SET - 3

Roll No. ☐☐☐☐☐☐☐

Candidates must write the Set No. on the title page of the answer book.

SAHODAYA PRE-BOARD EXAMINATION (2023-24)

- Please check that this question paper contains 15 printed pages.
- Set number given on the right hand side of the question paper should be written on the title page of the answer book by the candidate.
- Check that this question paper contains 35 questions.
- Write down the Serial Number of the question in the left side of the margin before attempting it.
- 15 minutes time has been allotted to read this question paper. The question paper will be distributed 15 minutes prior to the commencement of the examination. The students will read the question paper only and will not write any answer on the answer script during this period. Students should not write anything in the question paper.

CLASS- XII

SUB : COMPUTER SCIENCE (083)

Time: 3 hours   **Maximum Marks: 70**

General Instructions :-

1.   Please check this question paper contains 35 questions.

2.   All questions are compulsory.

3.   This question paper is divided into 5 sections- A, B, C, D and E.

4.   Section A, consists of 18 questions (1 to 18). Each question carries 1 Mark.

5.   Section B, consists of 7 questions (19 to 25). Each question carries 2 Marks.

6.   Section C, consists of 5 questions (26 to 30). Each question carries 3 Marks.

7.   Section D, consists of 2 questions (31 to 32). Each question carries 4 Marks.

8.   Section E, consists of 3 questions (33 to 35). Each question carries 5 Marks.

9.   All programming questions are to be answered using Python Language only.

	SECTION-A	
1.	What is the output of the following code : T=(200) print(T*2) (a) (200,200) (b) Error (c) 400 (d) [200,200]	1
2.	Given a Tuple tup1= (10, 20, 30, 40, 50, 60, 70, 80, 90) What will be the output of print (tup1 [3:7:2])? (a) (40,50,60,70,80) (b) (40,50,60,70) (c) [40,60] (d) (40,60)	1
3.	Which of the following functions can not be used with a tuple? (a) max( ) (b) sort (c) count (d) sorted	1
4.	Select the correct output of the code: str="computer is fun" p=len(str) substr="fun" print(str.find(substr, 0, p)) (a) 13 (b) 12 (c) -1 (d) 0	1
5.	When is the finally block executed? (a) When there is no exception (b) When there is an exception (c) Only if some condition that has been specified is satisfied (d) Always	1
6.	What output will be produced by the following expression? print ((2+3) *5/4+(4+6)//2) (a) 11.0 (b) 11.25 (c) 11 (d) 11.5	1
7.	Which of the following network devices amplify the incoming signal and forwards it in LAN? (a) Repeater (b) Gateway c) Router (d) Modem	1
8.	State whether the following statement is True or False: While writing a program all exceptions must be handled as the system cannot handle Exceptions on it's own.	1

9.	Which out of the following Network devices is used to connect dissimilar networks (different protocols)?	1
	(a) Hub (b) Router (c) Bridge (d) Gateway	
10.	What will be the output of the following code?	1

	import random
	List=["Delhi","Mumbai","Chennai","Kolkata"]
	for y in range(4):
	    x = random.randint(1,3)
	    print(List[x],end="#")
	
	(a) Delhi#Mumbai#Chennai#Kolkata#
	(b) Mumbai#Chennai#Kolkata#Mumbai#
	(c) Mumbai# Mumbai #Mumbai # Delhi#
	(d) Mumbai# Mumbai #Chennai # Mumbai	

11.	Write the output of the following code? t = (100, 200 , 300 , [560, 780], 900) t[3][-1] = [400 , 500] print(t)	1
12.	If cross product is done on two tables Table1 (2 tuples and 3 attributes) and Table2 (2 attributes and 3 tuples) then what will be the cardinality of the resultant table?	1
13.	Select the correct output of the code: quote= "Mission Chandrayan-3" a=quote.split("a") print(a[0],"++",a[3]) (a) Mission Ch++3 (b) Mission Ch++ ndrayan-3 (c) Mission Ch++ yan-3 (d) Mission Ch ++ n-3	1
14.	Which of the following is a valid identifier in Python?	1
	(a) False (b) var- (c) 15CBSE (d) _sahodaya1	
15.	Fill in the blank: _____ command is used to remove a column from a table in SQL.	1
	(a) update (b) remove (c) alter (d) delete	

16.	Fil in the blank: The _____ statement when combined with table name returns the structure of the table. (a) DESC (b) UNIQUE (c) DISTINCT (d) NULL	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 A

(c)   A is True but R is False

(d)   A is False but R is True

17.	**Assertion (A)** : A function is a block of organized and reusable code that is used to perform a single, related action. **Reason (R)** : Function provides better modularity for your application and a high degree of code reusability.	1
18.	**Assertion (A)** : CSV (Comma Separated Values) is a file format for data storage which looks like a text file. **Reason (R)** : The information is organized with one record on each line and each field is separated by comma.	1

SECTION-B

19.	Given is a Python string declaration: S="Digital India @@ 2023" Write the output of: print(S.replace('2','2+1')) print(S[::-2]))	1+1=2
| 20. | What will be the output of the following Python code?<br><br>```python
def Findoutput():
  L="Program"
  X=""
  L1=[ ]
  count = 1
  for i in L:
    if i in ['a', 'e', 'i', 'o', 'u']:
      X=X+i.swapcase()
    else:
      if count%2 != 0:
        X=X+str(len(L[:count]))
``` | 2 |

```
        else:
            X=X+i
        count=count+1
    print(X)
Findoutput()
```

OR

What will be the output of the following Python code?

```
def Display(str):
    m=""
    for i in range(0,len(str)):
        if(str[i].isupper()):
            m=m+str[i].lower()
        elif str[i].islower():
            m=m+str[i].upper()
        else:
            if i%2!=0:
                m=m+str[i-1]
            else:
                m=m+"$"
    print(m)
Display('Python3.10')
```

21.	Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code.
	
	value=30
	
	for res in range(0, value)
	
	If res%4==0:
	
	    print(res*4)
	
	elseif res%5==0:
	
	    print(res+3)
	
	else:
	
	    print(res+10)
		2

22.	Write the Python statement for each of the following tasks using BUILT-IN functions/methods only: (a) Sort the elements of a tuple Tup in ascending order. (b) Remove an element present at index 3 of a List Li. OR	2

	(a) Convert the input to the type of element as entered.	
	(b) Find the total of values in a list of integers.	

23.	Write the output of the following code snippet.
	
	    V=70
	    def display(N):
	       global V
	      V=35
	      if N%9==0:
	        V=V*N
	      else:
	        V=V/N
	    print(V, end="*")
	    display(15)
	    print(int(V))
		2

24.	Arjun has created a table SMS containing SRoll_no, Sname, SClass, SPhone_no and percent. Later, he realizes that the field Sphone_no may have duplicate values. Help him to write a SQL command to set the property of this field to deny duplicate values. Also he needs help to write SQL command to see the structural detail of the table SMS. OR Ms. Trisha of a software company created a table **Clients** under a database **Company**. After creating table, she now wants to add an additional column CPortfolio to store textual information containing maximum of 100 characters and that can't be blank. Also she wants to view all the tables present under the database **Company**. Help her to write the SQL commands to complete the above tasks.	2
25.	(a) Expand the following terms: IMAP, GSM (b) Give one difference between LAN and WAN. OR (a) Define the term Telnet with respect to networks (b) How is server different from client?	2

| 26. | (a) | Write the outputs of the SQL queries (i) to (iv) based on the relations PRODUCT and ORDER. | 2+1=3 |

Table: PRODUCT

PID	BRAND	CITY_STORE	PNAME	PRICE
111	SONY	DELHI	TV	70000
222	NOKIA	MUMBAI	MOBILE	50000
333	ONIDA	DELHI	TV	30000
444	SONY	MUMBAI	MOBILE	35000
555	BLACKBERRY	CHENNAI	MOBILE	25000
666	DELL	DELHI	LAPTOP	20000

Table: ORDER

CID	CNAME	QTY	PID
101	ROHAN SHARMA	20	222
102	DEEPAK KUMAR	10	666
103	MOHAN KUMAR	5	111
104	SAHIL BANSAL	3	333
105	NEHA SONI	7	444
106	SONAL AGARWAL	5	333
107	ARUN SINGH	15	666

(i) SELECT COUNT(*) , CITY_STORE FROM PRODUCT GROUP BY CITY_STORE;

(ii) SELECT AVG(QTY) FROM ORDER WHERE CNAME LIKE "%R%";

(iii) SELECT CNAME, BRAND FROM PRODUCT, ORDER WHERE PRODUCT. PID = ORDER.PID AND PNAME= "MOBILE";

(iv) SELECT CNAME, QTY FROM ORDER WHERE QTY NOT BETWEEN 5 AND 20;

(b) Write a command in SQL to view all the Tables present in a database named 'SCHOOL';

27.	Observe the following table and answer the parts (a) to (c): **Table: Store** | ItemCode	ItemName	Qty	Rate
---	---	---	---
10	Gel Pen Classic	1150	25
11	Sharpner	1500	10
12	Ball Pen 0.5	1600	12
13	Eraser	1600	5
15	Ball Pen 0.25	800	20 | (a) Identify the most appropriate column, which can be considered as Primary key of the Table Store. (b) If three columns are added and one row is deleted from the table Store, then what will be the new degree and cardinality of the above table? (c) Write the SQL statement to delete the record of item having Rate less than 10.	3
28.	A list contains following record of a 'Computer': [MACAddress, Brand, Price, RAM] Write separate user defined functions to perform given operations on the stack named 'System': (i) Push_element() - To Push an object containing Brand and Price of computers whose RAM capacity is more than 4GB. (ii) Pop_element() - To Pop the objects from the stack and display them. Also, display "Stack Empty" when there are no elements in the stack. For example: If the lists of computer details are: ["M001", "Lenovo", 75000, 16] ["M002", "HP", 72000, 8] ["M003","Apple", 110000, 16] ["M004", "Compaq", 50000, 4] The stack should contain ["Lenovo", 75000]	3

["Apple", 110000]

The output should be:

["Lenovo", 75000]

["Apple", 110000]

Stack Empty

<center>**OR**</center>

BCCI has created a dictionary containing top players and their runs as key value pairs of cricket team. Write a program, with separate user defined functions to perform the following operations:

● Push the keys (name of the players) of the dictionary into a stack, where the corresponding value (runs) is greater than 49.

● Pop and display the content of the stack.

For example:

If the sample content of the dictionary is as follows:

SCORE={"KAPIL":40, "SACHIN":55, "SAURAV":80, "RAHUL":35, "YUVRAJ":110}

The output from the program should be:

YUVRAJ SAURAV SACHIN

| 29. | (a) Refer the tables given below: | 3 |

Table: Book

Code	Sub
B1	English
B2	Physics
B3	History
B4	Science

Table B: Stock

SCode	Pub	Qty	Code
P01	Gyan Chand	250	B1
P02	Pustak House	340	B2
P03	Arora	470	B3
P04	Sonka	245	B5

Predict the output for the following query:

SELECT * FROM Book NATURAL JOIN Stock ;

(b) Consider the following tables WORKER and PAYLEVEL and write the output of the following SQL queries (i) to (iv) .

Table : WORKER

ECODE	NAME	DESIGN	PLEVEL	DOJ	DOB
11	Radhe Shyam	Supervisor	P001	13-Sep-2004	23-Aug-1981
12	Chander Nath	Operator	P003	22-Feb-2010	12-Jul-1987
13	Fizza	Operator	P003	14-Jun-2004	14-Oct-1983
15	Ameen Ahmed	Machanic	P002	21-Aug-2006	13-Mar-1984
18	Sanya	Clerk	P002	19-Dec-2005	09-Jun-1987

Table: PAYLEVEL

PLEVEL	PAY	ALLOWANCE
P001	26000	12000
P002	22000	10000
P003	12000	600

(i)   SELECT COUNT(PLEVEL), PLEVEL FROM WORKER
        GROUP BY PLEVEL;

(ii)   SELECT MAX (DOB), MIN(DOJ) FROM WORKER;

(iii)   SELECT NAME, PAY FROM WORKER W, PAYLEVEL P
        WHERE W. PLEVEL= P. PLEVEL AND W.ECODE <13;

(iv)   SELECT PLEVEL, PAY+ALLOWANCE FROM PAYLEVEL
        WHERE PLEVEL= 'P003';

| 30. | Write a function RevText() to read a text file " Story.txt " and Print the word(s) starting with 'I' in reverse order, rest of the words will be printed as it is. | 3 |

Example: If content of the text file is: INDIA IS MY COUNTRY **Output** will be:

AIDNI SI MY COUNTRY

OR

Write a function countmy( )in Python to read the text file "Data.txt" and count the

number of times "my" or "My" occurs in the file.

For example if the file "Data.txt" contains:

"This is my website. I have displayed my preferences in the CHOICE section."

The countmy( ) function should display the output as:

my occurs 2 times.

SECTION-D	

| 31. | Consider the following tables ITEM and CUSTOMER, write SQL commands for the statements (a) to (d) | 1*4=4 |

TABLE: ITEM

I_ID	Item _Name	Manufacturer	Price
PC01	Personal Computer	ABC	35000
LC05	Laptop	ABC	55000
PC03	Personal Computer	XYZ	32000
PC06	Personal Computer	MNO	37000
LC03	Laptop	PQR	57000

TABLE: CUSTOMER

C_ID	Customer_Name	City	I_ID
01	N Roy	Delhi	LC03
06	H Singh	Mumbai	PC03
12	R Pandey	Delhi	PC06
15	C Sharma	Delhi	LC03
16	K Agrawal	Bangalore	PC01

(a)   To display the details of those Customers whose city is Delhi in the descending order of Customer_Name.

(b)   To display the details of Items whose Price is not in the range of 35000 to 55000 (Both values included).

	(c) To display the Customer_Name, City from table CUSTOMER and Item_Name and Price from table ITEM, with their corresponding matching I_ID. (d) To increase the Price of all items by 1000 in the table ITEM.	

32.	Given below is a CSV file named as 'Student.csv'. Write the statement 1 to 4 to complete the program code.
	
	import csv
	fh = open(_____ , _____ , newline='') #Statement-1
	stuwriter = csv. _____ #Statement-2
	data = [ ]
	header = ['ROLL_NO', 'NAME', 'CLASS', 'SECTION']
	data.append(header)
	for i in range(5):
	       roll_no = int(input("Enter Roll Number : "))
	       name = input("Enter Name : ")
	       Class =input("Enter Class : ")
	       section =input("Enter Section : ")
	       rec = [_____] #Statement-3
	       data.append(rec)
	stuwriter._____ #Statement-4
	fh.close()
	
	(a) Identify the missing code for blank space in line marked as Statement-1?
	   (i) "Student.csv","r+"
	   (ii) "Student.csv","w"
	   (iii) "Student.csv","r"
	   (iv) "Student.csv","wb"
	(b) Choose the function name (with argument) that should be used in the blank space of line marked as Statement-2
	   (i) reader(fh)
	   (ii) reader(MyFile)
	   (iii) writer(fh)
	   (iv) writer(MyFile)
		4

(c)   Identify the suitable code for blank space in line marked as Statement-3.

   (i)   'ROLL_NO', 'NAME', 'CLASS', 'SECTION'

   (ii)   ROLL_NO, NAME, CLASS, SECTION

   (iii) 'roll_no','name','Class','section'

   (iv)   roll_no,name,Class,sectionc)

(d)   Choose the function name that should be used in the blank space of line marked as Statement-4 to create the desired CSV File?

   (i)   dump(data,fh)

   (ii)   load(fh)

   (iii) writerows(data)

   (iv)   writerow(data)

SECTION-E

33. (a) Differentiate between cardinality and degree of a relation.

(b) Nirnaya is learning Python and facing difficulty in interfacing python with MySQL. He wants to fetch all the records from a table School having the fields as ANo, SName, NOS, State, Address and display them.

The following are the details to establish connectivity between Python and MySQL:

   * User - student

   * Password - quick

   * Host - localhost

   * Database- Mydb

Help Nirnaya to write a program and complete the desired task.

OR

(a)   Define Primary key with example.

(b)   Anisha has created a table named Teacher in MySQL database School:

   * Teacher's Id(TId) - integer

   * Teacher's name(TName) - string

   * DOA(Date of Appointment) – Date

   * Salary – float

   Other details to establish connectivity between Python and MySQL are as follows:

   * Username - root

   * Password - tiger

   * Host - localhost

1+4=5

	Anisha wants to display the names of those teachers whose salary is less than 1,00,000. As a Python expert you need to help her to complete the task.		
34.	"**Sikshya for All**" is an educational 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:	1*5=5	

Centre to Centre distances between various buildings as per architectural drawings (in meters) is as follows:

Main Building to Resource Building	120 m
Main Building to Training Building	40 m
Main Building to Accounts Building	135 m
Resource Building to Training Building	125 m
Resource Building to Accounts Building	45 m
Training Building to Accounts Building	45 m

Expected number of Computers in each building:

Main Building	15
Resource Building	25
Training Building	250
Accounts Building	10

Answer the following questions based on the above information

(a)   Suggest a cable layout of connections between the buildings.

(b)   Suggest the most suitable place (i.e. building) to house the server of this NGO. Also, provide a suitable reason for your answer.

(c)   Suggest the placement of the following devices with justification:

    (i) Repeater   (ii) Hub/Switch

	(d)	The NGO is planning to connect its international office situated in Delhi. Which out of the following wired communication links, will you suggest for a very high-speed connectivity? (i) Telephone Analog line (ii) Optic Fibre (iii) Ethernet cable	
	(e)	Which of the following should be used to protect unauthorized access in the network. (i) Telnet (ii) Firewall (iii) Router	
35.	(a) Write any two differences between Text file and Binary file. (b) Write a function in python to search and display details, whose destination is "**Cochin**" from binary file "**Bus.dat**". Assuming the binary file is containing the following elements in the list: ▪ Bus Number ▪ Bus Starting Point ▪ Bus Destination OR (a) Write any two differences between 'rb' and 'ab' modes w.r.t. Binary files. (b) A binary file "salary.dat" has structure [employee id, employee name, salary]. Write a function CountRec() in Python that would read contents of the file "salary.dat" and display the details of those employee whose salary is above 20000.	2+3=5