COMMON PRE-BOARD EXAMINATION: 2022-23

Class-XII Subject: COMPUTER SCIENCE (083)

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

   In Dynamic Typing the datatype attached with the variable can change during the program run.

2. Which of the following is/are invalid identifier(s) in Python? 1

   (a) _number (b) None (c)123int (d)decimal

3. Given the following dictionary: 1

   D1={"Math":25,"CS":6,"Biology":23,"Chemistry":20}

   What is printed by the following statement?

   print (25 in D1)

   A.True

   B.False

   C.Error

   D.None

4. Seth was attending a seminar on the topic Python operators. He was given a set of questions to solve. In one particular question he had a doubt about the output generated. Help him to solve it, with your understanding of operators. 1

```
V1=True

V2=False

V3=False

if V1 or V2 and V3:

    print ("Computer")

else:

    print ("Science")
```

5. Select the correct output of the code: 1

```
a = "assistance"
a = a.partition('a')
b = a[0] + "-" + a[1] + "-" + a[2]
print (b)
```

a) -a-ssistance
b) -a-ssist-nce
c) a-ssist-nce
d) -a-ssist-ance

6 If a text file is opened in w+ mode, then what is the initial position of file pointer/cursor? 1

a. Beginning of file
b. End of the file
c. Beginning of the last line of text file
d. Undetermined

7 An Alternate key is a _____, which is not the primary key of the table. 1

a. Primary Key
b. Foreign Key
c. Candidate Key
d. Unique Key

8 Command to remove the row(s) from table Category is: 1

a. drop table Category;
b. drop from Category;
c. delete * from Category;
d. delete from Category;

9 What will be the values stored in final_S upon execution, if two strings S1 and S2 are taken as "Delhi" and "New Delhi" respectively ? 1

(i) final_S = S1 > S 2
(ii) final_S = S1. lower ( ) < S2

10 A relationship is formed via ------ , that relates two tables where one table references another table's key. 1

a. Candidate key
b. Primary key
c. Foreign key
d. Check constraint

11 Syntax of seek function in Python is myfile.seek(offset, reference_point) where myfile is the file object. What is the default value of reference_point? 1

a. 0

b. 1

c. 2

d. 3

12 In SQL where clause---------- 1

a. limits the row data being returned
b. limits the column data being returned
c. both (a) and (b) are correct
d. neither (a) nor (b) is correct

13 _____ is the protocol used to send emails to the e-mail server and _____ is the protocol used to download mail to the client computer from the server. 1

(a) SMTP,POP

(b) HTTP,POP

(c) FTP,TELNET

(d) HTTP,IMAP

14 Consider the expression given below. The value of X is: 1

X = 2+9*((3*12)-8)/10

a) 30.0

b) 27.2

c) 28.4

d) 30.8

15 Table Student has the columns RNO and SCORE. It has 3 rows in it. Following two SQL statements were executed, that produced the outputs as 45 and 2 respectively: 1

(i) Select AVG(SCORE) from Student;

(ii) Select COUNT(SCORE) from Student;

Data in SCORE column is same in two rows. What data is present in the SCORE column in the three rows ?

16 Which method of cursor class is used to get the number of rows affected after any of the insert/update/delete operation is executed from Python? 1

a. cursor.rowcount

b. cursor.rowscount

c. cursor.fetchall()

d. cursor.executequery()

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): Preserving the data for future purpose in Python is called pickling. 1

Reason (R): Unpickling is a technique that returns the byte stream produced by pickling back into Python objects.

18 Assertion (A) : A variable defined outside any function or any block is known as a global variable. 1

Reason (R) : A variable defined inside any function or a block is known as a local variable.

SECTION B

19 Consider the following code written by a programming student. The student is a beginner and has made few errors in the code. You are required to rewrite the code after correcting it and underline the corrections. 2

```
Def swap(d):
        n = {}
        values = d.values()
        keys = list(d.keys[])
        k = 0
        for i in values
            n(i) = keys[k]
            k=+1
        return n
result = swap({‘a’:1,’b’:2,’c’:3})
print(result)
```

20 What is the difference between Radio wave Transmission and Microwave Transmission? 2

OR

Differentiate between Web server and Web browser.

21 a. Write the output of the code given below: 1

```
upper = 'CYBERCRIME'
seq = '12345678'
my_list2 = upper[6:]
my_list3 = seq[-3:]
final_list =  my_list2 + my_list3
print( my_list2 , my_list3 )
```

b. What will be the output of the following Python code? 1

```
Runs = {‘virat’:50, ‘rohit’:100, ‘rahul’:80, ‘rohit’:120, ‘Virat’:105}
Runs[‘jadeja’] = 50
total = 0
for k in Runs:
    total+=Runs[k]
print(total)
```

22 Consider the related tables in a database given below and answer the questions given. 2

TABLE:HOLIDAYS

PKG_NO	LOC	DEP_AIRPORT	NO_DAYS	ST_DATE	DEP_DAY
T101	Tenerife	Manchester	7	21/5/02	TH
T102	Tenerife	Manchester	14	1/6/02	TU
C101	Corfu	Gatwick	14	11/10/02	SA
C101	Rhodes	Heathrow	7	15/6/02	MO

TABLE:PACKAGE

PACKAGENO	ACTIVITY	COSTPERDAY
T101	Sailing	300
K101	River Rafting	1200
T102	Volcano Exploration	530
C101	River Rafting	282
R101	Windsurfing	725

a. Identify the foreign key of table HOLIDAYS. Justify your answer.

b. Aman tried to insert the following record into the table HOLIDAYS but he was not able to. What could be the possible reason?

R102,Moher,Dublin,2,23/10/02,MO

23 a. Write the full forms of the following: 2

i. Wi-Fi ii. TCP/IP

b. Mention one point of difference between HTTP and FTP.

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

```
X = 50
def Func1(start1):
    global X
    start1 += X
    X += 20
    start1 = Func2(start1)
    return start1
def Func2(start1):
    global X
    X += 10
    start1 += X
    return start1
start = 100
start = Func1(start)
print(start,X)
```

OR

Predict the output of the Python code given below:

```
S="1234abc"
L=list(S)
T=tuple()
index = len(L)
while index>0:
   if L[index-1].isalpha():
      T+=tuple(L[index-1])
   index = index-1
print(T)
```

25 Write two differences between HAVING and WHERE clauses in SQL. 2

OR

Differentiate between a Candidate Key and Alternate Key with the help of an example.

SECTION C

26 **a.** Consider the following tables – Employee and Department 1+2

EMPLOYEE

ECODE	ENAME
M01	BHAVYA
M02	KKRISH
S01	MEHUL
S03	SANKET
A05	VANSH
H03	PALLAVI

DEPARTMENT

ECODE	DEPARTMENT
M01	MARKETING
S01	SALES
A05	ACCOUNTS
H03	HR

What will be the output of the following statement?

SELECT E.Ecode,E.Ename,D. Department FROM EMPLOYEE E, DEPARTMENT D WHERE E.Ecode = D.Ecode;

b. Write the output of the queries (i) to (iv) based on the table, TEACHER given below:

Table : Teacher

Tno	T_name	Department	Basic	Allowances
T16	Rakesh Sharma	Physics	27200	1500
T11	Vivek Rawat	Chemistry	34500	1200
T13	Dinesh Goel	Computer	30600	1300
T14	Lokesh Rathore	Commerce	44200	
T15	Lakshmi	Physics	43800	2000
T18	Ramkrishana	Commerce	24500	2500
T17	Suresh Kumar	Chemistry	32300	1900
T10	Raj Mohan	Computer	41700	1600

i. Select Tname,department from teacher where Basic between 27200 and 32300 order by T_name;

ii. Select department, count(Tno) from Teacher group by Department having count(*)>=2;

iii. Select sum(Basic),avg(Allowances) from Teacher where Basic>=30000 and Allowances IN(1200,1900,2000);

iv. Select count(distinct Allowances) from Teacher;

27 Write a function COUNTLINES() to count the number of lines in a text file, 'DATA.TXT' , which starts and end with 's' and 'g' respectively. 3

Example:

If the file content is as follows:

Top Reasons to Learn Python:
Data science.
Scientific and mathematical computing.
Finance and trading.
System automation and administration.
Basic game development.
Security and penetration testing.

The COUNTLINES() function should display the output as:

The number of lines which starts with s and ends with g : 2

OR

Write a function COUNTMAX() to read data from a text file 'FILE.TXT', and display the word which has maximum number of vowels characters.

Example:

If the file content is as follows:

There are two types of files that can be handled in Python,
normal text files and binary files.Text files: In this type of file,
Each line of text is terminated with a special character called
EOL,which is the new line character in Python by default.

The COUNTMAX() function should display the output as:

Word with maximum number of vowels : terminated

Maximum no of vowels: 4

28 a. Write the outputs of the SQL queries (i) to (iv) based on the relations Book and Member given below: 3

TABLE: MEMBER

MNO	MNAME	CODE	ISSUEDATE
M101	RAGHAV SINHA	L102	2016-10-13
M103	SARTHAK JOHN	F102	2017-02-23
M102	ANISHA KHAN	C101	2016-06-12

TABLE:BOOK

CODE	BNAME	TYPE	PRICE
F101	The Priest	Fiction	25
L102	German Easy	Literature	30
C101	Tarzan in the lost world	Comic	24
F102	Untold Story	Fiction	35
C102	War heroes	Comic	40

i. SELECT A.CODE,BNAME,MNAME FROM BOOK A, MEMBER B WHERE A.CODE=B.CODE AND ISSUEDATE>"2016-12-30";

ii. SELECT MAX(ISSUEDATE),SUM(PRICE) FROM BOOK A, MEMBER B WHERE A.CODE=B.CODE AND MNAME LIKE "%N";

iii. SELECT DISTINCT TYPE FROM BOOK WHERE PRICE >25 AND PRICE<35;

iv. SELECT MAX(PRICE),MIN(PRICE) FROM BOOK GROUP BY TYPE;

b. Write the command to view the structure of table Book

29 Write a function MAKE_LIST(L) to return a new list L_NEW, in the following manner. 3

While making the new list L_NEW, the elements having even values in L will be replaced with its half, and elements having odd values in L will be replaced with twice its value.

Example:

If the list L contains

[3, 4, 5, 16, 9]

Then the new list L_NEW should be displayed as:

[6, 2,10,8, 18]

30 Jiya has a list containing 8 integers. You need to help her create a program with two user defined functions to perform the following operations based on this list. 3

• Traverse the content of the list and push those numbers into a stack, which are divisible by both 5 and 3.

• Pop and display the contents of the stack.

For example:

If the sample content of the list is as follows:

L=[5,15,21,30,45,50,60,75]

Sample output of the code should be:

75 60 45 30 15

OR

Riya has created a dictionary containing Product names and prices as key value pairs of 4 products. Write a user defined function for the following:

● PRODPUSH() which takes a list as stack and the above dictionary as the parameters.

Push the keys (Pname of the product) of the dictionary into a stack, where the corresponding price

of the products is less than 6000. Also write the statement to call the above function.

For example: If Riya has created the dictionary is as follows:

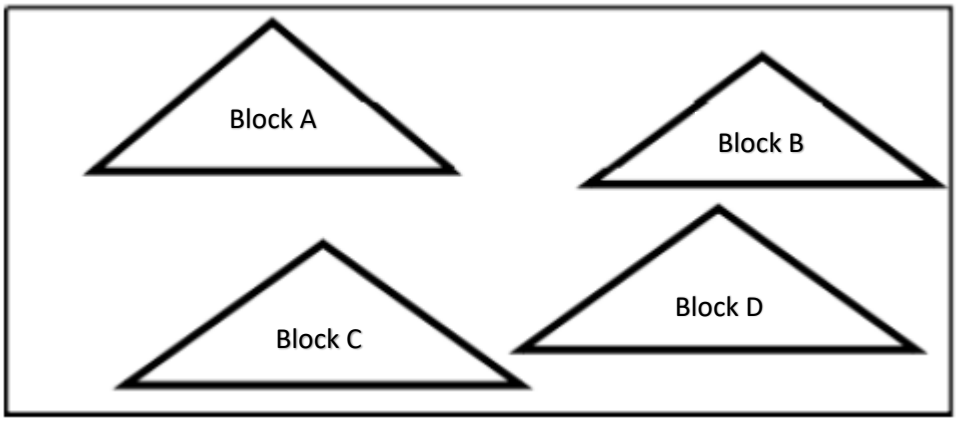
Product={"TV":10000, "MOBILE":4500, "PC":12500, "FURNITURE":5500}

The output from the program should be:

['FURNITURE', 'MOBILE']

SECTION D

31 Alpha Pvt Ltd is setting up the network in Chennai. There are four blocks- Block A, Block B, Block C & Block D.



Distance between various blocks are as given below:

Block	Distance
Block A to Block B	75 m
Block A to Block C	170m
Block A to Block D	100m
Block B to Block C	120 m
Block B to Block D	130 m
Block C to Block D	50 m

Number of computers in each block are given below:

Block	Number of Computers
Block A	85
Block B	28
Block C	43
Block D	20

i. Suggest the most suitable block to place the server to get the best and effective connectivity, with a suitable reason. 1

ii. Suggest and draw the cable layout to efficiently connect various blocks of buildings within the CHENNAI campus for connecting the digital devices. 1

iii. Suggest the placement of following devices with justification: 1
(a) Switch/Hub (b) Repeater

iv. The organization is planning to link its front office situated in the city in a hilly region where cable connection is not possible. Suggest an economic way to connect with reasonably high speed. 1

v. Which type of Network is formed between the four blocks? 1

32 a. Write the output of the code given below: 2+3

```
def increment(n):
    L=[1,2,3]
    L.append([4])
    return L
L=[1,2,3]
m=increment(L)
print(L,m)
```

b. The code given below inserts the following record in the table Employee:
ENo – integer
EName – string
Dept – string
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 (ENo, EName, Dept, 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
eno=int(input("Enter Employee No :: "))
ename=input("Enter Name :: ")
dept=input("Enter Dept :: ")
salary=int(input("Enter Salary :: "))
query="insert into employee values({},'{}','{}',{})".format(eno,ename,dept,salary)
_____ #Statement 2
_____ # Statement 3
print("Data Added successfully")
```

OR

a. What will be the output of the following Python code?

```
val="bTeR%h2q8"
S=""
for x in range(len(val)):
    if val[x].isdigit():
        S=S+str(len(val))
    elif val[x].islower():
        S=S+val[x].upper()
    elif val[x].isupper():
        S=S+val[x].lower()
    else:
        S=S+"@@"
print(S)
```

b. The code given below reads the following record from Table named Employee and display those records where salary >= 30000 and <= 90000:

Empno – integer

EName – string

Desig – integer

Salary – integer

Note the following to establish connectivity between Python and MYSQL:

- Username is root
- Password is Password
- The table exists in a MYSQL database named Bank.

Write the following missing statements to complete the code:

Statement 1 – to form the cursor object

Statement 2 – to query string.

Statement 3- to execute the query that extracts records of those Employees whose salary is >=30000 and <=90000.

```
import mysql.connector
mydb=mysql.connector.connect(host='localhost',user='root',passwd='Password',database='bank')
mycursor=_____ # statement1
mycursor._____ #statement 2
data= _____ # statement 3
for x in data:
        print(x)
```

33 In a csv file "Student.csv", assuming that csv_reader is an object returned from csv.reader(), what would be printed to the console with each iteration in the code given below? 5

```
for item in csv_reader:
    print(item)
```

a. The individual value data that is separated by the delimiter
b. The row data as a list
c. The column data as a list
d. The full line of the file as a string

Neha is making a software on "Items & their prices" in which various records are to be stored / retrieved in STORE.CSV data file. Each record consists of a list with field elements Item and Price. Write Python function definitions and calls for the following user defined functions.

i. INSERT() – Add the data of an item to the CSV file

ii. DISPLAY() – Display the records present. Also show the number of records in the file.

OR

Give any one point of difference between a binary file and a csv file.

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

i. add() – To accept and add data of a toystore to a CSV file 'toydata.csv'. Each record consists of a list with field elements as tid, tname and tprice to store toy id, toy name and toy price respectively.

ii. search()- To display the records of the toys whose price is more than 500.

SECTION E

34 Table : HEALTHYDRINKS 1+1+2

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 Bahar	12.00	150

Based on the data given, 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 deleted from the table HEALTHYDRINKS, 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 – Santara Special, Price – 25.00, Calories – 130

b. Increase the price of the juices by 3% whose name begins with 'A'.

OR (Option for part iii only)

iii. Write the statements to:

a. Delete the records of those juices having calories more than 140.

b. Add a column Vitamins in the table with datatype as varchar with 20 characters.

35 As a Python expert, help Rehaan to complete the following code based on the requirement given:

```
import _____ #Statement 1
def update_data():
    rec={}
    fin=open("record.dat","rb")
    fout=open("_____") #Statement 2
    found=False
    sid=int(input("Enter student id to update their marks :: "))
    while True:
        try:
            rec=_____ #Statement 3
            if rec["Student_id"]==sid:
                found=True
                rec["Marks"]=int(input("Enter new marks :: "))
                pickle._____ #Statement 4
            else:
                pickle.dump(rec,fout)
        except:
            break
    if found==True:
        print("The mark of student id ",sid," has been updated.")
    else:
        print("No student with such id is found")
fin.close()
fout.close()
```

(i) Which module should be imported in the program? (Statement 1) 1

(ii) Write the correct statement required to open a temporary file named temp.dat. (Statement 2) 1

(iii) Which statement should Rehaan fill in Statement 3 to read the data from the binary file record.dat, and in Statement 4 to write the updated data in the file, temp.dat? 2