

**KENDRIYA VIDYALAYA SANGATHAN, CHENNAI REGION**  
**PRE-BOARD EXAM 2022-23**

Class : XII

Computer Science – (083)

Time : 3 hrs  
Max Marks : 70

**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 mark each.
5. Section C has 05 Short Answer type questions carrying 03 mark each.
6. Section D has 03 Long Answer type questions carrying 05 mark each.
7. Section E has 02 questions carrying 04 mark each. One internal choice is given in Q34 against part c only.
8. All programming questions are to be answered using Python Language only.

| SECTION A |                                                                                                                                                                                                    |   |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 1.        | State True or False:<br>"A dictionary key must be of a data type that is mutable." <i>false</i>                                                                                                    | 1 |
| 2.        | What will be the data type of d, if d = (15)?<br>(a) int (b) tuple (c) list (d) string                                                                                                             | 1 |
| 3.        | Which of the following is a valid identifier in Python:<br>(a) else if (b) for (c) pass (d) 2count                                                                                                 | 1 |
| 4.        | Consider the given expression:<br>not 5 or 4 and 10 and 'bye'<br>Which of the following will be correct output if the given expression is evaluated?<br>(a) True (b) False (c) 10 <i>(d) 'bye'</i> | 1 |
| 5.        | Select the correct output of the code:<br>for i in "QUITE":<br>print([i.lower()], end= "#")<br><br>(a) q#u#i#t#e# (b) ['quite#']<br><i>(c) ['q']#[u]#[i]#[t]#[e]#</i> (d) ['quite'] #              | 1 |
| 6.        | Which file mode can be used to open a binary file in both append and read mode?<br>a) w+ b) wb+ <i>c) ab+</i> d) a+                                                                                | 1 |
| 7.        | Fill in the blank:                                                                                                                                                                                 | 1 |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|     | The SQL built-in function _____ calculates the average of values in numeric columns.<br>(a) MEAN() (b) <input checked="" type="checkbox"/> AVG() (c) AVERAGE() (d) COUNT()                                                                                                                                                                                                                                                                                                              |   |
| 8.  | Which of the following commands will be used to select a particular database named "Student" from MYSQL Database?<br>(a) SELECT Student;<br>(b) DESCRIBE Student;<br>(c) <input checked="" type="checkbox"/> USE Student;<br>(d) CONNECT Student;                                                                                                                                                                                                                                       | 1 |
| 9.  | Which of the following statement(s) would give an error after executing the following code?<br><br><pre>d = {"A": 1, "B": 2, "C": 3, "D": 4}      #statement 1 sum_keys = 0                             #statement 2 for val in d.keys():                      #statement 3     sum_keys = sum_keys + val             #statement 4 print(sum_keys)</pre><br>(a) Statement 1 <input checked="" type="checkbox"/> (b) Statement 2<br>(c) Statement 3                      (d) Statement 4 | 1 |
| 10. | Fill in the blank:<br>An attribute in a relation is a foreign key if it is the _____ key in any other relation.<br>(a) Candidate Key                      (b) Foreign Key<br>(c) <input checked="" type="checkbox"/> Primary Key                      (d) Unique Key                                                                                                                                                                                                                    | 1 |
| 11. | Which option correctly explains tell () method?<br>(a) <input checked="" type="checkbox"/> tells the current position within the file.<br>(b) tells the name of file.<br>(c) moves the current file position to a different location.<br>(d) it changes the file position only if allowed to do so else returns an error.                                                                                                                                                               | 1 |
| 12. | Fill in the blank:<br>When two conditions must both be true for the rows to be selected, the conditions are separated by the SQL keyword _____<br>(a) ALL                      (b) IN                      (c) <input checked="" type="checkbox"/> AND                      (d) OR                                                                                                                                                                                                      | 1 |
| 13. | Fill in the blank:<br>_____ protocol provides access to command line interface on a remote computer.<br>(a) FTP                      (b) PPP                      (c) <input checked="" type="checkbox"/> Telnet                      (d) SMTP                                                                                                                                                                                                                                          | 1 |
| 14. | What will the following expression be evaluated to in Python?<br>print(25 // 4 + 3**1**2 * 2)<br>(a) 24                      (b) 18                      (c) 6                      (d) <input checked="" type="checkbox"/> 12                                                                                                                                                                                                                                                          | 1 |
| 15. | Which statement in SQL allows to change the definition of a table is                                                                                                                                                                                                                                                                                                                                                                                                                    | 1 |

|                  |                                                                                                                                                                                                                                                                                   |   |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|                  | (a) ALTER (b) UPDATE(c) CREATE(d) SELECT                                                                                                                                                                                                                                          |   |
| 16.              | The statement which is used to get the number of rows fetched by execute() method of cursor:<br>(a) cursor.rowcount (b) cursor.rowcount()<br>(c) cursor.allrows() (d) cursor.countrows()                                                                                          | 1 |
|                  | Q17and18areASSERTIONANDREASONINGbasedquestions.Markthecorrect choice as<br>(a) Both Aand R are true and R is the correct explanation for A<br>(b) Both A and R are true and R is not the correct explanation for A<br>(c) A isTrue but R is False<br>(d) A is false but R is True |   |
| 17.              | Assertion(A):- In Python, statement return [expression] exits a function.<br><br>Reasoning(R):- Return statement passes back an expression to the caller. A return statement with no arguments is the same as return None.                                                        | 1 |
| 18.              | Assertion(A):CSV module allows to write a single record into each row in CSV file using write row() function.<br>Reason(R):The write row() function creates header row in csv file by default.                                                                                    | 1 |
| <b>SECTION B</b> |                                                                                                                                                                                                                                                                                   |   |
| 19.              | Rewrite the following code in python after removing all the syntax errors. Underline each correction done in the code.<br><br>num1,num2 = 10<br>While num1 % num2 = 0<br>num1+= 20<br>num2+= 30<br>Else:<br>print('hello')                                                        | 2 |
| 20.              | Write two advantages and two disadvantages of circuit switching.<br><br><b>OR</b><br><br>Differentiate between Web server and web browser. Write any two popular web browsers.                                                                                                    | 2 |
| 21.              | Write two points of difference between ALTER and UPDATE command in SQL.                                                                                                                                                                                                           | 2 |
| 22.              | (a) Given is a Python List declaration:<br>lst1=[39,45,23,15,25, 60].                                                                                                                                                                                                             | 2 |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |   |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|     | <p>What will be the output of :<br/> <code>print(lst1.index(23))</code> ?</p> <p>(b) Write the output of the code given below:<br/> <code>x=["rahul",5, "B",20,30]</code><br/> <code>x.insert( 1, 3)</code><br/> <code>x.insert( 3, "akon")</code><br/> <code>print(x[2])</code></p>                                                                                                                                                                                                                                                                                           |   |
| 23. | <p>(a) Write the full forms of the following:<br/>           (i) FTP      (ii) HTTPS</p> <p>(b) Name the protocols which are used for sending and receiving emails?</p>                                                                                                                                                                                                                                                                                                                                                                                                        | 2 |
| 24. | <p>Predict the output of the Python code given below:</p> <pre>st = "python programming" count = 4 while True:     if st[0] == "p":         st = st[2:]     elif st[-2] == "n":         st = st[:4]     else:         count += 1         break print(st) print(count)</pre> <p style="text-align: center;">OR</p> <p>Predict the output of the Python code given below:</p> <pre>myvalue = ["A", 40, "B", 60, "C", 20] alpha = 0 beta = "" gama = 0 for i in range(1,6,2):     alpha += i     beta += myvalue[i-1] + "#"     gama += myvalue[i] print(alpha, beta, gama)</pre> | 2 |
| 25. | <p>What do you understand by the terms PRIMARY KEY and UNIQUE KEY of a relation in relational database?</p> <p style="text-align: center;">OR</p>                                                                                                                                                                                                                                                                                                                                                                                                                              | 2 |

Categorize the following commands as DDL or DML: DROP, DELETE, SELECT, ALTER

### SECTION C

26. (a) Consider the following tables— Applicants and Centre

1+2

Table: Applicants

| Appno | Name  | Subject |
|-------|-------|---------|
| C01   | Mohan | English |
| C02   | Raju  | Hindi   |

Table : Centre

| Appno | City    |
|-------|---------|
| C02   | Madurai |
| C03   | Chennai |
| C02   | Jaipur  |

What will be the output of the following statement?  
SELECT \* FROM Applicants NATURAL JOIN Centre;

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

| CCODE | CNAME    | MAKE    | COLOUR | CAPACITY | CHARGES |
|-------|----------|---------|--------|----------|---------|
| 105   | Fortuner | Toyota  | White  | 7        | 1500    |
| 245   | Nexon    | Tata    | Black  | 5        | 1000    |
| 130   | Duster   | Renault | Green  | 6        | 2000    |
| 225   | Kwid     | Renault | Grey   | 5        | 2500    |
| 120   | Baleno   | Suzuki  | Red    | 5        | 4000    |
| 207   | Nano     | Tata    | Blue   | 4        | 3500    |

- (i) SELECT DISTINCT MAKE FROM CAR;
- (ii) SELECT MAKE, COUNT(\*) FROM CAR GROUP BY MAKE;
- (iii) SELECT CNAME FROM CAR WHERE CAPACITY > 5 ORDER BY CNAME;
- (iv) SELECT CNAME, MAKE FROM CAR WHERE CHARGES > 2500;

27. Write a function in Python to read lines from a text file 'visitors.txt', and display only those lines, which are starting with an alphabet 'P'.  
If the content of file is :

3

Visitors from various cities are coming here.  
Particularly, they want to visit the museum.  
Looking to learn more history about countries with their cultures.

The output should be:

Particularly, they want to visit the museum.

OR

Write a method in Python to read lines from a text file 'book.txt', to find and display the occurrence of the word 'are'. For example, if the content of the file is:

Books are referred to as a man's best friend. They are very beneficial for mankind and have helped it evolve. Books leave a deep impact on us and are responsible for uplifting our mood.

The output should be 3.

28. (a) Consider the following tables EMPLOYEE and SALARY.

Table : EMPLOYEE

| ECODE | NAME   | DESIG     | SGRADE | DOJ        | DOB        |
|-------|--------|-----------|--------|------------|------------|
| 101   | Akash  | Executive | S03    | 2003-03-23 | 1980-01-13 |
| 102   | Rajiv  | Manager   | S02    | 2010-02-12 | 1987-07-22 |
| 103   | Jonny  | RO        | S03    | 2009-06-24 | 1983-02-24 |
| 104   | Naziya | GM        | S02    | 2006-08-11 | 1984-03-03 |
| 105   | Pritam | CEO       | S01    | 2004-12-29 | 1982-01-19 |

Table: SAL

| SGRADE | SALARY | HRA   |
|--------|--------|-------|
| S01    | 56000  | 18000 |
| S02    | 32000  | 12000 |
| S03    | 24000  | 8000  |

Give the output of the following SQL queries:

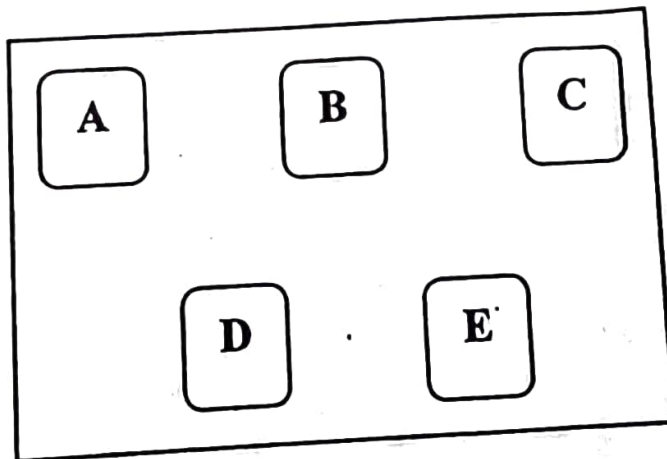
- (i) SELECT COUNT(SGRADE), SGRADE FROM EMPLOYEE GROUP BY SGRADE;
- (ii) SELECT MIN(DOB), MAX(DOJ) FROM EMPLOYEE;
- (iii) SELECT NAME, SALARY FROM EMPLOYEE E, SAL S WHERE E.SGRADE=S.SGRADE AND E.ECODE<103;
- (iv) SELECT SGRADE, SALARY+HRA FROM SAL WHERE SGRADE='S02';

(b) Write the command to view structure of table FOOD in a database.

29. Write a function `LeftShift(Numlist, n)` in Python, which accepts a list `Numlist` of numbers and `n` is a numeric value by which all elements of the list are shifted to left.  
 Sample input data of the list  
`Numlist = [10, 20, 30, 40, 50, 60, 70]`, `n=2`  
 Output  
`Numlist = [30, 40, 50, 60, 70, 10, 20]` 3
30. Write a function in Python `PUSH(Num)`, where `Num` is a list of numbers. From this list push all numbers divisible by 5 into a stack implemented by using a list. Display the stack if it has atleast one element, otherwise display appropriate error message.  
 For example:  
 If the list `Num` is:  
`[66, 75, 40, 32, 10, 54]`  
 The stack should contain:  
`[75, 40, 10]` 3
- OR**
- Write functions in Python, `MakePush(Package)` and `MakePop(Package)` to add a new Package and delete a Package from a List of Package Description, considering them to act as push and pop operations of the Stack data structure.

#### SECTION D

31. An International Bank has to set up its new data center in Delhi, India. It has five blocks of buildings – A, B, C, D and E. 5



Distance between the blocks and number of computers in each block are as given below:

| Distance Between Blocks |     |
|-------------------------|-----|
| Block B to Block C      | 30m |
| Block C to Block D      | 30m |
| Block D to Block E      | 35m |

| No of Computers |     |
|-----------------|-----|
| Block A         | 55  |
| Block B         | 180 |
| Block C         | 60  |

|                    |      |
|--------------------|------|
| Block E to Block C | 40m  |
| Block D to Block A | 120m |
| Block D to Block B | 45m  |
| Block E to Block B | 65m  |

|         |    |
|---------|----|
| Block D | 55 |
| Block E | 70 |

- (i) Suggest the most suitable block to host the server. Justify your answer.  
(ii) Draw the cable layout (Block to Block) to economically connect various blocks within the Delhi campus of International Bank.  
(iii) Suggest the placement of the following devices with justification:  
(a) Repeater (b) Hub/Switch  
(iv) The bank is planning to connect its head office in London. Which type of network out of LAN, MAN, or WAN will be formed? Justify your answer.  
(v) Suggest a device/software to be installed in the Delhi Campus to take care of data security.

32. (a) Consider the code below and answer the questions that follow:

```
def multiply(number1, number2):
    answer = number1 * number2
    return(answer)
    print(number1, 'times', number2, '=', answer)
output = multiply(5, 5)
```

- (i) When the code above is executed, what gets printed?  
(ii) What is variable output equal to after the code is executed?

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

Rollno – integer  
Name – string  
Age – integer

Note the following to establish connectivity between Python and MySQL:

- Username is root
- Password issys
- The table exists in a MySQL data base named school.
- The details (Roll no, Name and Age) 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 Student.  
Statement 3 – to add the record permanently in the database

```
import mysql.connector
mydb= mysql.connector.connect(host="localhost",user="root",passwd="sys",
```

```

database = "myschool")
mycursor = _____ #statement 1
while True:
ch=int(input("enter -1 to exit , any other number to insert record"))
    if ch== -1:
        break
    rollno = int(input("enter Roll no:"))
    name = input("enter Name:")
    age = int(input("enter Age:"))
    qry = "insert into student values({}, {}, {})".format(rollno, name, age)
    _____ #statement 2
    _____ #statement 3
    print("Data added successfully")

```

OR

(a) Write the output of the following python code.

```

def convert(line):
    n = len(line)
    new_line = ""
    for i in range(0, n):
        if not line[i].isalpha():
            new_line = new_line + '@'
        else:
            if line[i].isupper():
                new_line = new_line + line[i]*2
            else:
                new_line = new_line + line[i]
    return new_line
new_line = convert("Be 180 HuMan")
print(new_line)

```

(b) The code given below adds a new column in the table Student, updates the data into it and displays the content of the table.

Student table details are as follows:

Rollno – integer

Name – string

Age – integer

Note the following to establish connectivity between Python and MySQL:

- Username is root and Password is sys
- 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 a query that adds a column named "MARKS" of type integer in the table Student.

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
|                  | <p>Statement3-toupdatetherecordpermanentlyinthedatabase</p> <pre> import mysql.connector mydb=mysql.connector.connect(host="localhost",user="root",passwd="sys", database="myschool") mycursor = _____ #statement1 _____ #statement2 mycursor.execute("update student set MARKS=9 where Rollno = 1") _____ #statement3 mycursor.execute("select * from student") for x in mycursor:     print(x) </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |
| 33.              | <p>Write the full form of 'CSV'. What is the default delimiter of csv files?<br/>The scores and ranks of three students of a school level programming competition is given as:</p> <pre> ['Name', 'Marks', 'Rank'] ['Sheela', 450, 1] ['Rohan', 300, 2] ['Akash', 260, 3] </pre> <p>Write a program to do the following:<br/>(i) Create a csv file (results.csv) and write the above data into it.<br/>(ii) To display all the records present in the CSV file named 'results.csv'</p> <p style="text-align: center;"><b>OR</b></p> <p>What does csv.writer object do?<br/>Rohan is making a software on "Countries &amp; their Capitals" in which various records are to be stored/retrieved in CAPITAL.CSV data file. It consists some records(Country &amp; Capital). Help him to define and call the following user defined functions:</p> <p>(i) AddNewRec(Country,Capital) – To accept and add the records to a CSV file "CAPITAL.CSV". Each record consists of a list with field elements as Country and Capital to store country name and capital name respectively.</p> <p>(ii) ShowRec() – To display all the records present in the CSV file named 'CAPITAL.CSV'</p> | 5   |
| <b>SECTION E</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |
| 34.              | A company stores the records of motorbikes sold in January, February, March                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1+1 |

and April months in MOTOR table as shown below:

+2

| Bcode | Bname   | January | February | March | April |
|-------|---------|---------|----------|-------|-------|
| 156   | Honda   | 200     | 310      | 140   | 250   |
| 234   | Pegasus | 100     | 430      | 120   | 170   |
| 432   | Ebony   | 250     | 100      | 280   | 340   |
| 876   | Raven   | 300     | 150      | 240   | 430   |
| 970   | Hero    | 250     | 130      | 190   | 100   |

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 3 more columns are added and 2 rows are deleted from the table MOTOR, what will be the new degree and cardinality?

(iii) Write the query to:

(a) Insert the following record into the table

Bcode- 207, Bname- TVS, January- 500, February- 450,  
March- 480, April - 350.

(b) Display the names of motor bikes which are sold more than 200 in January month.

**OR (Option for part iii only)**

(iii) Write the query to:

(a) Add a new column MAY in MOTOR table with datatype as integer.

(b) Display total number of Motorbikes sold in March Month.

35. Sheela is a Python programmer. She has written a code and created a binary file "book.dat" that has structure [BookNo, Book\_Name, Author, Price]. The following user defined function CreateFile() is created to take input data for a record and add to book.dat and another user defined function CountRec(Author) which accepts the Author name as parameter and count and return number of books by the given Author. As a Python expert, help her to complete the following code based on the requirement given above:

1+1  
+2

```
import _____ #statement1
def createFile():
    fobj = open("book.dat", "_____") #statement2
    BookNo = int(input("Book number:"))
    Book_Name = input("Book Name:")
    Author = input("Author:")
```

```

Price = int(input("Price:"))
rec = [BookNo, Book_Name, Author, Price]
pickle._____ #statement3
fobj.close()
def Count_Rec(Author):
fobj = open("book.dat", "rb")
num = 0
try:
    while True:
        rec = pickle._____ #statement4
        if Author == rec[2]:
            num=num+1
except:
fobj.close()
return num

```

- (i) Which module should be imported in the program? (Statement 1)
- (ii) Write the correct statement required to open a file named book.dat.  
(Statement 2)
- (iii) Which statement should be filled in Statement 3 to write the data into the binary file, book.dat and in Statement 4 to read the data from the file, book.dat?