

Navodaya Vidyalaya Samiti

Pre-Board-II Question Paper (Theory)

Computer Science (083)

Maximum Marks: 70

Time Allowed: 3 hours

General Instructions:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each. One internal choice is given in Q35 against part c only.
8. All programming questions are to be answered using Python Language only.

SECTION A

1. State True or False 1
"Single Line Comments in Python begin with a "\$" symbol."
2. Find the valid identifier from the following 1
a) My-Name b) True c) While d) S.name
3. Which statement is correct for dictionary? 1
(i) A dictionary is an ordered set of key : value pair
(ii) each of the keys within a dictionary must be unique
(iii) each of the values in the dictionary must be unique
(iv) values in the dictionary are immutable
4. Write the names of any two mutable data types available in Python. 1
5. If the following code is executed, what will be the output of the following code? 1

```
n="Trust yourself that you can do it and get it"  
print(name[2:-4:2])
```

6. Which of the following commands can be used to read “n” number of characters from a file using the file object <file>? 1
- a) read(n) b) n = file.read() c) file.readline(n) d) file.readlines()
7. Fill in the blank: _____ command is used to remove the database . 1
- (a) update (b) remove (c) alter (d) drop
8. Which of the following command will use to add new column in the table from MYSQL database? 1
- (a) DELETE TABLE
- (b) DROP TABLE
- (c) REMOVE TABLE
- (d) ALTER TABLE
9. Which of the following statement(s) would give an error after executing the following code? 1
- ```

W=" Nothing is impossible, the word itself says 'I'm possible" # Statement 1
print(W) # Statement 2
S="Good" # Statement 3
S[0]= ' ' # Statement 4
S=S*"Good" # Statement 5

```
- (a) Statement 3
- (b) Statement 4
- (c) Statement 5
- (d) Statement 4 and 5
10. In SQL, which command is used to SELECT only one copy of each set of duplicable rows 1
- a) SELECT DISTINCT
- b) SELECT UNIQUE
- c) SELECT DIFFERENT
- d) All of the above
11. Write the output of the following code 1
- ```

fout=open("story.txt","w")
fout.write("Welcome Python")
fout.seek(5)
print(fout.tell( ))
fout.close( )

```
12. Which operator tests column for the absence of data (i.e., NULL value) ? 1

(a) EXISTS operator (b) NOT operator (c) IS operator (d) None of these

13. Rearrange the following terms in increasing order of speedy medium of data transfer. 1
Telephone line, Fiber Optics, Coaxial Cable, Twisted Paired Cable
14. What will the following expression be evaluated to in Python? 1
float(9+int(4.29+2.1)%4)
(a) 11.0 (b) 11 (c) 10.0 (d) 10
15. The SQL built-in function _____ obtains the smallest value in a numeric column. 1
16. Which connector is used for linking the database with Python code? 1
(a) mysql.connector
(b) YesSQL: connector
(c) PostSQL: connector
(d) None of the above

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):- Python allows function arguments to have default values; if the function is called without the argument, the argument gets its default value. 1
Reasoning (R):- During a function call, the argument list first contains default argument(s) followed by positional argument(s).
18. Assertion (A): A CSV file stores data in rows and the values in each row is separated with a separator, also known as a delimiter. 1
Reason (R): You cannot change the by default comma as a value separator.

SECTION B

19. Mr Tendulkar has written a code to generate Fibonacci series. but he is unable to get the result / code is having errors. Rewrite the correct code and underline the corrections made. 2

```
Def check():  
    N=25  
    for i in range(0,N):  
        if N%2=0:  
            print(N*2)
```

```

elif N%3==0
    print(N*3)
Else:
    print(N)
check()

```

20. Mention any two characteristics of BUS Topology. 2

OR

Differentiate between the terms Domain Name and URL in the context of World Wide Web.

21. If given A=2, B=1, C=3, What will be the output of following expressions:

(A) print((A>B) and (B>C) or (C>A)) 1

(B) print(A**B**C) 1

22. Explain the use of 'Primary Key' in a Relational Database Management System. Give example to support your answer. 2

23. (a) Write the full forms of the following: 1

(i) FTP (ii) VOIP

(b) Which type of network (out of LAN, PAN and MAN) is formed, when you connect two mobiles using Bluetooth to transfer a video? 1

24. Predict the output of the Python code given below: 2

```

x = 20
def myfunc():
    global x
    x = 10
    print(x)
myfunc()
print(x,end="")

```

OR

Fill in the blanks to execute loop from 10 to 100 and 10 to 1

(i) for i in range(____):
print(i)

(ii) for i in range(____):
print(i)

25. Differentiate between Degree and Cardinality in the context of Relational Data Model. 2

OR

Anjali writes the following commands with respect to a table employee having fields, empno, name, department, commission.

Command1 : Select count(*) from employee;
 Command2: Select count(commission) from employee;
 She gets the output as 4 for the first command but gets an output 3 for the second command.
 Explain the output with justification.

SECTION C

26. Consider following table medicalstore and write perform the following query. 1+2

MedicineNo	MedicineName	MedCode	Quantity
5647	Saridon	141	75
5741	Paracetamol	142	44
3546	Nicip Plus	141	60
9541	Disprin	140	53
2025	Diclofenac	143	73
2783	Corex Syrup	141	97
8614	Psorid	142	48

- (a) Insert the following data into the attributes respectively in the given table medicalstore.
 MedicineNo = 6647, MedicineName = "Dapsone", MedCode = 141 and Quantity = 55
- (b) Write the output of the SQL queries (i) to (iv) based on the table: Staff

Ecode	Name	Dept	DOB	Gender	Designation	Salary
101	Sunita	Sales	06-06-1995	F	Clerk	25000
102	Neeru	Office	05-07-1993	F	Manager	12000
103	Raju	Purchase	05-06-1994	M	Manager	26000
104	Neha	Sales	08-08-1995	F	Accountant	18000
105	Nishant	Office	08-10-1995	M	Clerk	10000
106	Vinod	Purchase	12-12-1994	M	Clerk	10000

- (i) Select sum(Salary) from staff where Gender = 'F' and Dept = 'Sales';
 (ii) Select Max(DOB), Min(DOB) from staff;
 (iii) Select Gender, Count(*) from staff group by Gender;
 (iv) Select Name from staff where salary>25000;
27. Write a method in python to read lines from a text file "Test.TXT" and display those lines which start with the alphabets S.

OR

Write a function Count_word() in python to read the text file "story.txt" and count the number of times "vidyalaya" occurs in the file. For example if the file story.txt contains:

"This is my vidyalaya. I love to play and study in my vidyalaya."

the Count_word() function should display the output as: "vidyalaya occurs 2 times".

- 28.(a) Consider the tables given below which are linked with each other and maintains referential integrity. 2

Table :Party

Partyid	Description	Costperperson
P101	Birthday	400
P102	Wedding 700	700
P103	Farewell	300
P104	Engagement	400

Table :Client

ClientId	ClientName	Address	Phone	NoOfGuest	PartyId
C101	A.K.Antony	A-151 Adarsh Nagar	99101956	80	P101
C102	Fauzia Aria	K-5/52 Vikas Vihar	981166568	500	P102
C103	Rashi Khanaa	D-6 Hakikat Nagar	981166568	50	P101
C104	S.K.Chandra	76-A/2 MG Colony Adarsh Avenue	65877756	100	P104

- (i) Name the Primary keys in both the tables.
- (ii) 'P101' data is present twice in column 'PartyId' in 'Client' table – Is there any discrepancy? justify your answer.

With reference to the above given tables , Write commands in SQL for (iii) and (iv) and write output for (iv)

- (iii) To display Client names of clients, their phone numbers, PartyId and party description who will have number of guests more than 50 for their parties.
- (iv) To display Client Ids, their addresses, number of guests of those clients who have 'Adarsh' anywhere in their addresses.
- (b) Write the command to describe the table structure. 1

29. Write a function in Display which accepts a list of integers and its size as arguments and replaces elements having even values with its half and elements having odd values with twice its value .
eg: if the list contains 5, 6, 7, 16, 9 then the function should rearranged list as 10, 3,14,8, 18

3

- 30 Write a function in python named PUSH(STACK, SET) where STACK is list of some numbers forming a stack and SET is a list of some numbers. The function will push all the EVEN elements from the SET into a STACK implemented by using a list. Display the stack after push operation.

OR

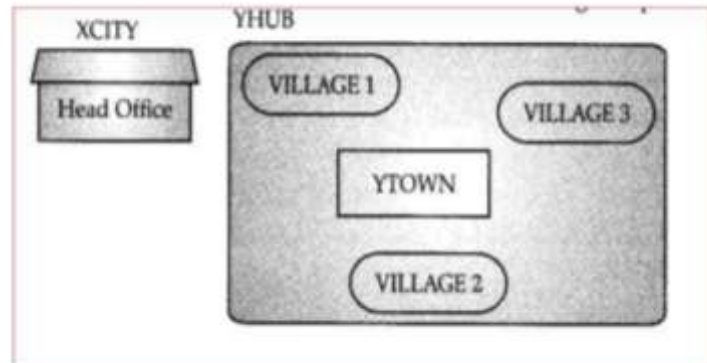
Write a function in python named POP(STACK) where STACK is a stack implemented by a list of numbers. The function will display the popped element after function call.

3

SECTION D

- 31 DVC India is a knowledge community aimed to uplift the standard of skills and knowledge in the society. It is planning to setup its training centres in multiple towns and villages of India with its head offices in the nearest cities. They have created a model of their network with a city, a town and 3 villages as given. As a network consultant, you have to suggest the best network related solution for their issues/problems raised in (i) to (v) keeping in mind the distance between various locations and given parameters

1+1+1+1+1



Shortest distance between various locations:

VILLAGE 1 To YTOWN	2 KM
VILLAGE 2 To YTOWN	1.2 KM
VILLAGE 3 To YTOWN	3 KM
VILLAGE 1 To VILLAGE 2	3.5 KM
VILLAGE 1 To VILLAGE 3	4.5 KM
VILLAGE 2 To VILLAGE 3	3.5 KM
CITY Head office to YHUB	30 KM

Number of computers installed at various locations are as follows:

YTOWN	100
VILLAGE 1	10
VILLAGE 2	15
VILLAGE 3	15
CITY OFFICE	5

Note: * In Villages, there are community centres, in which one room has been given as training centre to this organization to install computers. * The organization has got financial support from the government and top IT companies.

1. Suggest the most appropriate location of the SERVER in the YHUB (out of the 4 locations), to get the best and effective connectivity. Justify your answer.
2. Suggest the best wired medium and draw the cable layout (location to location) to efficiently connect various locations within the YHUB.
3. Which hardware device will you suggest to connect all the computers within each location of YHUB?
4. Which server/protocol will be most helpful to conduct live interaction of Experts from Head office and people at YHUB locations?
5. Suggest a device/software and its placement that would provide data security for the entire network of the YHUB.

32.a. Write the output given by following Python code.

2

```
x=1
def fun1():
    x=3
    x=x+1
    print(x)
def fun2():
    global x
    x=x+2
    print(x)
fun1()
fun2()
```

b) The code given below inserts the following record in the table Employee:

3

Eid – integer
Name – string
DeptID – integer
Salary – integer

Note the following to establish connectivity between Python and MYSQL:

- Username is root
- Password is tiger
- The table exists in a MYSQL database named Company.
- The details (Eid, Name, DeptID and Salary) are to be accepted from the user.

Write the following missing statements to complete the code:

Statement 1 – to form the cursor object

Statement 2 – to execute the command that inserts the record in the table Employee.

Statement 3- to add the record permanently in the database


```

import mysql.connector as mysql
def sql_data():
    con1=mysql.connect(host="localhost",user="root",password="tiger", database="company")
    mycursor=_____ #Statement 1
    rno = int(input("Enter Employee ID :: "))
    name = input("Enter name :: ")
    class = int(input("Enter Department ID :: "))
    marks = int(input("Enter Salary :: "))
    query = "insert into employee values({},'{}',{},{})".format(eid,name,deptid,salary)
    _____ #Statement 2
    _____ # Statement 3
    print("Data Added successfully")

```

OR

a) Find and write the output of the following python code:

```

def fun(s):
    k=len(s)
    m=" "
    for i in range(0,k):
        if(s[i].isupper()):
            m=m+s[i].lower()
        elif s[i].isalpha():
            m=m+s[i].upper()
        else: m=m+'bb'
    print(m)
fun('school2@com')

```

b) The code given below reads the following record from the table named student and displays only those records where students name starts with 'A':

RollNo – integer

Name – string

class – integer

Marks – integer

Note the following to establish connectivity between Python and MYSQL:

Username is root

Password is tiger

The table exists in a MYSQL database named school.

Write the following missing statements to complete the code:

Statement 1 – to form the cursor object

Statement 2 – to execute the query that extracts records of those students where students name starts with 'A'.

Statement 3- to read the complete result of the query (records where students name starts with 'A') into the object named data, from the table student in the database.

```
import mysql.connector as mysql
def sql_data():
    con1=mysql.connect(host="localhost",user="root", password="tiger", database="school")
    mycursor=_____ #Statement 1
    print("Students where students name starts with 'A': ")
    _____ #Statement 2
    data=_____ #Statement 3
    for i in data:
        print(i)
    print()
```

33. Give any one point of difference between a binary file and a csv file. What is the advantage of using a csv file for permanent storage? Write a Program in Python that defines and calls the following user defined functions: **5**

- (i) ADD() – To accept and add data of an employee to a CSV file 'record.csv'. Each record consists of a list with field elements as empid, name and mobile to store employee id, employee name and employee salary respectively.
- (ii) COUNTR() – To count the number of records present in the CSV file named 'record.csv'.

OR

Write a Program in Python that defines and calls the following user defined functions:

- (i) add() – To accept and add data of an employee to a CSV file 'furddata.csv'. Each record consists of a list with field elements as fid, fname and fprice to store furniture id, furniture name and furniture price respectively.
- (ii) search()- To display the records of the furniture whose price is more than 10000.

SECTION E

34. Consider the following table named "SOFTDRINK".

1+1+2

Table : SOFTDRINK

DRINKCODE	DNAME	PRICE	CALORIES
101	Lime and Lemon	20.00	120
102	Apple Drink	18.00	120
103	Nature Nectar	15.00	115
104	Green Mango	15.00	140
105	Aam Panna	20.00	135
106	Mango Juice	12.00	150

Based on the data given above answer the following questions:

- (i) Identify the most appropriate column, which can be considered as Primary key.
- (ii) If two columns are added and 2 rows are added from the table result, what will be the new degree and cardinality of the above table?
- (iii) Write the statements to:
 - a. Insert the following record into the table DRINKCODE –107, DNAME- Khatta Aam, PRICE- 15.00, CALORIES-100.
 - b. Increase the PRICE of the SOFTDRINK''by 3% whose name begins with 'A'.

OR

- (iii) Write the statements to:
 - a. Delete the record of SOFTDRINK containing calories 120.
 - b. Add a column FAT in the table with datatype as decimal(5,2).

35. Amritya Seth is a programmer, who has recently been given a task to write a python code to perform the following binary file operations with the help of two user defined functions/ modules:

AddStudents() to create a binary file called STUDENT.DAT containing student information – roll number, name and marks (out of 100) of each student.

GetStudents() to display the name and percentage of those students who have a percentage greater than 75. In case there is no student having percentage > 75 the function displays an appropriate message. The function should also display the average percent.

He has succeeded in writing partial code and has missed out certain statements, so he has left certain queries in comment lines. You as an expert of Python have to provide the missing statements and other related queries based on the following code for Amritya. Answer the below mentioned questions.

```
import _____ #Statement 1
def AddStudents():
    _____ #2 statement to open the binary file to write data
    while True:
        Rno = int(input("Rno :"))
        Name = input("Name : ")
        Percent = float(input("Percent :"))
        L = [Rno, Name, Percent]
        _____ #3 statement to write the list L into the file
        Choice = input("enter more (y/n): ")
        if Choice in "nN":
            break
    F.close()
def GetStudents():
    Total=0
    Countrec=0
    Countabove75=0
    with open("STUDENT.DAT","rb") as F:
```

```

while True:
    try: _____ #4 statement to read from the file
        Countrec+=1
        Total+=R[2]
        if R[2] > 75:
            print(R[1], " has percent = ",R[2])
            Countabove75+=1
        except:
            break
    if Countabove75==0:
        print("There is no student who has percentage more than 75")
    average=Total/Countrec
    print("average percent of class = ",average)
AddStudents()
GetStudents()

```

- | | | |
|------|------------------------------------------------------------------|---|
| i) | Which module should be imported in the program? (Statement 1) | 1 |
| ii) | Write code to open the binary file to write data. (Statement 2) | 1 |
| iii) | Write statement to write the list L into the file. (Statement 3) | 1 |
| iv) | Write statement to read from the file. (Statement 4) | 1 |