

Question Bank
Class XII
Subject : Computer Science

Chapter – 1 Revision Tour of Class XI

Multiple choice Questions

Q1 Which of the following statements is false for python programming language?

- a) Python is free and Open source.
- b) Python is statically typed.
- c) Python is portable.
- d) Python is interpreted.

Q2 What will be the output of the following program?

```
a = {'A':10,'B':20}
```

```
b = {'B':20, 'A':10}
```

```
print(a==b and a is b)
```

- a) True
- b) False
- c) None
- d) Error

Q3 Which of the following keywords is a python operator?

- a) for
- b) break
- c) is
- d) else

Q4 Which one of the following is not a valid identifier?

- a) true
- b) __init__
- c) 20Decades
- d) My_var

Q5 What will be the output of the following python statement?

```
s = "HOME ALONE"
```

```
p = s.split("O")
```

```
print(p[1][:2]+p[-1])
```

- a) ALNE
- b) MENE
- c) MEONE
- d) MEAL

Q.6 What will be the output of the following python code?

```
s="final eXam"
```

```
print(s.title())
```

- a) Final Exam
- b) Final Exam
- c) Final exam
- d) Error

Q.7 What is the output of print("hello".find('E'))?

- a) 1
- b) 2
- c) -1
- d) Error

Q.8 Which of the following statements is False for a python String?

- a) Python Strings are immutable objects.
- b) Python Strings can be accessed using indexing.
- c) Python Strings cannot be empty.
- d) We can get a substring from an existing string using slicing.

Q.9 What will be the correct output of the following string operation?

```
"MALAYALAM".partition("MA")
```

- a) ("MA","LAYAL", "AM")
- b) ("","MA","LAYALAM")
- c) ("MA","LAYALA","AM")
- d) ("MALAYAL","AM","")

Q.10 Which of the following statements will generate an error?

```
st = "PYTHON"
```

```
t = st*5 Statement(1)
```

```
u = st[0] + "M" Statement(2)
```

```
st[0] = "K" Statement(3)
```

```
st = st + st Statement (4)
```

- a) Statement(1)
- b) Statement(2)
- c) Statement(3)
- d) Statement(4)

Q.11 What will be the output of the following python statement?

```
s = "MONGO"
```

```
print(sorted(s))
```

- a) "GMNOO"
- b) ["GMNOO"]
- c) ["G","M","N","O","O"]
- d) Error

Q12 What will be the output of the following list operations?

```
data = [10,20,30,[40,50,60],[70,80]]
```

- a) print(data[3]+data[-1])
- b) print(data[-2][-2])

Q.13 What will be the output of the following python program:

```
data = [10,20,30, 60,70]
```

```
data[3:3]=[40,50]
```

```
print(data)
```

```
data.pop(3)
```

```
print(data)
```

```
data.extend([10,20])
```

```
print(len(data))
```

Q.14 Ganga is learning to use python Lists. Help her to get the answers of the following operations based on the given list:

```
data = [10,20,30]
```

```
data[1:3]=[5,10]
```

```
print(data)
```

```
data.extend([3,4])
```

```
x =data.count(10)
```

```
print(data[x:])
```

```
data.sort()
```

```
print(data)
```

```
print(data.pop(2))
```

Ch- 2 revision Tour of Class XI II

Q.1 Write a python program that accepts a list of integers from user and creates a new list from the existing list containing all the numbers that have three or more digits.

Eg: for existing list [10,100, 99,200,1000] the new list should be [100,200,1000]

Q.2 Write a python program that accepts a list of countries from user and prints all the countries whose number of alphabets is more than 5.

Q.3 Write a python program that accepts a list of integers from user and prints all the integers that have 8 as the last digit. Eg: for the list [10, 28, 8, 86, 98] the program should print 28 8 98

Q4 What will be the output of the following program?

```
d={'A':10,'B':20,'C':30,'D':40}
del d['C']
print(d)
x = d.popitem()
print(x)
```

Q5 Sapna wants to understand the concept of methods in a dictionary. Help her to find the answers of the following operations on a python dictionary:

```
d = {'M':10, 'N':20, 'O':30, 'P':40}
r = d.popitem()
print(r)
x = d.pop('N')
print(x)
print(list(d.keys()))
d.setdefault('X',60)
print(d)
```

Q6 Write a python program that increases the values by 10 for the dictionary alphabets as keys and numbers as values where ever the key is a vowel.

Q7 Write a python program that accepts a list of integers from user and creates a new list from the existing list containing all the numbers that have three or more digits. Eg: for existing list [10,100, 99,200,1000] the new list should be [100,200,1000]

Q8 Write a python program that accepts a list of countries from user and prints all the countries whose number of alphabets is more than 5.

Q9 Rewrite the following code in Python after removing all the syntax errors. Underline each correction made by you in the code.

```
num = 10
for x in range[0, num]:
    if x in not [3, 5]:
        print(x*4)
    else
        if x == 8:
            print(x+3)
    else:
        a =+ x
```

Q10 Write a function display(PROD) in Python, that takes a dictionary PROD as an argument and increase the price by 10% of those products whose names contain exactly three characters, finally display the updated dictionary.

Note:

Dictionary PROD contains product names and prices as key and value pairs.

For example if the dictionary is as follows: PROD = {'RAM':3000, 'MOUSE':250, 'KB':2500, 'HDD':4000}

Then the output should be:

```
{'RAM': 3300.0, 'MOUSE': 250, 'KB': 2500, 'HDD': 4400.0}
```

Ch- 3 Working with Functions

Q1. Write a function `SUM(a, b)` that returns the sum of two numbers.

Q2. Write a function to check whether a number is **even or odd**.

Q3. Write a function `MAX3(a, b, c)` to return the largest of three numbers.

Q4. Write a function `interest(p, r=5, t=2)` to calculate simple interest.

Q5. Write a function to return **factorial of a number**.

Q7. Write a function to return the **sum of digits** of a number.

Q8. Write a function to: count number of vowels in a string

Q9. Write a function that: checks if a number is **prime**

Output-Based Questions (Very Important)

Q10

```
def f(a, b=2, c=3):  
    print(a, b, c)
```

```
f(10)  
f(10, 20)  
f(10, 20, 30)
```

Q11

```
def func(x, y=5):  
    return x * y
```

```
print(func(2))  
print(func(2, 3))
```

Q12. `def change(lst):`

```
    lst[0] = 100
```

```
    L = [1, 2, 3]
```

```
    change(L)
```

```
    print(L)
```

Q13. `def calc(x):`

```
    if x > 0:
```

```
        return x
```

```
    else:
```

```
        return -x
```

```
print(calc(-5))
```

```
print(calc(10))
```

Q14. What are formal and actual parameters?

Q15. What are default arguments? Explain with example.

Ch-4 Exception Handling

1	Consider the statements given below and then choose the correct output from the given options: N='5' try: print('WORD' + N, end='#') except: print('ERROR',end='#') finally: print('OVER') (A) ERROR# (B) WORD5#OVER (C) WORD5# (D) ERROR#OVER
2	State whether the following statement is True or False: While handling exceptions in Python, name of the exception has to be compulsorily added with except clause.
3	State whether the following statement is True or False: The finally block in Python is executed only if no exception occurs in the try block.
4	State whether the following statement is True or False: An exception may be raised even if the program is syntactically correct.
5	State True or False: "raise and assert statements are used to raise exceptions"

Ch- 5 Data File Handling

TEXT FILE

Q1 Find the output of the following code:

```
F=open("focus.txt", 'r')
L= F.readlines()
for a in L:
    print(a.upper())
F.close()
```

Q2 Find the output of the following code:

```
F=open("focus.txt", 'a+')
S= " sleep reduces stress hormones that can be harmful to the brain"
F.write(S)
F.seek(0) # bring cursor to the beginning of the file
L=F.readlines()
print(L)
F.close()
```

Q3 Find the output of the following code:

```
F=open("wish.txt", 'w')
F.write("Day")
F.close()
```

If the file contains “Good” before execution, what will be the contents of the file after execution of the above code.

Q4 Write a program to read text file story.txt and count number of lines starting with letter ‘A’ or ‘a’.

Q5 Write a program to read the file data.txt and count number of uppercase, lowercase in it.

Q6 Write a program to read the file hash.txt and display the number characters up to first #.

Q7 Write a program to read the file data.txt and count number of lines present in it.

Q8 Write a program to read the file article.txt and count occurrences of words “the” in the file.

Q9 Write a program to read the file letter.txt and display those words which has less than or equal to four characters.

Q10 Write python statements for opening the following files. Also, write the Python statements to open the following files:

- a) a text file “example.txt” in both read and write mode
- b) a text file “bfile.dat” in write mode
- c) a text file “try.txt” in append and read mode
- d) a text file “btry.dat” in read only mode.

BINARY FILE

1. The process of converting byte stream back to the original structure is known as
 - a. Pickling b. Unpickling c. Packing d. Zipping
2. Which file mode is used to handle binary file for reading.
 - a. rb b. rw c. r d. w
3. Which of the following is not a correct statement for binary files?
 - a. Easy for carrying data into buffer b. Much faster than other file systems
 - c. Characters translation is not required d. Every line ends with new line character ‘\n’
4. Which one of the following is correct statement?
 - a. import – pickle b. pickle import c. import pickle d. All the above
5. Which of the following file mode opens a file for append or read a binary file and moves the files pointer at the end of the file if the file already exist otherwise create a new file?
 - a. a b. ab c. ab+ d. a+
6. Which of the following file mode opens a file for reading and writing both as well as

overwrite the existing file if the file exists otherwise creates a new file?

a. w b. wb+ c. wb d. rwb

7. Mr Sharma is working on a binary file and wants to write data from a list to a binary file. Consider list object as l1, binary file sharma_list.dat, and file object as f. Which of the following can be the correct statement for him?

a. f = open('sum_list','wb'); pickle.dump(l1,f)

b. f = open('sum_list','rb'); l1=pickle.dump(f)

c. f = open('sum_list','wb'); pickle.load(l1,f)

d. f = open('sum_list','rb'); l1=pickle.load(f)

8. Every file has its own identity associated with it. This is known as:

a. icon b. extension c. format d. file type

9. EOL in a file stands for :

a. End of Lines b. End of Line c. End of List d. End of Location

10. Which of the following file types allows you to store large data files in the computer memory?

a. Binary Files b. Text Files c. CSV Files d. None of these

11 Differentiate between pickle.load() and pickle.dump() methods with suitable examples.

12 A binary file "Book.dat" has structure [BookNo, Book_Name, Author, Price].Write a user defined function CreateFile() to input data for a record and add to Book.dat

13 A binary file "STUDENT.DAT" has structure (admission_number, Name, Percentage). Write a function countrec() in Python that would read contents of the file "STUDENT.DAT" and display the details of those students whose percentage is above 75.

14 A binary file "Store.dat" has structure [ItemNo, Item_Name, Company, Price]. Write a function CountRec(Company) in Python which accepts the Company name as parameter and count and return number of Items by the given Company are stored in the binary file "Store.dat".

15 A binary file "Store.dat" has structure [ItemNo, Item_Name, Company, Price]. Write a function AddRecord() which accepts a List of the record [ItemNo, Item_Name, Company, Price] and appends in the binary file "Store.Dat".

CSV FILE

1. Write a Python program that reads data from a CSV file named "inventory.csv" using the **csv.DictReader()** class. The CSV file contains columns for "Product", "Quantity", and "Price". Your program should calculate the total value of each product in inventory (quantity * price) and print a summary report showing each product's name and total value.
2. Identify and correct the error in the following Python code that attempts to open a CSV file named "data.csv" for writing using the **csv.writer()** object.

```
import csv
data = [['Name', 'Age', 'City'], ['Alice', 25, 'New York'], ['Bob', 30, 'San Francisco']]
with open('data.csv', 'r') as file:
    writer = csv.writer(file) writer.writerows(data)
```

3. Fill in the blanks in the following code snippet to open a CSV file named "output.csv" in write mode and write multiple rows of data into it using the **csv.writer()** object. The data to be written includes product information (name, quantity, price) stored in a list of dictionaries.

```
import csv
product_data = [ {'Name': 'Laptop', 'Quantity': 10, 'Price': 1200}, {'Name': 'Mouse',
'Quantity': 50, 'Price': 20}, {'Name': 'Keyboard', 'Quantity': 20, 'Price': 50} ]
with open('output.csv', 'w', newline='') as file:
    fieldnames = ['Name', 'Quantity', 'Price']
    writer = csv.DictWriter(file,
    fieldnames=_____ ) writer.writeheader()
    writer.writerows(_)
```

4. Write a Python program that reads data from a CSV file named "sales.csv" using the **csv.reader()** object. The CSV file contains columns for "Date", "Product", and "Revenue". Your program should calculate and print the total revenue earned for each product across all dates.
5. Write a Python program that reads data from two CSV files, "sales.csv" and "inventory.csv", using appropriate methods like **csv.reader()** or **csv.DictReader()**. The "sales.csv" file contains columns for "Date", "Product", and "Revenue", while the "inventory.csv" file contains columns for "Product" and "Quantity". Your program should combine these datasets to create a new CSV file named "combined_data.csv" that includes the columns "Date", "Product", "Revenue", and "Available Quantity". Ensure to handle missing or mismatched data appropriately.

Case study based questions-4 marks each

1. Imagine you work for a retail company that stores its daily sales data in a CSV file named "sales_data.csv". Develop a Python script using the csv module to read this file and generate a daily sales report. The report should include total sales revenue, the number of items sold, and a breakdown of sales by product category.
2. You are managing a student gradebook for a school, and the grade data is stored in a CSV file named "gradebook.csv". Design a Python program using the csv module to read and update student grades. Implement functionalities such as adding new grades, calculating average grades for each subject, and generating individual progress reports.
3. In a warehouse setting, you have an inventory CSV file named "inventory.csv" containing product details like name, quantity, and reorder level. Create a Python application using the csv module to track inventory levels, identify low-stock items (below reorder level), and generate a restocking list with recommended quantities.
4. A company receives customer feedback through an online survey, and the feedback data is stored in a CSV file named "feedback_data.csv". Develop a Python script using the csv module to read and analyze the feedback. Implement sentiment analysis to categorize feedback as positive, neutral, or negative and generate a summary report highlighting key customer sentiments.
5. You are responsible for managing personal finances and have a CSV file named "expenses.csv" containing daily expense records. Build a Python application using the csv module to read and analyze the expense data. Implement functionalities such as calculating total expenses, categorizing expenses (e.g., food, transportation), and generating a budget overview with spending trends.

Stack

Multiple Choice Questions

Q1. What is the principle of a stack?

- a) FIFO – First In First Out
- b) LIFO – Last In First Out
- c) FILO – First In Last Out
- d) LILO – Last In Last Out

Q2 Which method is used to remove the top element from a stack implemented using a list?

- a) remove()
- b) delete()
- c) pop()
- d) discard ()

Q3 What happens if you call pop () on an empty stack?

- a) Returns None
- b) Raises IndexError
- c) Returns -1
- d) Does nothing

Q4 Consider a list named Nums which contains random integers. Write the following user defined functions in Python and perform the specified operations on a stack named BigNums.

- (i) PushBig(): It checks every number from the list Nums and pushes all such numbers which have 5 or more digits into the stack, BigNums.
- (ii) PopBig(): It pops the numbers from the stack, BigNums and displays them. The function should also display "Stack Empty" when there are no more numbers left in the stack.

For example: If the list Nums contains the following data:

```
Nums = [213, 10025, 167, 254923, 14, 1297653, 31498, 386, 92765]
```

Then on execution of PushBig(),

the stack BigNums should store: [10025, 254923, 1297653, 31498, 92765] And on execution of PopBig(),

the following output should be displayed:

```
92765 31498 1297653 254923 10025 Stack Empty
```

Q5 A list contains following record of course details for a University: [Course_name, Fees, Duration] Write the following user defined functions to perform given operations on the stack named 'Univ' :

- (i) Push_element() - To push an object containing the Course_name, Fees and Duration of a course, which has fees greater than 100000 to the stack.
- (ii) Pop_element() - To pop the object from the stack and display it. Also, display "Underflow" when there is no element in the stack. For example: If the lists of courses details are:

```
["MCA", 200000, 3] ["MBA", 500000, 2] ["BA", 100000, 3]
```

The stack should contain

```
["MBA", 500000, 2]
```

```
["MCA", 200000, 3]
```

Structured Query Language

Questions ;

Q. No. 1 to 20 are MCQs of 1 mark each	
1.	An attribute in a table is foreign key if it is the _____key in any other table. a) Candidate b) Primary c) Unique d) Alternate
2.	What is the domain of an attribute? (a) The set of possible values that the attribute can take (b) The name of the attribute (c) The data type of the attribute (d) None of the above
3.	Which of the following is not a database constraint? a. CHECK b. DEFAULT c. UNIQUE d. NULL
4.	The data types CHAR (n) and VARCHAR (n) are used to create _____ and _____types of string/text fields respectively in a database. a) Fixed, equal b) Equal, variable c) Fixed, variable d) Variable, equal
5.	Which of the following is a DDL command? A. UPDATE B. INSERT C. DELETE D. ALTER
6.	Which command is used to open the database "SCHOOL"? a. USE SCHOOL b. OPEN SCHOOL
	c. USE DATABASE SCHOOL d. SHOW SCHOOL
7.	In the given query which keyword has to be inserted? INSERT INTO employee_____(1002, "Kausar", 2000); a) Value b) Values c) Values into d) Into Values
8.	Which SQL statement is used to display all the data from PRODUCT table in the decreasing order of PRICE? a. SELECT * FROM PRODUCT ORDER PRICE BY DESC ; b. SELECT * FROM PRODUCT PRICE ORDER BY DESC; c. SELECT * FROM PRODUCT ORDER BY DESC PRICE; d. SELECT * FROM PRODUCT ORDER BY PRICE DESC;
9.	Which of the following function is used to FIND the largest value from the given data in MYSQL? a) MAX () b) MAXIMUM () c) LARGEST () d) BIG ()
10.	Which keyword is used for aliasing a table? a) ASC b) AS c) IS d) None of these
11.	_____aggregate function does not ignore NULL values in a column. a) Min() b) Sum() c) Avg () d) Count ()
12.	SELECT name FROM class WHERE subject_____NULL; Which comparison operator may be used to fill the blank space in above query? a) = b) LIKE c) IS d) <>
13.	Which SQL statement is used to display all the data from ITEMS table where INAME is ending with 'L'? a. SELECT * FROM ITEMS WHERE INAME LIKE 'L%'; b. SELECT * FROM ITEMS WHERE INAME LIKE '%L'; c. SELECT * FROM ITEMS WHERE INAME LIKE '%L%'; d. SELECT * FROM ITEMS WHERE INAME LIKE ' _L_ ';
14.	Which join combines each row from the first table with every row from the second table to make the result set? a. CROSS JOIN b. OUTER JOIN c. INNER JOIN d. EQUI JOIN

State True / False for Q. No. 15 and 16

15. MySQL statement to delete a table STUDENT from the database SCHOOL is DELETE TABLE STUDENT;
16. Where and Having clauses can be used interchangeably in SQL queries.

Q. No. 17 to 20 are ASSERTION (A) and REASONING (R) 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 correct explanation for A.
c. A is true but R is false.
d. A is false but R is true.

17. Assertion (A): A foreign key in the relational data model is a set of attributes in one relation that references the primary key of another relation.
Reason (R): Foreign keys are used to establish relationships between tables.
18. Assertion(A): DBMS is an application package which arranges the data in orderly manner in a tabular form.
Reason(R): It is an interface between database and the user. It allows the users to access and perform various operations on stored data using some tools.
19. Assertion(A): Aggregate function AVG() calculates the average of a set of values and produces a single value as result.
Reason(R): The aggregate functions are used to perform some basic calculations

like sum, max, min, etc on a set of numbers.

20. Assertion(A): While inserting records in EMP table, value of DateOfBirth field must be enclosed withing quotes ‘ ‘ .
Reasoning(R): Date is represented as char / varchar always.

Q. No. 21 to 30 are questions of 2 marks each

21. a) What do you mean by degree and cardinality of a table?
b) Consider the following table and find its degree and cardinality.

Customer_Details			
Customer_id	Name	Address	Age
1	Billie	NY	22
2	Eilish	London	19
3	Ariana	Miami	18
4	Selena	New Jersey	32
5	Kety	Hawaii	42
6	Adele	Miami	29

22. What do you mean by referential integrity? Explain with suitable example.

23. Write MySQL statement to create a table named REMEDIAL based on the following specification:

Table: REMEDIAL

Attribute	Data type	Constraints
SNAME	VARCHAR(20)	NOT NULL
ROLL	INT	UNIQUE
FEES	FLOAT	
ADMN	INT	PRIMARY KEY

24. Write MySQL statements to do the following:
- Enter into the database OFFICE and display the name of all the tables.
 - Display the structure of the table 'EMPL'.

25. Consider the following table PLAYER:

PNO	PNAME	SPORTS	COUNTRY	SALARY
C001	VIRAT	CRICKET	INDIA	112
F003	RONALDO	FOOTBALL	PORTUGAL	1134
T007	ROGER	TENNIS	SWITZERLAND	795
B002	SINDHU	BADMINTON	INDIA	59

- Suggest the most suitable Primary Key. Justify your answer.
- Identify the alternate Keys.

26. Consider the table MOTOR having the following attributes:
VNO, MODEL, BRAND, PRICE

Write SQL statement for the following:

- Modify the existing column MODEL as varchar(30) and NOT NULL.
- Increase PRICE by 20% for the BRAND 'TATA'

27. Categorize the following commands as DDL or DML:
INSERT, UPDATE, ALTER, DROP

28. A MySQL table, sales have 10 rows. The following queries were executed on the sales table.

SELECT COUNT(*) FROM sales;

COUNT(*)
10

SELECT COUNT(discount) FROM sales;

COUNT(discount)
6

Write a statement to explain as to why there is a difference in both the counts.

29. Explain Group by clause with a suitable example.

30. Distinguish between Natural Join and Equi Join.

Q. No. 31 to 40 – 3 marks question

31. Write output of the SQL queries based on the following table Employee:

Table: Employee

EID	Name	DOB	DOJ	Salary	Project
E01	Ranjan	1990-07-12	2015-01-21	150000	P01
E02	Akhtar	1992-06-21	2015-02-01	125000	P04
E03	Muneera	1996-11-15	2018-08-19	135000	P01
E04	Alex	1991-10-25	2018-10-19	75000	P02
E05	Satyansh	1993-12-16	2018-10-19	85000	P04

- select name, project from employee order by project;
- select name, salary from employee where doj like '2015%';
- select min(doj), max(dob) from employee;

32. Write output of the SQL queries based on the following tables Projects and Employee:

Table: Projects

PID	PName	Startdate	Enddate
P01	Road 102 Carpeting	2022-01-28	2022-02-26
P02	Civil Lines Parking	2022-01-30	2023-01-29
P03	T-3 Renovation	2022-03-16	2022-12-15
P04	Footover Bridge K-13	2022-03-19	2023-02-01

Table: Employee

EID	Name	DOB	DOJ	Salary	Project
E01	Ranjan	1990-07-12	2015-01-21	150000	P01
E02	Akhtar	1992-06-21	2015-02-01	125000	P04
E03	Muneera	1996-11-15	2018-08-19	135000	P01
E04	Alex	1991-10-25	2018-10-19	75000	P02
E05	Satyansh	1993-12-16	2018-10-19	85000	P04

- select project, count(*) from employee group by project;
- select pid, pname, eid, name from projects p, employee e where p.pid=e.project;
- select avg(salary) from employee where doj between '2018-08-01' and '2018-08-31';

33. Write SQL statements to do the following:

COMPANY

CID	NAME	CITY	PRODUCTNAME
111	SONY	DELHI	TV
222	NOKIA	MUMBAI	MOBILE
333	ONIDA	DELHI	TV
444	SONY	MUMBAI	MOBILE
555	BLACKBERRY	MADRAS	MOBILE
666	DELL	DELHI	LAPTOP

CUSTOMER

CUSTID	NAME	PRICE	QTY	CID
101	ROHAN SHARMA	70,000	20	222
102	DEEPAK KUMAR	50,000	10	666
103	MOHAN KUMAR	30,000	5	111
104	SAHIL BANSAL	35,000	3	333
105	NEHA SONI	25,000	7	444
106	SONAL AGGARWAL	20,000	5	333
107	ARUN SINGH	50,000	15	666

- Define CID in CUSTOMER table as Foreign Key that refers to CID i.e. Primary Key of COMPANY table.
- Display the 'CUSTOMER NAME', 'PRODUCT NAME' who have purchased any product from the 'COMPANY NAME' 'SONY'.
- Increase the QTY by 15 for the products with PRICE below 40,000.

34. Consider the GAMES table and answer the following questions:

Table: GAMES

GCode	GameName	Number	PrizeMoney	ScheduleDate
101	CaromBoard	2	5000	23-Jan-2004
102	Badminton	2	12000	12-Dec-2003
103	TableTennis	4	8000	14-Feb-2004
105	Chess	2	9000	01-Jan-2004
108	LawnTennis	4	25000	19-Mar-2004

- Identify the possible Candidate Keys in the above table.
- Suggest the most suitable column for Primary key of the above table. Give reason behind your answer.
- Write down the Alternate Keys for the above table.

35. Consider a table STORE having attributes as following:

ItemNo –numeric
 ItemName – character of size 20
 Scode – numeric
 Quantity – numeric

Abhay wants to do the following operations on the STORE table. Please help him to do by writing appropriate SQL statements.

- Insert the following record in the STORE table:
 (2010, Notebook, 23, NULL)
- Add a new column price with data type as decimal.
- Remove STORE table from the database.

36. What do you mean by CHECK constraint and DEFAULT constraint? Explain with suitable example.

37. Consider the following tables and answer the questions below:

Table : PRODUCT

P_ID	ProductName	Manufacturer	Price
TP01	Talcom Powder	LAK	40
FW05	Face Wash	ABC	45
BS01	Bath Soap	ABC	55
SH06	Shampoo	XYZ	120
FW12	Face Wash	XYZ	95

Table : CLIENT

C_ID	ClientName	City	P_ID
01	Cosmetic Shop	Delhi	FW05
06	Total Health	Mumbai	BS01
12	Live Life	Delhi	SH06
15	Pretty Woman	Delhi	FW12
16	Dreams	Banglore	TP01

- What will be the degree and cardinality of the resultant table after performing Cartesian Product between PRODUCT and CLIENT?
- What will be the degree and cardinality of the resultant table after performing NATURAL JOIN between PRODUCT and CLIENT?
- Are these values same? What can be the reason for this?

- Write down the purpose of using aggregate functions in MySQL.
- Give example of any two aggregate functions and their purposes.
- Can we use aggregate functions without GROUP BY clause? Justify.

39. i. What is the significance of NULL value in database?
 ii. Name the operator that can check for NULL value in a column.
 iii. Name the SQL command to permanently save the changes caused by DML statements in the database.

40. i. Name the aggregate functions valid on a column of DATE data type.
 ii. Suggest a keyword for renaming an attribute or a table in MySQL.
 iii. Write down the syntax of representing the common column CODE while performing Equi Join between two tables GAME and USER.

Q. No. 41 to 45 – 5 marks question

41. i. Differentiate between 'WHERE' clause and 'HAVING' clause in MySQL with appropriate example.

ii. Consider the following table and find the output of the following queries:

TEACHER

TCODE	TNAME	SUBJECT	SEX	SALARY
5467	Narendra Kumar	Computer Science	M	70000
6754	Jay Prakash	Accountancy	M	Null
8976	Ajay Kumar	Chemistry	M	65000
5674	Jhuma Nath	English	F	55000
8756	Divya Bothra	Computer Science	F	75000
6574	Priyam Kundu	Physics	M	Null
3425	Dinesh Verma	Economics	M	71000

- a. select SEX, avg(SALARY) from TEACHER group by SEX;
 b. select SUBJECT, count(*) from TEACHER group by SUBJECT having count(*)>1;
 c. select SUBJECT, min(SALARY) from TEACHER where TNAME not like '%Kumar' group by SUBJECT;

42. i. Differentiate between DELETE and DROP in MySQL. Cite suitable examples.

ii. Consider the following tables – Bank_Account and Branch:

BANK_ACCOUNT

E_CODE	NAME
E01	ASHISH
E02	SURESH

BRANCH

E_CODE	LOCATION
E05	MUMBAI

What will be the output of the following statement?

SELECT * FROM Bank_Account, Branch;

iii. Choose the correct option:

The above SQL query represents _____ operation.

- a. Outer join b. Natural join c. Equi join d. Cross join

43. Fill in the blanks with appropriate keywords in order to complete the following SQL queries:

CAR

CID	BRAND	MODEL	TYPE	COLOUR	PRICE
CO1	MARUTI	SWIFT	HATCHBACK	WHITE	5,00,000
D32	HYUNDAI	VERNA	SEDAN	BLACK	16,00,000
F32	TATA	NEXON	SUV	RED	9,00,000
C29	KIA	SELTOS	SUV	BLUE	17,00,000

- i. Display all the databases present in MySQL of a system.
show _____ ;
- ii. Display the values in TYPE column of the table CAR after removing the duplicate values from the output.
select _____TYPE from CAR;
- iii. Display MODEL, PRICE, COLOUR from CAR whose COLOUR is neither RED nor BLUE.
select MODEL, PRICE, COLOUR from CAR
where COLOUR _____('RED', 'BLUE');
- iv. Display the total number of records present in CAR table.
select _____(CID) from CAR;
- v. Display Discount on each CAR where Discount is 5% of the PRICE.
select MODEL, PRICE*0.05 _____ 'DISCOUNT' from CAR;

44. i. Write two advantages of using database.
ii. Distinguish between CHAR and VARCHAR data type. Which one is preferable in general and why?
iii. Write down the significance of the data type NUMERIC(7,3).

45. i. What do you mean by Join. Give an example.
ii. Fill in the blanks with appropriate keywords for creating the table DRESS with the following specifications:
- Default COLOR is 'BLACK'.
 - PRICE between 0 and 8000.

```
CREATE _____ (a) _____ DRESS
(
    DCODE INT PRIMARY KEY,
    DNAME VARCHAR(15),
    COLOR VARCHAR(10) _____ (b) _____ 'BLACK',
    PRICE DECIMAL(6, 2) _____ (c) _____ PRICE BETWEEN 0 and 8000
);
```

Q. No. 46 to 50 – Case Study based questions of 4 marks each

46. Consider the following tables ITEM and CUSTOMER and find the outputs of the following queries:

Table: ITEM

ID	Item_Name	Manufacturer	Price
PC01	Personal Computer	ABC	35000
LC05	Laptop	ABC	55000
PC03	Personal Computer	XYZ	32000
PC06	Personal Computer	COMP	37000
LC03	Laptop	PQR	57000

Table: CUSTOMER

C_ID	CName	City	ID
01	N Roy	Delhi	LC03
06	R Singh	Mumbai	PC03
12	R Pandey	Delhi	PC06
15	C Sharma	Delhi	LC03
16	K Agarwal	Bangalore	PC01

- i) SELECT ITEM_NAME, MAX(PRICE), COUNT(*) FROM ITEM GROUP BY ITEM_NAME;
- ii) SELECT CNAME, MANUFACTURER FROM ITEM, CUSTOMER WHERE ITEM.ID=CUSTOMER.ID;
- iii) SELECT ITEM_NAME, PRICE*100 FROM ITEM WHERE MANUFACTURER="ABC";
- iv) SELECT DISTINCT CITY FROM CUSTOMER;

47. Consider the tables ITEM and CUSTOMER and write the queries:

TABLE: SCHOOL

CODE	TEACHERNAME	SUBJECT	DOJ	PERIODS	EXPERIENCE
1001	RAVI SHANKAR	ENGLISH	12/03/2000	24	10
1009	PRIYA RAI	PHYSICS	03/09/1998	26	12
1203	LISA ANAND	ENGLISH	09/04/2000	27	5
1045	YASHRAJ	MATHS	24/08/2000	24	15
1123	GANAN	PHYSICS	16/07/1999	28	3
1167	HARISH B	CHEMISTRY	19/10/1999	27	5
1215	UMESH	PHYSICS	11/05/1998	22	16

TABLE: ADMIN

CODE	GENDER	DESIGNATION
1001	MALE	VICE PRINCIPAL
1009	FEMALE	COORDINATOR
1203	FEMALE	COORDINATOR
1045	MALE	HOD
1123	MALE	SENIOR TEACHER
1167	MALE	SENIOR TEACHER
1215	MALE	HOD

- (i) Display the total PERIODS for each SUBJECT from SCHOOL table.

(ii) Display TEACHERNAME, GENDER from the tables SCHOOL and ADMIN whose DESIGNATION is 'COORDINATOR'.

(iii) Display TEACHERNAME and DOJ in the descending order of CODE.

(iv) Display TEACHERNAME whose DOJ is in the year 2000.

48. Modern Public School is maintaining fees records of students. The database administrator Aman decided that-

- Name of the database -School
- Name of the table – Fees
- The attributes of Fees are as follows:
 - Rollno – numeric
 - Name – character of size 20
 - Class - character of size 20
 - Fee – Numeric
 - PayDate – Date
 - Primary Key – (Rollno, Class)

Answer the following questions:

(i) Write the DDL statement to create database School.
 (ii) Write the SQL statement to create Fees table in School database with the above-mentioned specifications.
 (iii) Write SQL statement to display all the table names in School database.

49. Consider the table Fees mentioned in Q. No. 48 and answer the following questions:

i. Insert the following record into the table
 Rollno-1201, Name-Akshay, Class-12th, Fee-350, PayDate-24 JUNE 2019

ii. Increase the second quarter fee of class 12th students by 50.
 iii. Delete the record of student with Rollno-1212
 iv. Aman wants to display the schema (structure) of Fees table. Which command will he use from the following:
 a) CREATE b) ALTER c) SHOW d) DESCRIBE

50. Sagar, a cloth merchant creates a table CLIENT with a set of records to maintain the client’s order volume in Qtr1, Qtr2, Qtr3 and their total. After creation of the table, he has entered data of 7 clients in the table.

CLIENT

ClientName	Client_ID	Qtr1	Qtr2	Qtr3	Total
Suraj	C120	200	300	400	900
Radha	C650	190	356	220	766
Estha	C430	200	100	400	700
Karuna	C790	130	540	380	1050
Naresh	C660	200	400	800	1400
Varun	C233	400	300	220	920
Kritika	C540	500	100	400	1000

Based on table CLIENT, write SQL statements for the following:

- i. Write the statements to Update a record present in the table with data for Qtr2 = 200, Qtr3 = 600 , total = sum of all Qtrs where the Client_ID is C660.
 ii. Delete all records where total is between 500 to 900.

- | | |
|--|---|
| | iii. Make changes in ClientName with data type varchar(20) and not null constraint.
iv. Remove the column Total from the CLIENT table. |
|--|---|

SQL Connectivity

1. To establish a connection with MySQL from Python which of the following functions is used?
 - (a) connection()
 - (b) connect()
 - (c) open()
 - (d) cursor()
2. execute() method can execute _____.
 - (a) DDL statements
 - (b) DML statements
 - (c) DDL and DML statements.
 - (d) Select statement only
3. To establish a connection between Python and sql database, connect() is used. Which of the following arguments may not necessarily be given while calling connect()?
 - (a) host
 - (b) database
 - (c) user
 - (d) password
4. What is the purpose of the `rowcount` attribute in Python-MySQL database connectivity?
 - (a) Number of rows affected by the last executed command
 - (b) Total number of rows in the database
 - (c) Total number of columns in the database
 - (d) Number of tables in the database
5. Which method is used to retrieve N number of records
 - (a) fetchone()
 - (b) fetchall()
 - (c) fetchmany()
 - (d) fetchN()
6. To make the changes made by any SQL Queries permanently in database, which function is used after execution of the query?
 - (a) save()
 - (b) commit()
 - (c) execute()
 - (d) dump()
7. How is dynamic insertion of values achieved in SQL queries?
 - (a) Using execute()
 - (b) Using dynamicValues()
 - (c) Using '%s' format specifier or format()
 - (d) Using insertValues()

8. _____it is a pointer or iterator which points towards the resultset of the SQL query.

- (a) cursor
- (b) rset
- (c) temp
- (d) None of these

9. To get all the records from result set, you may use _____.

- (a) cursor.fetchmany()
- (b) cursor.fetchall()
- (c) cursor.fetchone()
- (d) cursor.execute()

10. Which of the following is not a valid method to fetch records from database in python.

- (a) fetchmany()
- (b) fetchone()
- (c) fetchmulti()
- (d) fetchall()

11. Which attribute of cursor is used to get number of records stored in cursor (Assume cursor name is mycursor)?

- (a) mycursor.count
- (b) mycursor.row_count
- (c) mycursor.records
- (d) mycursor.rowcount

12. Which of the following package must be imported in Python to create a database connectivity application?

- (a) mysql.connector
- (b) mysql.connect
- (c) sql.connector
- (d) sql.execute

13. Which of the following method reflects the changes made in database permanently?

- (a) <connection>.done()
- (b) <connection>.final()
- (c) <connection>.reflect()
- (d) <connection>.commit()

14. Which method of cursor class is used to fetch limited rows from the table?

- (a) cursor.fetchsize(SIZE)
- (b) cursor.fetchmany(SIZE)
- (c) cursor.fetchall(SIZE)
- (d) cursor.fetchonly(SIZE)

15. Which method of cursor class is used to get the number of rows affected after any of the Insert/update/delete database operation executed from Python?

- (a) cursor.rowcount

- (b) cursor.getaffectedcount
- (c) cursor.rowcount
- (d) cursor.rcount

16. Which of the following component acts as a container to hold the data returned from the query:

- (a) table
- (b) cursor
- (c) resultset
- (d) container

17. To get the next record from the result set, we may use _____.

- (a) cursor.fetch(next)
- (b) cursor.fetchmany()
- (c) cursor.fetchall()
- (d) cursor.fetchone()

18. SQL command is passed to which function to run after establishment of the connection between python and database

- (a) cursor()
- (b) execute()
- (c) connection()
- (d) fetchall()

19. Which of the following function is used to close the connection between python and database?

- (a) cursor.close()
- (b) is.close()
- (c) connection.close()
- (d) execute.close()

20. Which is the correct statement about fetchone()

- (a) Fetch the next row of a query result set, returning a single tuple, or None when no more data is available
- (b) Fetch the First row of a query result set, returning a single tuple, or None when no more data is available
- (c) Fetch the current row of a query result set, returning a single tuple, or None when no more data is available
- (d) None of the above

1. The code given below inserts following record in to a table

EMPLOYEE EMPNO – Integer
ENAME – string
SALARY - Integer
BONUS - Integer
DEPTID – string

Help your friend Sonia in writing the following missing statements to complete the code:-

```
import _____ # Statement1
```

```

mydb=mysql.connector.connect(host="localhost",user="root",passwd='root',database="class12")
mycursor= _____ # Statement 2
mycursor.execute("INSERT INTO EMPLOYEE VALUES(114,'BP Singh',56400,800,'D01')")
_____ # Statement 3
print(mycursor.rowcount, "Record inserted")

_____ # Statement 4

```

2. Avni is trying to connect Python with MySQL for her project. Help her to write the python statement on the following:

- i. Name the library, which should be imported to connect MySQL with Python.
- ii. Name the function, used to run SQL query in Python.
- iii. Name the function required to make the changes permanent.
- iv. Name the fuction to clear the environment.

Ans:

- i. mysql.connector
- ii. execute()
- iii. commit()
- iv. close()

3. Your friend Jagdish is writing a code to fetch data from a database Shop and table name Products using Python. He has written incomplete code. You have to help him to write complete code: import __ as m # Statement-1

```
object1 = m.connect(host="localhost", user="root", password="root", database="Shop")
```

```
object2 = object1. _____ # Statement-2
```

```
query = "SELECT * FROM Products WHERE NAME LIKE 'A%';"
```

```
object2 _____ (query) # Statement-3
```

```
_____ .close() # Statement-4
```

4. The code given below reads the following record from Table named Employee and display those record 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 on behalf of your friend Sandeep:

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 >=30000 and <=90000.

Statement 4 - to close the connection.

```

import mysql.connector
mydb=mysql.connector.connect(host='localhost',user='root',passwd='Password',database='bank')
mycursor=_____# statement 1
mycursor _____#statement 2
data=_____# statement 3
for x in data:
    print(x)
_____# statement 4

```

5. The code given below inserts the following record in the table

Emp: Empno – integer

EName – string

Designation – integer

Salary – integer

Bonus - Integer

Note the following to establish connectivity between Python and MYSQL:

- sersname is root
- Password is tiger
- The table exists in a MYSQL database named Employee.
- The details (Empno, EName, Designation, Salary and Bonus) are to be accepted from the user.

Help your friend in writing the following missing statements to complete the code:

Statement 1 – to create a connection

Statement 2 – to form the cursor object

Statement 3 – to execute the command that inserts the record in the table Emp.

Statement 4 - to add the record permanently in the database

```
import mysql.connector as mysql
```

```
def sql_data():
```

```
    mycursor=_____#Statement 1
```

```
    eno=int(input("Enter Employee Number: "))
```

```
    Ename=input("Enter Employee Name: ")
```

```
    Designation=input("Enter Designation: ")
```

```
    Salary=int(input("Enter Salary: "))
```

```
    Bonus=int(input("Enter Bonus: "))
```

```
    query="insert into emp values( {}, '{}', {}, {})".format(eno,ename,designation,bonus)
```

```
    _____#Statement 2
```

```
    _____# Statement 3
```

```
    print("Employee Data Added successfully")
```

COMPUTER NETWORKING

MULTIPLE CHOICE QUESTIONS(1 MARK EACH)

1. _____ is a communication methodology designed to deliver both voice and multimedia communications over Internet protocol.
 (A) SMTP (B) VoIP (C) PPP (D) HTTP
2. Which of the following is used to receive emails over Internet?
 a) SMTP b) POP c) PPP d) VoIP
3. What is the size of IPv4 address?

- (a) 32 bits (b) 64 bits (c) 64 bytes (d) 32 bytes

4. _____ protocol provides access to command line interface on a remote computer.

- a) FTP b) Telnet c) VoIP d) SMTP

5. _____ is a communication methodology designed to deliver electronic mail (E-mail) over the internet.

- (a) VoIP (b) HTTP (c) PPP (d) SMTP

6. Which protocol is used for transferring files over a TCP/IP network?

- a) FTP b) SMTP c) PPP d) HTTP

7. Network in which every computer is capable of playing the role of a client, or a server or both at same time is called

- a) local area network b) peer-to-peer network c) dedicated server network d) wide area network

8. _____ is a communication methodology designed to establish a direct and dedicated communication between an internet user and his/her ISP.

- a) VoIP (b) SMTP (c) PPP (d) HTTP

9. Identify the device on the network which is responsible for forwarding data from one device to another

- (a) NIC (b) Router (c) RJ45 (d) Repeater

10. Which of the following device send data to every connected node?

- a) Switch b) Repeater c) Router d) Hub

11. In which type of switching first the connection is established between sender and receiver and then the data is transferred?

- a) Circuit b) Message c) Packet d) None

12. Identify the cable which consists of an inner copper core and a second conducting outersheath:

- (i) Twisted Pair (ii) Co-axial (iii) Fiber Optical (iv) Shielded Twisted Pair

13. In fiber optic transmission, data is travelled in the form of:

- (i) Light (ii) Radio link (iii) Microwave Link (iv) Very low frequency

14. Which of the following devices modulates digital signals into analog signals that can be sent over traditional telephone lines?

- (i) Router (ii) Gateway (iii) Bridge (iv) Modem

15. Out of the following guided media, which is not susceptible to external interference?

- (i) Twisted Pair (ii) Co-axial Cable (iii) Fiber Optical (iv) Electric Wire

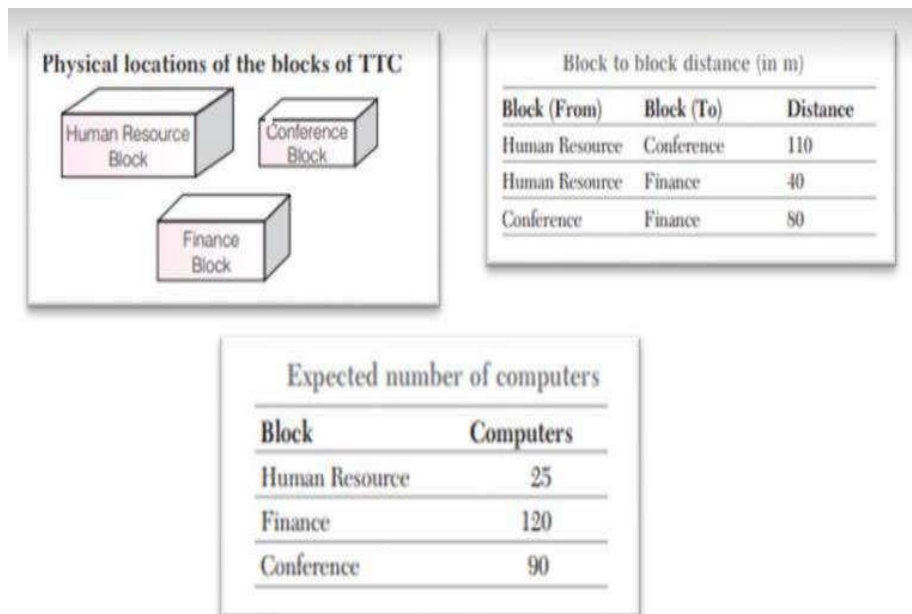
16. Which of the following device is used for sorting and distribution of data packet to their destination based on their IP Address?
 (i) Gateway (ii) Router (iii) Bridges (iv) Switch
17. Which of the following device is used to connect network of different protocols so that they can communicate properly?
 (i) Gateway (ii) Router (iii) Bridges (iv) Switch
18. Which type of Network is generally privately owned and links the devices in a single office, building or Campus?
 a. LAN b. MAN c. WAN d. PAN
19. Raj, is working as a Tech Support Engineer and sometimes he wants to work on Client's computer from his office. Identify the traditional protocol used for this purpose?
 a. FTP b. Telnet c. HTTP d. POP3
20. Raj is looking for some information about How Router works, for this he opens the browser and typed the URL of requested site. In few moments he received the requested page on his browser screen. Identify the type of protocol, used between Browser (Client) and Web Server for the communication?
 a. TCP/IP b. HTTP c. SMTP d. POP3

2 MARKS QUESTIONS

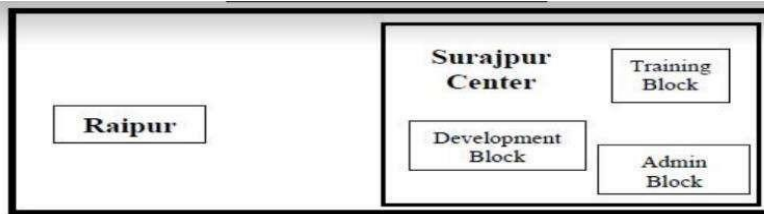
1. Write two points of difference between Bus topology and star topology.
2. Write two points of difference between XML and HTML.
3. Write the full forms of the following:
 (i) HTTP (ii) FTP
4. Discuss the use of TELNET
5. Write two advantages and two disadvantages of circuit switching.
6. Differentiate between Web server and web browser. Write any two popular web browsers.
7. Classify each of the following Web Scripting as Client Side Scripting and Server Side Scripting :
 (i) Java Scripting
 (ii) ASP
 (iii) VB Scripting
 (iv) JSP
8. What is Bandwidth? What is the measuring unit of Bandwidth in term of range of frequencies a channel can pass?
9. (a) Write the full forms of the following:
 (i) FTP (ii) HTTPS
 b) Name the protocols which are used for sending and receiving emails?
10. Write two differences between Coaxial and Fiber transmission media.

5 MARKS QUESTIONS

1. A professional consultancy company is planning to set up their new offices in India with its hub at Hyderabad. As a network adviser, you have to understand their requirement and suggest them the best available solutions. Their queries are mentioned as (i) to (v) below.



- a) Which will be the most appropriate block, where TTC should plan to install their server?
- b) Draw a block to block cable layout to connect all the buildings in the most appropriate manner for efficient communication.
- c) What will be the best possible connectivity out of the following, you will suggest to connect the new setup of offices in Bangalore with its London based office.
- Satellite Link
 - Infrared
 - Ethernet
- d) Which of the following device will be suggested by you to connect each computer in each of the buildings?
- Switch
 - Modem
 - Gateway
- e) Company is planning to connect its offices in Hyderabad which is less than 1 km. Which type of network will be formed?
2. FutureTech Corporation, a Bihar based IT training and development company, is planning to set up training centers in various cities in the coming year. Their first center is coming up in Surajpur district. At Surajpur center, they are planning to have 3 different blocks - one for Admin, one for Training and one for Development. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant of this company, you have to suggest the best network related solutions for them for issues/problems raised in question nos. (i) to (v), keeping in mind the distances between various blocks/locations and other given parameters.



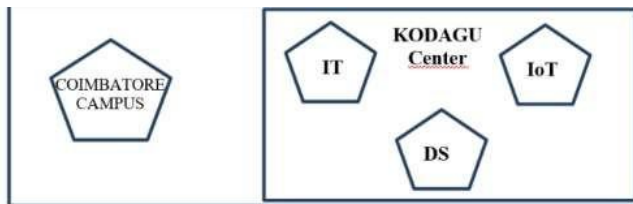
Distance between various blocks/locations:

Block	Distance
Development to Admin	28 m
Development to Training	105 m
Admin to Training	32 m
Surajpur Campus to Coimbatore Campus	340 km

Number of computers:

Block	Number of Computers
Development	90
Admin	40
Training	50

- (i) Suggest the most appropriate block/location to house the SERVER in the Surajpur center (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.
 - (ii) Suggest why should a firewall be installed at the Surajpur Center?
 - (iii) Suggest the best wired medium and draw the cable layout (Block to Block) to most efficiently connect various blocks within the Surajpur Center.
 - (iv) Suggest the placement of the following devices with appropriate reasons:
 - a) Switch/Hub
 - b) Router
 - (v) Suggest the best possible way to provide wireless connectivity between Surajpur Center and Raipur Center.
3. Total-IT Corporation, a Karnataka based IT training company, is planning to set up training centers in various cities in next 2 years. Their first campus is coming up in Kodagu district. At Kodagu campus, they are planning to have 3 different blocks, one for AI, IoT and DS (Data Sciences) each. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant of this company, you have to suggest the best network related solutions for them for issues/problems raised in question nos. (i) to (v), keeping in mind the distances between various blocks/locations and other given parameters.



Distance between various blocks/locations:

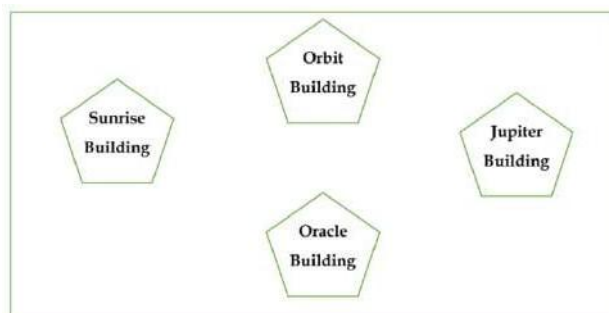
Block	Distance
IT to DS	28 m
IT to IoT	55 m
DS to IoT	32 m
Kodagu Campus to Coimbatore Campus	304 km

Number of computers:

Block	Number of Computers
IT	75
DS	50
IoT	80

- (i) Suggest the most appropriate block/location to house the SERVER in the Kodagu campus (out of the 3 blocks) to get the best and effective connectivity. Justify your
- (ii) Suggest a device/software to be installed in the Kodagu Campus to take care of data security.
- (iii) Suggest the best wired medium and draw the cable layout (Block toBlock) to most efficiently connect various blocks within the Kodagu Campus.
- (iv) Suggest the placement of the following devices with appropriate reasons:
 - a) Switch/Hub
 - b) Router
- (v) Suggest a protocol that shall be needed to provide Video Conferencing solution between Kodagu Campus and Coimbatore Campus.

4. Aryan Infotech Solutions has set up its new center at Kamla Nagar for its office and web based activities. The company compound has 4 buildings as shown in the diagram below:



Distance between various buildings.	
Jupiter Building to Orbit Building	50 Mtrs
Orbit Building to Oracle Building	85 Mtrs.
Oracle Building to Sunrise Building	25 Mtrs.
Sunrise Building to Jupiter Building	170 Mtrs.
Jupiter Building to Oracle Building	125 Mtrs.
Orbit Building to Sunrise Building	45 Mtrs.

Number of Computers in each of the buildings is follows:	
Jupiter Building	30
Orbit Building	150
Oracle Building	15
Sunrise Building	35

- i) Suggest a cable layout of connections between the buildings.
- ii) Suggest the most suitable place (i.e. building) to house the server of this organisation with a suitable reason
- iii) Suggest the placement of the following devices with justification:
 - a. Internet Connecting Device/Modem
 - b. Switch
- iv) The organisation is planning to link its sale counter situated in various parts of the same city, which type of network out of LAN, MAN or WAN will be formed? Justify your answer.
- v) What do you mean by PAN? Explain giving example.