

Class: XII Session: 2022-23  
Computer Science (083)  
Sample Question Paper (Theory)

Maximum Marks: 70

Time Allowed: 3 hours

**SECTION A**

*(1 mark to be awarded for every correct answer)*

1.	<b>Identify which of the statement does not have error</b> a. N = 5,000 b. int x = 5 c. x/10 = y d. "jump" * 2  <b>Ans. d</b>	1
2.	<b>1. What is the output of given code?</b> X = ("Something") Print(type(X))  a. str b. String c. List d. Tuple  <b>Ans: a</b>	1
3.	<b>What is the difference between get() and pop() functions in a dictionary?</b>  a. Get returns and deletes a value but pop directly deletes the value b. Get function returns the value without deleting but the pop function returns and deletes the values c. Get function returns key value pair but pop function only returns the value d. Get and pop function are the same.  <b>Ans: b</b>	1
4.	<b>What is the output of the following code?</b> a = 5 b = 10 a,b=b,a print(a>b)  a. True b. False c. Invalid syntax d. None of these  <b>Ans. a</b>	1

5.	<p>Select the right output</p> <pre>x = ('INDIA\tis\na GREAT Country') y = x.title() print (y.split())</pre> <p>a) ['India', 'Is', 'A', 'Great', 'Country']  b) ('India', 'Is', 'A', 'Great', 'Country')  c) ['India\tis\na', 'Great', 'Country']  d) ('India\tis\na', 'Great', 'Country')</p> <p><b>Ans. a</b></p>	1
6.	<p>What is the correct syntax to open a CSV File?</p> <p>a. open("filename", "br")  b. csv.open("filename", "r")  c. csv.reader("filename", "r")  d. open("filename")</p> <p><b>Ans. d</b></p>	1
7.	<p>Which function returns the average value from a given column or expression.</p> <p>a) AVG()  b) AVERAGE()  c) AVGCOL()  d) AVG COLUMN()</p> <p><b>Ans. a) AVG()</b></p>	1
8.	<p>Which command is used to change definitions of tables in SQL?</p> <p>a) UPDATE  b) INSERT  c) VIEW  d) ALTER</p> <p><b>Ans: d) ALTER</b></p>	1
9.	<p>Which one of these statements will give an error?</p> <p>a) print ("Hello"[-5])  b) print ("Hello"[-1:-5])  c) print ("Hello"[1:5])  d) print ("Hello"[5])</p> <p><b>Ans. d</b></p>	1

10.	<p>_____() method to the MySQL server, saves the data physically after any transaction.</p> <p>a) Update b) Execute c) Commit d) Rollback</p> <p><b>Ans. c Commit</b></p>	1
11.	<p><b>What is the output of this program if contents of file.txt are as shown?</b></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>row row row your boat row your paddle</p> </div> <pre> k = [] d = [] rec=fh.read().split(); for a in rec:     if a not in k:         k.append(a)     else:         if a not in d:             d.append(a) fh.close() print (len(d)) </pre> <p>a. 2 b. 4 c. 5 d. 8</p> <p><b>Ans. a</b></p>	
12.	<p>In SQL which data declaration doesn't use the same number of bytes and consumption of bytes depending on the input data?</p> <p>a. varchar b. char c. both care and varchar d. none of these</p> <p><b>Ans. a.varchar</b></p>	
13.	<p>The technique of switching in which there is a dedicated link between the sender and the receiver.</p> <p>a) Circuit Switching b) Datagram Switching c) Message Switching d) Connection Switching</p> <p><b>Ans. Circuit switching</b></p>	

14.	<p><b>The expression for the given mathematical equation is:</b></p> $ut + \frac{1}{2}ft^2$ <p>a. <math>u*t+(1/2)*f* t^2</math>  b. <math>u*t+(1/2)*f*t**2</math>  c. <math>ut+(1/2)*f* t^2</math>  d. <math>ut+(1/2)*f*math.pow(t,2)</math></p> <p><b>Ans. b</b></p>	
15.	<p>A Column or group of columns which can be used as primary key are called ____keys.</p> <p>a. Candidate  b. Alternate  c. Candidate  d. None of above</p> <p><b>Ans. a. Candidate</b></p>	1
16.	<p>Which of the commands below is correct to install mysql library.</p> <p>a) import mysql.connector  b) pip install mysql  c) import mysql  d) pip install mysql-connector</p> <p><b>Ans. d</b></p>	1
<p>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</p>		
17.	<p>Assertion (A): If return statement is not used inside the function it means function does not return anything.</p> <p>Reasoning (R): Does not return anything means the function will return None.</p> <p><b>Ans. a</b></p>	1
18.	<p>Assertion(A): CSV File stores data as comma separated values.</p> <p>Reasoning (R): The delimiter parameter in CSV reader/writer function allows you to have delimiters other than comma.</p> <p><b>Ans. b</b></p>	1
<b>SECTION B</b>		



22.	<p>What is PRIMARY KEY Constraint?</p> <p>Ans. A primary key constraint depicts a key comprising of one or more columns that will help uniquely identify every tuple/record in a table. No duplicate values are allowed, i.e. Column assigned as primary key should have UNIQUE values only. No NULL values are present in column with Primary key. For e.g. in the table below the Student ID uniquely identifies each student and its value cannot be null.</p> <table border="1" data-bbox="284 439 1158 651"> <thead> <tr> <th>Student ID</th> <th>Name</th> <th>DOJ</th> <th>DOB</th> </tr> </thead> <tbody> <tr> <td>101</td> <td>Abdul Ahmad</td> <td>23-Mar-2003</td> <td>13-Jan-1980</td> </tr> <tr> <td>102</td> <td>Ravi Chander</td> <td>12-feb-2010</td> <td>22-Jul-1987</td> </tr> <tr> <td>103</td> <td>John Ken</td> <td>24-Jun-2009</td> <td>24-Feb-1983</td> </tr> <tr> <td>105</td> <td>Nazar Ameen</td> <td>11-Aug-2006</td> <td>03-Mar-1984</td> </tr> <tr> <td>108</td> <td>Priyam Sen</td> <td>29-Dec-2004</td> <td>19-Jan-1982</td> </tr> </tbody> </table>	Student ID	Name	DOJ	DOB	101	Abdul Ahmad	23-Mar-2003	13-Jan-1980	102	Ravi Chander	12-feb-2010	22-Jul-1987	103	John Ken	24-Jun-2009	24-Feb-1983	105	Nazar Ameen	11-Aug-2006	03-Mar-1984	108	Priyam Sen	29-Dec-2004	19-Jan-1982	2
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23.	<p>(i) Expand the following:-</p> <p>HTTP, DNS</p> <p>Ans: HTTP: Hypertext Transfer Protocol DNS: Domain Name Resolution</p> <p>(ii) _____ was the first computer network that was setup by American Govt for defense.</p> <p>Ans: ARPANET</p>	2																								
24.	<p>What is the output of below code</p> <pre>l = [1,2,3,4] t1 = () for i in l:     t1 = t1 + (i**3,) print (t1)</pre> <p>Ans: (1, 8, 27, 64)</p>	2																								
25.	<p>Sita has to perform following tasks. Help her by suggesting appropriate SQL Commands for it.</p> <p>i. Create a database COMPANY and then utilize it for creating tables. OR i Create a new table EMPLOYEE with the following structure.</p> <table border="1" data-bbox="172 1753 922 2045"> <thead> <tr> <th>FIELD NAME</th> <th>DATA TYPE</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr> <td>employeeID</td> <td>Char(8)</td> <td></td> </tr> <tr> <td>Salary</td> <td>Decimal</td> <td></td> </tr> <tr> <td>DateofJoining</td> <td>Date</td> <td></td> </tr> <tr> <td>Aadhaar</td> <td>Char(10)</td> <td>Unique</td> </tr> </tbody> </table>	FIELD NAME	DATA TYPE	REMARKS	employeeID	Char(8)		Salary	Decimal		DateofJoining	Date		Aadhaar	Char(10)	Unique	2									
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Ans:- i. CREATE DATABASE COMPANY;  
USE COMPANY;  
  
OR  
  
i CREATE TABLE EMPLOYEE ( employeID char(8), SALARY Decimal,  
DateofJoining Date, Aadhar char(10) UNIQUE);

**SECTION C**

26. Consider the following tables EMPLOYEE and SALGRADE and write the output of the queries given below 1+2

**Table : Employee**

Ecode	Name	Design	SGrade	DOJ	DOB
101	Abdul Ahmad	Executive	S03	23-Mar-2003	13-Jan-1980
102	Ravi Chander	Head-IT	S02	12-feb-2010	22-Jul-1987
103	John Ken	Receptionist	S03	24-Jun-2009	24-Feb-1983
105	Nazar Ameen	GM	S02	11-Aug-2006	03-Mar-1984
108	Priyam Sen	CEO	S01	29-Dec-2004	19-Jan-1982

**Table : SalGrade**

Sgrade	Salary	HRA
S01	56000	18000
S02	32000	12000
S03	24000	8000

i) SELECT Name, Salary FROM Employee NATURAL JOIN SalGrade where Employee.SGrade = SalGrade.S.Grade;

Ans.

Name	Salary
Abdul Ahmad	56000
Ravi Chander	32000
John Ken	24000
Nazar Ameen	32000
Priyam Sen	56000

ii)

- (a) Select count(sgrade), sgrade from employee group by sgrade;
- (b) Select min(dob), max(doj) from employee;
- (c) Select name, salary from employee e, sal-grade s where e.sgrade= s.sgrade and e.ecode<103;
- (d) Select sgrade, salary+hra from salgrade where sgrade='S02';

Ans.

(a)

Count(Sgrade)	Sgrade
2	S03
2	S02
1	S01

(b)

	<table border="1"> <tr> <td>Min(dob)</td> <td>Max(doj)</td> </tr> <tr> <td>1980-01-13</td> <td>1987-07-22</td> </tr> </table> <p>(c)</p> <table border="1"> <tr> <td>Abdul Ahmad</td> <td>24000</td> </tr> <tr> <td>Ravi Chander</td> <td>32000</td> </tr> </table> <p>(d)</p> <table border="1"> <tr> <td>sgrade</td> <td>Salary+hra</td> </tr> <tr> <td>S02</td> <td>44000</td> </tr> </table>	Min(dob)	Max(doj)	1980-01-13	1987-07-22	Abdul Ahmad	24000	Ravi Chander	32000	sgrade	Salary+hra	S02	44000	
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27.	<p><b>Write a function LongLine() that accepts a filename and prints the longest line in the file with its length?</b></p> <p>Ans.</p> <pre>def LongLine(filename):     longest=""     file=open(filename)     for line in file:         if len(line)&gt;len(longest):             longest=line     print("Longest line's length=",len(longest))     print(longest)</pre> <p style="text-align: center;"><b>Or</b></p> <p><b>Write a function remLower(infile, outfile) that accepts two filenames and copies all lines that do not start with a lowercase letter from the first file into the second.</b></p> <pre>def remLower(infile,outfile):     output=open(outfile,"w")     file=open(infile)     for line in file:         if not line[0] in "abcdefghijklmnopqrstuvwxy":             output.write(line)     output.close()     file.close()</pre>	3												



28. Consider the following tables RESORT and OWNEDBY and write queries from (a) to (d) given below 3

**Table : OWNEDBY**

Place	Owner
Goa	Raj Resorts
Kerala	KTDC
Himachal	HTDC
Gujarat	MAHINDRA RESORTS

**Table : RESORT**

RCODE	PLACE	RENT	TYPE	STARTDATE
R001	GOA	15000	5 STAR	12-JAN-02
R002	HIMACHAL	9000	4 STAR	20-DEC-07
R003	KERALA	12500	5 STAR	10-MAR-06
R004	HIMACHAL	10500	2 STAR	25-NOV-05
R005	GUJARAT	8000	4 STAR	01-JAN-03
R006	GOA	18000	7 STAR	30-MAR-08
R007	ORISSA	7500	2 STAR	12-APR-99
R008	KERALA	11000	5 STAR	03-MAR-03
R009	HIMACHAL	9000	2 STAR	15-OCT-08
R010	GOA	13000	5 STAR	12-APR-06

- (a) To display the RCODE and PLACE of all '5 STAR' resorts in the alphabetical order of the place from table RESORT.
- (b) To display the maximum and minimum rent for each type of resort from table RESORT.
- (c) To display the details of all resorts which are started after 31-DEC-05 from table RESORT.

OR

- (c) Display the OWNER of all '5 STAR' resorts from tables RESORT and OWNEDBY.

**Ans.**

- a) Select rcode, place from resort where type = "5 STAR" order by place;
- b) Select type, max (rent), min (rent) from resort group by type;
- c) Select \* from resort where startdate > '2005-12-31';

OR

- c) Select owner from resort a, ownedby b where (a.type ='5 STAR' and a.place = b.place);

29.	<p>Write a function simply(n) which takes in a number n and returns a list with values [n, 2n, 3n.... nn]</p> <p><b>Ans.</b>  def simply(n):      t1 = []      for i in range(1,n+1):          t1.append(i*n)      return (t1)</p>	3
30.	<p>Students of school have voted what is their favorite fruit. It is kept in a dictionary containing names of students and fruit names as key value pairs. Write a program, with separate user defined functions to perform the following operations:</p> <ul style="list-style-type: none"> <li>• Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (fruit) is either apple or banana.</li> <li>• Pop and display the content of the stack.</li> </ul> <p>For example:  If the sample content of the dictionary is as follows:  R={"Mona":"apple", "Rahul":"kiwi", "Sona":"banana", "Gita":"apple", "Ronit":"grapes", "Tony":"apple"}</p> <p>The output from the program should be:  Tony Gita Sona Mona</p> <p><b>Ans.</b>  R={"Mona":"apple", "Rahul":"kiwi", "Sona":"banana", "Gita":"apple", "Ronit":"grapes", "Tony":"apple"}  def PUSH(S,N):      S.append(N)</p> <p>def POP(S):      if S!=[]:          return S.pop()      else:          return None</p> <p># Main Program  ST=[]  for k in R:      if R[k]=="apple" or R[k] == "banana":          PUSH(ST,k)</p> <p>while True:      if ST!=[]:          print(POP(ST),end=" ")      else:          break</p> <p style="text-align: center;">OR</p> <p>Shyam has a list containing some integers. You need to help him create a program with separate user defined functions to perform the following operations based on this list.</p> <ul style="list-style-type: none"> <li>• Traverse the content of the list and push only the BUZZ numbers into a stack. (A BUZZ no is a number which is either divisible by 7 or ends with 7. So nos like 14, 17, 21, 27 are all buzz nos )</li> </ul>	3

- Pop and display the content of the stack.

For Example:

If the sample Content of the list is as follows:

N=[512, 14, 307, 756, 21, 77, 63, 4422, 35, 438]

Sample Output of the code should be:

35 63 77 21 756 307 14

**Ans.**

N=[512, 13, 304, 756, 6621, 77, 68, 4422, 35, 438]

def PUSH(S,N):

    S.append(N)

def POP(S):

    if S!=[]:

        return S.pop()

    else:

        return None

ST=[]

for k in N:

    if k>=10 and k<= 99:

        PUSH(ST,k)

while True:

    if ST!=[]:

        print(POP(ST),end=" ")

    else:

        break

## SECTION D

31 A new education campus is coming up in Pune. It is starting up the network between its different wings. There are four Buildings named as SCHOOL, COLLEGE, ADMIN and HOSTEL. Total nos of computer in it as shown below:

5

**College**  
120 computers

**School**  
50 computers

**Admin**  
70 computers

**Hostel**  
25 computers

The distance between various buildings is as follows:

Admin to College	150m
Admin to School	50m
Admin to Hostel	75m
College to School	200m
College to Hostel	150m
School to Hostel	100m

Suggest the cable layout of connections between the buildings.

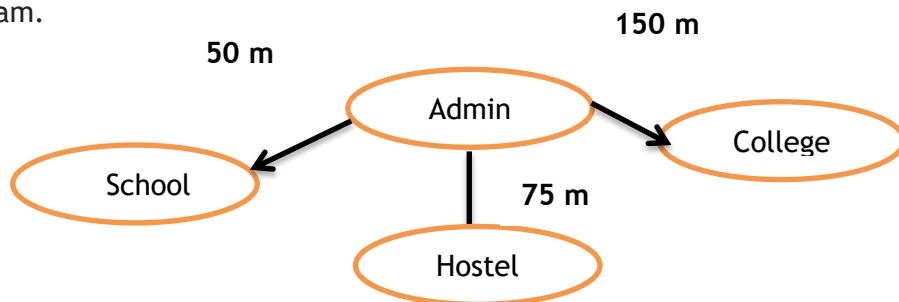
1. Suggest the most suitable place (i.e., building) to house the server of this Campus, provide a suitable reason.
2. Draw the network layout diagram of the proposed solution
3. Suggest the placement of the following devices with justification.
  - Repeater

○ Hub/Switch

4. The campus also has inquiry office in Lonavala about 50-60 km away in hilly region. Suggest the suitable transmission media to interconnect to campus and inquiry office
5. Which type of network out of the following is formed by connecting the computers of these three blocks?
- LAN
  - MAN
  - WAN

**Ans.:-**

1. Server can be placed in the admin building as it has the maximum number of computers
2. Diagram.



3. Repeater can be placed between admin and college building as the distance is more than 100 m.
4. Radio waves can be used in hilly regions as they can travel through obstacles.
5. LAN

32. i. What is the output of given code?

```
m = 10
def myfunc(n):
    global m
    m=5
    for i in range (m,n):
        if i% 4==0:
            print(i, end = " ")
myfunc(m)
print(m)
```

**Ans. 8 5**

OR

i What is the output of given code?

```
x = 'S'
for i in range(0,3):
    for j in range(0,i+1):
        x+=str(j)
print(x)
```

**Ans. S001012**

ii. A database STORE has a table product with following structure

2+3

```
create table product (  
PNo char (5),  
ProductName char (25),  
Quantity int,  
Price int);
```

Help to complete the code to update price to 500 for given PNo.

```
import _____ as my # Statement 1: Name of library to import  
  
db = my. _____( # statement 2: Join to database  
    host = "localhost",  
    user = "root",  
    passwd = "simplycoding",  
    database = "STORE" )  
cursor = db.cursor()  
pno = input("Enter product number")  
SQL = "update product set price = 500 where pno = %s;"  
cursor.execute(SQL, (pno,))  
db. _____ # Statement 3: Command to write to database
```

**Ans.**

Statement 1: mysql.connector  
Statement 2: connect  
Statement 3: commit()

OR

b. . A database STORE has a table product with following structure

```
create table product (  
PNo char (5),  
ProductName char (25),  
Quantity int,  
Price int);
```

Help to complete the code to select the record with price > 100.

```
import _____ # Statement 1: Name for library  
  
db =my.connect(  
    host = "localhost",  
    user = "root",  
    passwd = "simplycoding",  
    database = "STORE" )  
cursor = db.cursor()  
SQL = "Select * from product where price > 100;"  
cursor.execute( _____) # Statement 2: Statement to execute  
data = cursor. _____() # Statement 3: Statement to retrieve all data  
print(data)
```

**Ans.**

	<p>Statement 1: mysql.connector as my  Statement 2: SQL  Statement 3: fetchall</p>	
33.	<p><b>i What does seek() method do?</b>  Ans. seek() method can be used to changes the current file position  <b>Syntax:</b>  <b>Fileobject.seek(offset[, from])</b></p> <p><b>Offset:</b> number of bytes to be moved.  <b>From:</b> 0 - Beginning of the file  1 - Current Position  2 - End of the file</p> <p><b>ii Write a program in python that defines and calls following function.</b></p> <p><b>ADD():</b> Function to add data into file “score.csv” Data is in format Name and Score separated by comma. Take in input from the user to add one row. The format of the file should be as shown.</p> <p><b>Ronit, 67</b>  <b>Nihir, 86</b></p> <p><b>SUM()</b> Function to find the sum of the scores from file score.csv. e.g. output would be as shown</p> <p><b>Total Score: 153</b></p> <p><b>Ans.</b>  import csv  def ADD():  f1=open('score.csv','a',newline=' ')  w1=csv.writer(f1,delimiter = ",")  name = input("Enter Name")  score = int(input("Enter Score"))  wlist = [name,score]  w1.writerow(wlist)  f1.close()  def SUM():  f=open("score.csv","r")  d=csv.reader(f)  s = 0  for row in d:  s = s + int(row[1])  print("Total Score:",s)  f.close( )</p> <p><b>ADD()</b>  <b>SUM()</b></p> <p style="text-align: center;"><b>OR</b></p> <p><b>i When do we use CSV file?</b>  <b>Ans.</b></p> <ul style="list-style-type: none"> <li>• When data has a strict tabular structure</li> <li>• To transfer large data between programs</li> </ul>	5

- To import and export data

ii Write a program in python that defines and calls following function.

**ADD(file\_name):** Function to add into csv file file\_name Data is to be taken in from the user in given format Name, mark1, mark2, mark3. The file should be separated by comma. The format of the file should be as shown.

Ronit, 76, 86, 85  
Nihir 80, 76, 82

**TOTAL(file\_name)** Function to find the sum of marks of all students in the file above. For the given Student, display his name and total e.g. output is as shown.

Ronit 237  
Nihir 238

**Ans.**

```
import csv
def ADD(file_name):
    f1=open(file_name,'a',newline=' ')
    w1=csv.writer(f1,delimiter = ",")
    name = input("Enter Name")
    m1 = int(input("Enter m1"))
    m2 = int(input("Enter m2"))
    m3 = int(input("Enter m3"))
    w1.writerow([name,m1,m2,m3])
    f1.close()

def TOTAL(file_name):
    f=open(file_name,"r")
    d=csv.reader(f delimiter = ",")
    for row in d:
        s = int(row[1]) + int(row[2]) + int (row[3])
        print (row[0],s)
    f.close( )

ADD("temp.csv")
TOTAL("temp.csv")
```

**SECTION E**

34. Consider the table Item below and answer the questions.

1+1+2

**Table : Item**

INO	IName	Qty
101	CD	25
102	Pen	50
103	Pencil	60
104	Eraser	10

- (i) What is the difference between degree and cardinality of a table?
- (ii) What is the degree and cardinality of the following table?

Ans:

(i) Degree The number of attributes or columns in a table is called the degree of the table. Cardinality The number of rows or records in a table is called the cardinality of the table.

- (ii) The degree of the given table is: 3.  
The cardinality of the given table is: 4.

Consider the following table FARES

**Table : FARES**

FL_NO	AIRLINES	FARE	TAX%
IC701	Indian Airlines	6500	10

- (iii) Write the command to
  - 1: view all tables
  - 2: delete this table

OR

- (iii) Recommend any one constraint which should be used and write the command to add it to this table.

Ans. (iii) 1: SHOW TABLES;  
2: DELETE TABLE FARES;

OR

(iii) The constraint that can be used is PRIMARY KEY. It will ensure that each row is uniquely identified. The column which can uniquely identify the above table is FL\_NO. The command to add the constraint is  
ALTER TABLE FARES ADD CONSTRAINT PRIMARY KEY(FL\_NO);



35. 1. Complete the python program to display all content of binary file, sales.dat and find the sum of amount, the file has the following information [itemcode,amount].

```
import pickle
F1 = open (___LINE 1___)
sum = 0
while True:
    try:
        L = ___LINE 2___
        print(L)
        sum = sum + ___LINE 3___
        ___LINE 4___
        break
print (sum)
F1.close()
```

1) Write the correct statement to replace Line 1

Ans. "sales.dat", "rb"

2) Write the correct statement to replace Line 2 with a statement to read a row in L

Ans. pickle.load(F1)

3) Write correct statement to replace Line 3 to find the sum

Ans. sum=sum + L[1]

4) Write correct statement to replace Line 4 with matching statement with try to catch error

Ans except EOFError: