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**SET A**



**INDIAN SCHOOL MUSCAT  
SECOND PRE-BOARD EXAMINATION  
COMPUTER SCIENCE**

CLASS: XII

Sub. Code: 083

Time Allotted: 3 Hrs.

14.04.2021

Max. Marks: 70

**General Instructions:**

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
  - a. Section – I is short answer questions, to be answered in one word or one line.
  - b. Section – II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
4. Part - B is Descriptive Paper.
5. Part- B has three sections
  - a. Section-I is short answer questions of 2 marks each in which two question have internal options.
  - b. Section-II is long answer questions of 3 marks each in which two questions have internal options.
  - c. Section-III is very long answer questions of 5 marks each in which one question has internal option.
6. All programming questions are to be answered using Python Language only

**PART - A  
SECTION - I**

**Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no 1 to 21.**

1. Can List be used as keys of a dictionary? Why or why not ? 1
2. Which one is valid relational operator in Python 1  
 i) /      ii) =      iii)      ==      iv) and
3. Which of the following can be used as valid variable identifiers in Python? 1  
 i) 4th Sum    ii) Total    iii) Number#    iv) \_Data
4. Identify the mutable data types? 1  
 (i) List      ii) Tuple    iii) Dictionary    iv) String
5. What is the length of the tuple shown below? 1  
 T=(((('a',1),'b','c'),'d',2),'e',3)

6. A non-key attribute, whose values are derived from primary key of someother table. 1  
i. Alternate Key ii. Foreign Key  
iii. Primary Key iv. Candidate Key
7. What is Telnet? 1
8. Name any two most commonly used transmission media in wireless network. 1
9. Expand the terms 1  
i. XML ii. SMS
10. Name two web scripting languages 1
11. What is the output of the below program? 1  

```
def say(message, times = 1):  
    print(message * mes)  
say('Hello')  
say('World', 5)
```
12. Name the python module need to be imported to invoke following function 1  
i. writer() ii. load()
13. Give output: 1  

```
d = {1 : "SUM", 2 : "DIFF", 3 : "PROD"}  
for i in d:  
    print(i)
```
14. Identify the DDL Commands. 1  
Insert into command  
Create table command  
Drop table command  
Delete command
15. Consider the following code: 1  

```
t1=(2,3,4,5,6)  
print(t1.index(4))
```

  
Output is  
a) 4 b) 5 c) 6 d) 2
16. Which clause is used with a SELECT command in SQL to display the records in ascending order of an attribute? 1
17. Which of these is not an example of unguided media? 1  
(i) Optical Fibre Cable (ii) Radio wave (iii) Bluetooth (iv) Satellite
18. A relation has 45 tuples & 5 attributes, what will be the Degree & Cardinality of that relation? 1  
i. Degree 5, Cardinality 45  
ii. Degree 45, Cardinality 5  
iii. Degree 50, Cardinality 45  
iv. Degree 50, Cardinality 2250
19. In SQL, which aggregate function is used to count all records of a table? 1

20. Write output: 1  
 employee={'salary':10000,'age':22,'name':'Mahesh'}  
 employee.pop('age')  
 print(employee)
21. Which of the following appears harmless but actually performsmalicious functions such as deleting or damaging files. 1  
 (a) WORM  
 (b) Virus  
 (c) Trojan Horse  
 (d) Malware

## SECTION - II

**Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark**

22. Parth Patel of class 12 is writing a program to create a CSV file “emp.csv”which will contain employee code and name of some employees. He haswritten the following code. As a programmer, help him to successfully execute the given task.
- ```
import _____ #Line 1
def addemp(empcode,name):#to write/add data into the CSV filefo=open('emp.csv','a')
    writer=csv. (fo) #Line 2
    writer.writerow([empcode,name])
    fo.close()

#csv file reading codedef reademp():
    with open('emp.csv','_____') as fin: #Line 3
        filereader=csv.reader(fin)
        for row in filereader:
            for data in row:
                print(data, end='\t')
                print(end='\n')
            fin._____ #Line 4

addemp('E105','Parth')
addemp("E101",'Arunima')
addemp("E102",'Prahalad')
reademp() #Line 5
```
- Answer the following questions: (1 mark each)
- (a) Name the module he should import in Line 1. 1  
 (b) Fill in the blank in Line 2 to write the data in a CSV file. 1  
 (c) In which mode, Parth should open the file to read the data from thefile(Line 3). 1  
 (d) Fill in the blank in Line 4 to close the file. 1  
 (e) Write the output he will obtain while executing Line 5.
23. ABC school is considering to maintain their student’s information using SQLto store the data. As a database administrator Harendra has decided that:  
 Name of database : school  
 Name of table : student  
 Attributes of the table are as follows:  
 AdmissionNo-numeric

FirstName –character of size 30

LastName - character of size 20

DOB - date

Table : student

| AdmissionNo | FirstName | LastName | DOB        |
|-------------|-----------|----------|------------|
| 012355      | Rahul     | Singh    | 2005-05-16 |
| 012358      | Mukesh    | Kumar    | 2004-09-15 |
| 012360      | Pawan     | Verma    | 2004-03-03 |
| 012366      | Mahesh    | Kumar    | 2003-06-08 |
| 012367      | Raman     | Patel    | 2007-03-19 |

**Attempt any four questions**

- (i) What is the degree and cardinality of the table student 1
- (ii) Identify the attribute best suitable to be declared as Primary Key 1
- (iii) Insert the following data in table student: AdmissionNo=012368, 1  
FirstName = Kamlesh , LastName= Sharma, DOB=01 Jan 2004
- (iv) Harendra wants to remove the data of Mukesh whose admission 1  
no is 012358, suggest him SQL command to remove the abovesaid data.
- (v) To remove the data of Pawan from table student which command is used : 1
  - a. Delete \* from student where FirstName="Pawan";
  - b. Delete from table student where FirstName="Pawan";
  - c. Delete from student where FirstName="Pawan";
  - d. Delete from student drop FirstName ="Pawan";

## **PART – B**

### **SECTION - I**

24. Differentiate between cross join and equijoin of two relations in a database 2

**OR**

.Differentiate between natural join and equijoin of two relations in a database

25. Explain cursor and recordset in the context of Python connectivity with SQL 2

26. What is significance of Primary Key? Give a suitable example of Primary key 2  
from a table containing some meaningful data.

27. Predict the output for following code. 2

```
def replaceV(st):  
    newstr = "  
    for character in st:  
        if character in 'aeiouAEIOU':  
            newstr += '*'  
        else:  
            newstr += character  
    return newstr  
st = "Hello how are you"  
st1 = replaceV(st)  
print("The original String is:", st)  
print("The modified String is:", st1)
```

28. Rewrite the following code after removing syntax error and underline the correction: 2  
 x=int("Enter value for x:")  
 for y in range[0,11]:  
 if x=y  
     print(x+y)  
 else:  
 Print x-y
29. What is protocol? Name some commonly used protocols. 2  
 OR  
 Differentiate between virus and worms in context of networking and data communication threats.
30. What is difference between actual parameter and formal parameter? Explain with suitable example. 2
31. What possible output(s) are expected to be displayed on screen at the time of execution of the program from the following code? Justify. 2  
**import random**  
**Colours = ["VIOLET", "INDIGO", "BLUE", "GREEN", "YELLOW", "ORANGE", "RED"]**  
**End = randrange(2)+3**  
**Begin = randrange(End)+1**  
**for i in range(Begin,End) :**  
     **print(Colours[i],end="&")**
- (i) INDIGO&BLUE&GREEN&                      (ii) VIOLET&INDIGO&BLUE&  
 (iii) BLUE&GREEN&YELLOW&                      (iv) GREEN&YELLOW&ORANGE&
32. Explain any two aggregate functions in SQL with example of each. 2
33. Write a program that reads a string and check whether it is a palindrome string or not 2

## SECTION - II

34. 3

Table : Employee

| EmployeeId | Name              | Sales  | JobId |
|------------|-------------------|--------|-------|
| E1         | Sumit Sinha       | 110000 | 102   |
| E2         | Vijay Singh Tomar | 130000 | 101   |
| E3         | Ajay Rajpal       | 140000 | 103   |
| E4         | Mohit Kumar       | 125000 | 102   |
| E5         | Sailja Singh      | 145000 | 103   |

Table : Job

| JobId | JobTitle                | Salary |
|-------|-------------------------|--------|
| 101   | President               | 200000 |
| 102   | Vice President          | 125000 |
| 103   | Administrator Assistant | 80000  |
| 104   | Accounting Manager      | 70000  |
| 105   | Accountant              | 65000  |
| 106   | Sales Manager           | 80000  |

Give the output of following SQL statement:

- (i) Select max(salary),min(salary) from job ;

- (ii) Select Name, JobTitle, Sales from Employee, Job where Employee.JobId=Job.JobId and JobId in (101,102) ;
- (iii) Select JobId, count(\*) from Employee group by JobId;1

35. Write a function in python that displays the number of lines starting with 'H' in the file 3

"para.txt". Example, if file contains:

Whose woods these are I think I know. His house is in  
the village though;  
He will not see me stopping here  
To watch his woods fill up with snow  
Then the lines  
count should be 2

OR

Write a function countmy() in Python to read file Data.txt and count the number of times "my" occur in file. For example, if the file contain 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"

36. Write a user define function in Python for push(list) and pop(list) for performing push and pop operations with a stack of list containing integers. 3

37. Write a function listchange(Arr) in Python, which accepts a list Arr of numbers , the function will replace the even number by value 10 and multiply odd number by 5 . 3

Sample Input Data of the list is:

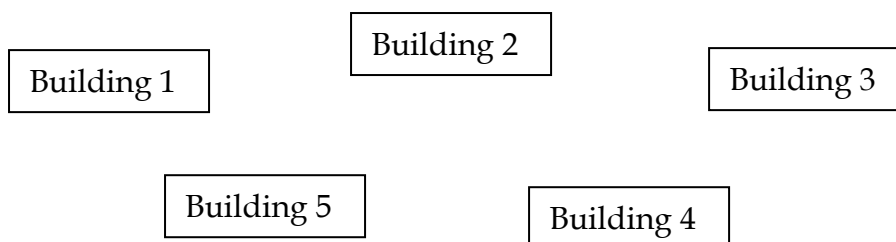
a=[10,20,23,45]

listchange(a,4)

output : [10, 10, 115, 225]

### SECTION - III

38. PVS Computers decided to open a new office at Ernakulum, the office consist of 5  
Five Buildings and each contains number of computers. The details are shown below.



Distance between buildings

|                  |            |
|------------------|------------|
| Building 1 and 2 | 20 Meters  |
| Building 2 and 3 | 50 Meters  |
| Building 3 and 4 | 120 Meters |
| Building 3 and 5 | 70 Meters  |
| Building 1 and 5 | 65 Meters  |
| Building 2 and 5 | 50 Meters  |

| Building | No of computers |
|----------|-----------------|
| 1        | 40              |
| 2        | 45              |
| 3        | 110             |
| 4        | 70              |
| 5        | 60              |

Computers in each building are networked but buildings are not networked so far. TheCompany has now decided to connect building also.

- (i) Suggest a cable layout for connecting the buildings
- (ii) Do you think anywhere Repeaters required in the campus? Why
- (iii) The company wants to link this office to their head office at Delhi
  - (a) Which type of transmission medium is appropriate for such a link?
  - (b) What type of network would this connection result into?
- (iv) Where server is to be installed? Why?
- (v) Suggest the wired Transmission Media used to connect all buildings efficiently.

39. Consider the following tables Sender and Recipient. Write SQLcommands for the statements (a) to (e) 5

**Table : Sender**

| SenderID | SenderName | SenderAddress     | Sendercity |
|----------|------------|-------------------|------------|
| ND01     | R Jain     | 2, ABC Appls      | New Delhi  |
| MU02     | H Sinha    | 12 Newtown        | Mumbai     |
| MU15     | S Jha      | 27/A, Park Street | Mumbai     |
| ND50     | T Prasad   | 122-K,SDA         | New Delhi  |

**Table: Recipient**

| RecID | SenderID | RecName    | RecAddress        | recCity   |
|-------|----------|------------|-------------------|-----------|
| KO05  | ND01     | R Bajpayee | 5, Central Avenue | Kolkata   |
| ND08  | MU02     | S Mahajan  | 116, A-Vihar      | New Delhi |
| MU19  | ND01     | H Singh    | 2A, Andheri East  | Mumbai    |

- a) To display the RecIC, Sendername, SenderAddress, RecName, RecAddress for every Recipient
- b) To display Recipient details in ascending order of RecName

- c) To display number of Recipients from each city
- d) To display the details of senders whose sender city is 'mumbai'.
- e) To change the name of recipient whose recid is 'Ko05' to 'S Rathore'.

40. A binary file "Account.dat" has structure (Acct\_Number, Acct\_Type, AcctHolderName, Balance).

5

- i. Write a user defined function *CreateFile()* to input data for a record and add to Account.dat Write a function *display()* in Python to display the detail of all employees whose salary is more than 50000.
- ii. Write a function *CountBalanceAbove(BAL)* in Python that would read contents of the file "Account.dat" and display the details of those accounts in which Balance is more than BAL. Also display number of such accounts.

OR

A binary file "emp.DAT" has structure (EID, Ename, designation, salary).

- a) Write a function to add more records of employees in existing file emp.dat.
- b) Write a function *Show()* in Python that would read detail of employee from file "emp.dat" and display the details of those employee whose designation is "Salesman".

**End of the Question Paper**