display_hindi_movies()
count_records()
```

Or

(a) Why it is important to close a file before exiting?

If a program terminates abruptly without closing a file, the file may become corrupted, especially if it was being written to. Closing the file properly finalizes any pending write operations and prevents corruption.

(b) Write a program in Python that defines and calls the following user defined functions :

Add_Book : Takes the details of the books and adds them to a csv file 'Book.cv. Each record consists of a list with field elements as book_ID, B_name and pub to store book ID, book name and publisher respectively.

Search_Book : Takes publisher name as input and counts and displays number of books published by them.

```
import csv

def Add_Book():
    """
    Takes book details as input and adds them to 'Book.csv' file.
    """
    with open('Book.csv', 'a', newline='') as csvfile:
        writer = csv.writer(csvfile)
        book_id = input("Enter Book ID: ")
        book_name = input("Enter Book Name: ")
        publisher = input("Enter Publisher: ")
        writer.writerow([book_id, book_name, publisher])

def Search_Book():
    """
    Takes a publisher name and counts the number of books published by them.
    """
    publisher_name = input("Enter Publisher Name to Search: ")
    count = 0
    with open('Book.csv', 'r', newline='') as csvfile:
        reader = csv.reader(csvfile)
        for row in reader:
            if row[2] == publisher_name:
                count += 1
    print(f"Number of books published by {publisher_name}: {count}")
```

	SECTION E	
34	Amit 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	5

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 Amit.

(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 12 years and change their designation to "Sr. Manager".

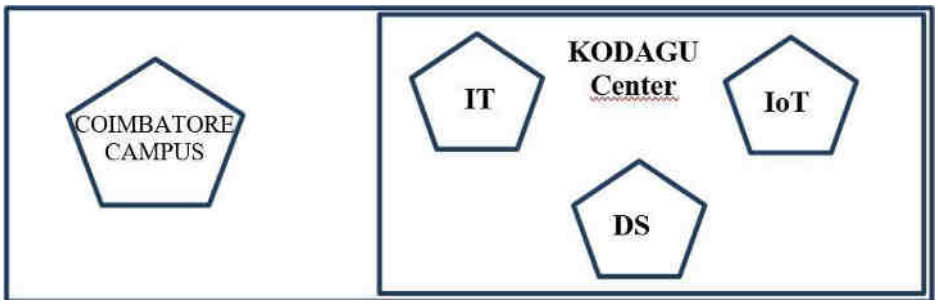
(iii) Write a function to read the data from the binary file and display the data of all those candidates who are not "Sr. Manager".

```
import pickle
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])
    return candidates

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

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)
                except EOFError:
```

```
                break  # End of file reached
    except FileNotFoundError:
        print("No candidate data found. Please add candidates first.")
        return

    with open('candidates.bin', 'wb') as file:
        for candidate in updated_candidates:
            pickle.dump(candidate, file)

    print("Candidates updated to Senior Manager where applicable.")

update_senior_manager()
```

35

Total-IT Corporation, a Karnataka based IT training company, is planning to set up training centers in various cities in next 2 years. Their first campus is coming up in Kodagu district. At Kodagu campus, they are planning to have 3 different blocks, one for AI, IoT and DS (Data Sciences) each. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant of this company, you have to suggest the best network related solutions for them for issues/problems raised in question nos. (i) to (v), keeping in mind the distances between various blocks/locations and other given parameters



Distance between various blocks/locations:

Block Distance

IT to DS 28m

IT to IoT 55m

DS to IoT 32 m

Kodagu Campus to Coimbatore Campus 304 km

Number of computers:

Block	Number of Computers
IT	75
DS	50
IoT	80

(i) Suggest the most appropriate block/location to house the SERVER in the Kodagu campus (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.=>IOT due to 80-20 rule

5

	(ii) Suggest a device/software to be installed in the Kodagu Campus to take care of data security.=> Firewall (iii) Suggest the best wired medium and draw the cable layout (Block to Block) to most efficiently connect various blocks within the Kodagu Campus. Ethernet (iv) Suggest the placement of the following devices with appropriate reasons: a) Switch/Hub=> in every builiding b) Router=> In IOT (v) Suggest an efficient transmission media between Coimbatore and Kodagu centre.=> Optical Fire	