

# CBSE

# CLASS – XII

# COMPUTER SCIENCE

Name of the Student

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**OLD QUESTIONS, ANSWERS  
MATERIAL, SAMPLE PAPERS**

**TERM – II (2021.22) (Part I)  
(THIS IS PARTIAL MATERIAL, DID  
NOT COVER ALL SYLLABUS)**

## SYLLABUS

Data Structures ( Python- Stack)  
Computer Networks  
Database Concepts

## CONTENTS

Chap No	Chapter Name	Page No.	Exp.Marks
1	Data Structures (Python – Stack)	3	5
2	Computer Networks	8	10
3	Database Management	28	18+2

**Dear Student/Reader,** I have prepared this material with the good intention to make the XII<sup>th</sup> class computer students to understand important models and to score good marks. To score full marks, one must prepare all the syllabus prescribed by CBSE.

As I have prepared the above material through my own answers, marking schemes from CBSE, copied material from various other sources, etc, there are some spelling mistakes, or any other errors. So reader should read carefully. I am not responsible for any errors that creep in this material. **\*\*ALL THE BEST\*\***

*Your 's Ever.... Dear....*

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## SYLLABUS

### UNIT I: COMPUTATIONAL THINKING AND PROGRAMMING – 2

**Data Structure:** Stack, operations on stack (push & pop), implementation of stack using list.

### UNIT II: COMPUTER NETWORKS

**Evolution of networking:** introduction to computer networks, evolution of networking (ARPANET, NSFNET, INTERNET)

**Data communication terminologies:** concept of communication, components of data communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching)

**Transmission media:** Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves)

**Network devices** (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card)

**Network topologies and Network types:** types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree)

**Network protocol:** HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP

**Introduction to web services:** WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting

### UNIT III: DATABASE MANAGEMENT

**Database concepts:** Introduction to database concepts and its need

**Relational data model:** relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key)

**Structured Query Language:** Introduction, Data Definition Language and Data Manipulation

Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command

**Aggregate functions** (max, min, avg, sum, count), group by, having clause, **joins** : Cartesian product on two tables, equi-join and natural join

**Interface of python with an SQL database:** connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications

### PRACTICAL (15 Marks):

#### **1. Report File (3 Marks) :**

Minimum 3 Python programs, SQL Queries – Minimum 5 sets using one table / two tables.

Minimum 2 programs based on Python - SQL connectivity

#### **2. Python Program (2 Marks) : On Exam Day**

3 SQL Queries based on one/two table(s), 2 output questions based on SQL Queries (**4 Marks**) : On Exam Day

**Viva Voce (1 Mark) : On Exam Day**

#### **3. Project + Viva Voce (5 Marks)**

### SUGGESTED RECORD PROGRAMS:

**Python Programming :** Write a Python program to implement a stack using list.

**Database Management :**

Create a student table and insert data. Implement the following SQL commands on the student table:

- o ALTER table to add new attributes / modify data type / drop attribute
- o UPDATE table to modify data
- o ORDER By to display data in ascending / descending order
- o DELETE to remove tuple(s) o GROUP BY and find the min, max, sum, count and average
- o Joining of two tables.

- Similar exercise may be framed for other cases.
- Integrate SQL with Python by importing suitable module.

## DATA STRUCTURES (PYTHON – STACK)

**Syllabus:** (5 Marks given in Sample Paper)

**Data Structure:** Stack, operations on stack (push & pop), implementation of stack using list.

**1. Give any two characteristics of stacks. (2)**

**A) Characteristics of Stacks: (SP2022)**

- (i) It is a LIFO data structure
- (ii) The insertion and deletion happens at one end i.e. from the top of the stack

**2) Julie has created a dictionary containing names and marks as key value pairs of 6 students. Write a program, with separate user defined functions to perform the following operations: (3) (SP2022)**

\* Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (marks) is greater than 75.

\* Pop and display the content of the stack.

**For example:**

If the **sample content** of the dictionary is as follows:

```
R={"OM":76, "JAI":45, "BOB":89, "ALI":65, "ANU":90, "TOM":82}
```

The **output** from the program should be:

```
TOM ANU BOB OM
```

**Ans)**

```
R={"OM":76, "JAI":45, "BOB":89, "ALI":65, "ANU":90, "TOM":82}
```

```
def PUSH(S,N):
    S.append(N)
def POP(S):
    if S!=[ ]:
        return S.pop()
    else:
        return None
```

```
ST=[ ]
for k in R:
    if R[k]>=75:
        PUSH(ST,k)
while True:
    if ST!=[ ]:
        print (POP(ST), end=" ")
    else:
        break
```

**(OR)**

**Alarm has a list containing 10 integers. You need to help him create a program with separate user defined functions to perform the following operations based on this list.**

\* Traverse the content of the list and push the even numbers into a stack.

\* Pop and display the content of the stack.

**For Example:**

If the **sample content** of the list is as follows:

```
N=[12,13,34,56,21,79,98,22,35,38]
```

**Sample output** of the code should be:

```
38 22 98 56 34 12
```

**Ans)**

```
N=[12,13,34,56,21,79,98,22,35,38]
def PUSH(S,N):
    S.append(N)
def POP(S):
    if S!=[ ]:
        return S.pop()
    else:
        return None
ST=[ ]
for k in N:
    if k%2==0:
        PUSH(ST,k)
while True:
    if ST!=[ ]:
        print(POP(ST), end=" ")
    else:
        break
```

**2020-21**

Write a function in Python PUSH(Arr), where Arr 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 at least one element, otherwise display appropriate error message.

**Ans)**

```
def PUSH(Arr,value):
    s=[ ]
    for x in range(0,len(Arr)):
        if Arr[x]%5==0:
            s.append(Arr[x])
    if len(s)==0:
        print("Empty Stack")
    else:
        print(s)
```

**OR**

Write a function in Python POP(Arr), where Arr is a stack implemented by a list of numbers. The function returns the value deleted from the stack.

**Ans)**

```
def popStack(st) :
    # If stack is empty
    if len(st)==0:
        print("Underflow")
    else:
        L = len(st)
        val=st[L-1]
        print(val)
        st.pop(L-1)
```

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**Note:** Need to read initial theory questions. I.e Data type & Data Structures, Types of data structures, about each type of data structure, Operations on Data Structures, etc

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**DOUBTFUL IN SYLLABUS**

**2019-20**

(1) Write a Recursive function in python BinarySearch(Arr,l,R,X) to search the given element X to be searched from the List Arr having R elements where l represents lower bound and R represents upper bound.

**(Doubt weather in Syllabus or Not)**

**Ans)**

```
def BinarySearch (Arr,l,R,X):
    if R >= l:
        mid = l + (R-l)//2
        if Arr[mid] == X:
            return mid
        elif Arr[mid] > X:
            return BinarySearch(Arr,l,mid-1,X)
        else:
            return BinarySearch(Arr,mid+1,r,X)
    else:
        return -1
Arr = [ 2, 3, 4, 10, 40 ]
X =int(input(' enter element to be searched')) result =
BinarySearch(Arr,0,len(Arr)-1,X)
if result != -1:
    print ("Element is present at index ", result) else:
    print ("Element is not present in array")
```

(2) Write a function in Python, INSERTQ(Arr,data) and DELETEQ(Arr) for performing insertion and deletion operations in a Queue. Arr is the list used for implementing queue and data is the value to be inserted.

**(OR)**

Write a function 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.

**(Similarly they might ask question for Stack)**

**Doubtful Questions**

Searching : Linear Search, Binary Search  
Insertion, Deletion and Traversal in a Linear List  
Sorting: Bubble Sort, Insertion Sort  
List Compressions  
Linear List Implementation  
Nested/Two Dimensional Lists in Python  
Slices of Two Dimensional Lists  
Stack Applications (Evaluation of Postfix Expression, Conversion from infix to postfix expression, etc)

**Linear Search:**

```
def Lsearch(ar,S):
    i=0
    while i<len(ar) and ar[i]!=S:
        i+=1
    if i<len(ar):
        return i
```

```
else:
    return -1
```

```
N=int(input("Enter the size of the list: "))
print("Enter the elements...")
ar=[0]*N
for i in range(0,N):
    ar[i]=int(input("Enter Element: "))
    S=int(input("Enter Search Element: "))
p=Lsearch(ar,S)
if p>=0:
    print ("Element is available at ",p+1," position")
else:
    print("Oh!Element is not available. Try later")
```

**Binary Search:**

```
def Bsearch(ar,S):
    beg=0
    last=len(ar)-1
    while(beg<=last):
        mid=(beg+last)//2
        if(S==ar[mid]):
            return mid
        elif (S>ar[mid]):
            beg=mid+1
        else:
            last=mid-1
    else:
        return -1
```

```
N=int(input("Enter the size of the list: "))
print("Enter the elements...")
ar=[0]*N
for i in range(0,N):
    ar[i]=int(input("Enter Element: "))
    S=int(input("Enter Search Element: "))
p=Bsearch(ar,S)
if p>=0:
    print ("Element is available at ",p+1," position")
else:
    print("Oh!Element is not available. Try later")
```

**Evaluate the Postfix Notation using Stack:**

**1. Evaluate the following POSTFIX expression. Show the status of Stack after execution of each operation separately: 45, 45, +, 32, 20, 10, /, -, \***

**Ans) 2700**

Element Scanned	Stack Status
45	45
45	45, 45
+	90
32	90, 32
20	90,32,20
10	90,32,20,10
/	90,32,2
-	90,30
*	2700

2. Evaluate the following postfix expression. Show the status of stack after execution of each operation separately. T,F,NOT,AND,T,OR,F,AND

Symbol	Operation	Stack
T	PUSH	T
F	PUSH	T,F
NOT	Pop One Element. Apply NOT	T,T
AND	Pop Two Elements. Apply AND	T
T	PUSH	T,T
OR	Pop Two elements. Apply OR	T
F	PUSH	T,F
AND	Pop two elements. Apply AND	F

3. Evaluate the following postfix expression. Show the status of stack after execution of each operations: 5,2,\*,50,5/,5,-,+

Element Scanned	STACK
5	5
2	5,2
*	10
50	10,50
5	10,50,5
-	10,45
+	55

4. Evaluate the following postfix notation of expression: (Show status of Stack after each operation) False, True, NOT, OR, True, False, AND, OR Ans.

Element Scanned	Stack
False	False
True	False, True
NOT	False, False
OR	False
True	False, True
False	False, True, False
and	False, False
OR	False

RESULT=False

5) Evaluate the following postfix notation of expression: 25 8 3 - / 6 \* 10 +

Operator Scanned	Stack Content
25	25
8	25, 8
3	25, 8, 3
-	25, 5
/	5
6	5, 6
*	30
10	30, 10
+	40

**Convert infix expression to postfix expression:**

1) Obtain the postfix notation for the following infix notation of expression showing the contents of the stack and postfix expression formed after each step of conversion :  $(P-Q)/(R*(S-T)+U)$

Ans)  $((P-Q)/((R*(S-T))+U))$

(Keep entire expression in set of parenthesis.

If the symbol scanned is Operand (Ex:P,Q,...), then keep it in Expression.

If the symbol scanned is Operator (Ex: +,-,\*,...) then keep it in Stack.

If the symbol scanned is closing parenthesis, take out one operator from the stack, and keep it in expression. Also remove one opening parenthesis from the Stack )

S No	Symbol Scanned	Stack	Expression Y
1	(	(	
2	(	((	
3	P	((	P
4	-	((-	P
5	Q	((-	P Q
6	)	(	P Q -
7	/	(/	P Q -
8	(	(/(	P Q -
9	(	(/(	P Q -
10	R	(/(	P Q - R
11	*	(/(	P Q - R
12	(	(/(	P Q - R
13	S	(/(	P Q - R S
14	-	(/(	P Q - R S
15	T	(/(	P Q - R S T
16	)	(/(	P Q - R S T -
17	)	(/	P Q - R S T - *
18	+	(/(	P Q - R S T - *
19	U	(/(	P Q - R S T - * U
20	)	(/	P Q - R S T - * U +
21	)		P Q - R S T - * U + /

Postfix Form: **PQ-RST-\*U+ /**

**Write the equivalent infix expression:**

1) Write the equivalent infix expression for

**a, b, AND, a, c, AND, OR.**

Ans) a, b, AND, a, c, AND, OR

(a AND b), (a AND c), OR

(a AND b) OR (a AND c)

S.No.	Element scanned	Operation	Infix Expression
1	A	Push a	a
2	B	Push b	a, b
3	AND	Pop, Pop, Push (a AND b)	a AND b
4	A	Push a	a AND b, a
5	C	Push c	a AND b, a, c
6	AND	Pop, Pop, Push(aANDc)	a AND b, a AND c
7	OR	Pop, Pop, Push (a AND b OR a AND c)	Push (a AND b OR a AND c)

2) Write the **equivalent infix** expression for

**10, 3, \*, 7, 1, --, \*, 23, +** (OD2006)

**Solution:** 10, 3, \*, 7, 1, -, -, \*, 23, +

This is in Postfix form

(ie Operator will come after the operand(s));

Infix form means Operator must come in between the operands. 10, 3, \*, 7, 1, -, -, \*, 23, + (**Prefix form**)

10 \* 3, 7 - 1, \*, 23, +

(10 \* 3) \* (7 - 1), 23, +

(10 \* 3) \* (7 - 1) + 23 (**Infix form**)

## XII COMPUTER – RECORD PROGRAMS- TERM2(21,22)

1) Julie has created a dictionary containing names and marks as key value pairs of different students. Write a program, with separate user defined functions to perform the following operations:

\* Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (marks) is greater than users choice (Ex: >75)

\* Pop and display the content of the stack.

### Program:

```
Student={ }
def PUSH(S,M):
    S.append(M)
def POP(S):
    if S!=[ ]:
        return S.pop( )
    else:
        return None
ST=[ ]
N=int(input("Enter size of the Student Marks
            Dictionary : "))
for i in range(N):
    name=input("Enter student name: ")
    marks=int(input("Enter student marks: "))
    Student[name]=marks
    mcriteria = int(input("Enter the marks
                        criteria to display names: "))
for k in Student:
    if Student[k]>=mcriteria:
        PUSH(ST,k)
while True:
    if ST!=[ ]:
        print (POP(ST), end=" ")
    else:
        break
```

### Sample Output:

```
Enter size of the Student Marks Dictionary : 5
Enter student name: ravi
Enter student marks: 66
Enter student name: kiran
Enter student marks: 77
Enter student name: chinna
Enter student marks: 33
Enter student name: munna
Enter student marks: 99
Enter student name: kanna
Enter student marks: 100
Enter the marks criteria to display names: 70
kanna munna kiran
```

2) Alarm has a list containing different integer values (of users choice). You need to help him

create a program with separate user defined functions to perform the following operations based on this list.

\* Traverse the content of the list and push the even numbers into a stack.

\* Pop and display the content of the stack.

### Program:

```
L=[ ]
def PUSH(S,M):
    S.append(M)
def POP(S):
    if S!=[ ]:
        return S.pop()
    else:
        return None
ST=[ ]
N=int(input("Enter size of the Numbers List : "))
for i in range(N):
    number=int(input("Enter number: "))
    L.append(number)
for k in L:
    if k%2==0:
        PUSH(ST,k)
while True:
    if ST!=[ ]:
        print(POP(ST), end=" ")
    else:
        break
```

### Sample Output:

```
Enter size of the Numbers List : 10
Enter number: 7
Enter number: 15
Enter number: 18
Enter number: 22
Enter number: 25
Enter number: 30
Enter number: 33
Enter number: 36
Enter number: 40
Enter number: 45
40 36 30 22 18
```

3) Stack general operations using List

### Program:

```
def push(stk,item):
    stk.append(item)
    top=len(stk)-1
def pop(stk):
    if stk= =[ ]:
        return "Underflow"
    else:
        item=stk.pop( )
        if len(stk)= =0:
            top=None
```

```

else:
    top=len(stk)-1
    return item
def display(stk):
    if stk== []:
        print("Stack Empty")
    else:
        top=len(stk)-1
        print(stk[top],"<--top")
        for a in range(top-1,-1,-1):
            print(stk[a])
stack=[]
top=None
while True:
    print("Stack Operations...")
    print("1.Push")
    print("2.Pop")
    print("3.Display")
    print("4.Exit")
ch=int(input("Enter your choice (1-4): "))
if ch== 1:
    item=int(input("Enter item: "))
    push(stack,item)
elifch== 2:
    item=pop(stack)
    if item=="Underflow":
        print("Underflow! Stack is Empty")
    else:
        print("Popped Item is ", item)
elifch== 3:
    display(stack)
elifch== 4:
    break
else:
    print("Invalid Choice")

```

### Sample Output:

#### Stack Operations...

```

1.Push
2.Pop
3.Display
4.Exit

```

Enter your choice (1-4): 1

Enter item: 34

#### Stack Operations...

```

1.Push
2.Pop
3.Display
4.Exit

```

Enter your choice (1-4): 1

Enter item: 56

#### Stack Operations...

```

1.Push
2.Pop
3.Display

```

4.Exit

Enter your choice (1-4): 3

56 <--top

34

#### Stack Operations...

```

1.Push
2.Pop
3.Display
4.Exit

```

Enter your choice (1-4): 2

Popped Item is 56

## 2.COMMUNICATION NETWORKS

### SYLLABUS:

**Evolution of networking:** introduction to computer networks, evolution of networking (ARPANET, NSFNET, INTERNET)

**Data communication terminologies:** concept of communication, components of data communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching)

**Transmission media:** Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves)

**Network devices** (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card)

**Network topologies and Network types:** types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree)

**Network protocol:** HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP

**Introduction to web services:** WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting.

### Sample QP (Term2:2021.22)

1) Expand the following:SMTP, XML(SP2022) (1)

A) SMTP : Simple Mail Transfer Protocol  
XML : Extensible Markup Language

2) Out of the following, which is the fastest wired and wireless medium of transmission? (SP2022) (1)

Infrared, coaxial cable, optical fibre, microwave, Ethernet Cable

A) Wired – Optical Fibre  
Wireless – Microwave

3) Give two advantages and two disadvantages of star topology. (SP2022)(2)

A) Advantages :  
(i) Ease of service  
(ii) Centralized Control  
(iii) Easy to diagnose faults  
(iv) One device per connection

**Disadvantages:**

(i) Long cable length  
(ii) Difficult to expand  
(iii) Central node dependency (OR)

4) Define the following terms: www, web hosting (SP2022)(2)

A) WWW (World Wide Web): A set of protocols that allow you to access any document on the internet through the naming systems based on URLs.

**Web hosting:** Web hosting is a service that allows organizations and individuals to post a website or web page onto the server, which can be viewed by everyone on the Internet.

5) How is packet switching different from circuit switching. (SP2022)(2)

A) Packet Switching:  
(i) Uses store and forward concept to send messages

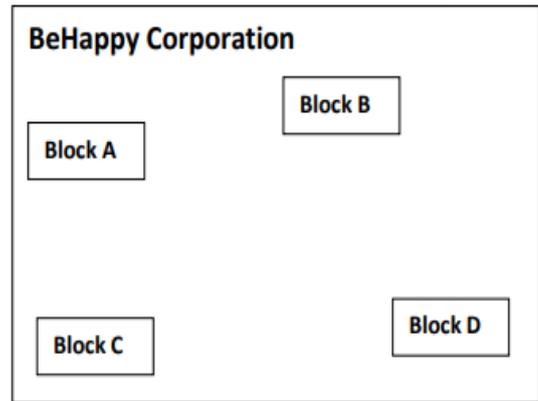
(ii) No physical path is actually established  
(iii) Message is divided into smaller parts, known as packets and then sent forward  
(iv) Tight upper limit on block size  
(v) Each data unit knows only the final receiver's address.

**Circuit Switching:**

(i) Physical connection is established between sender and receiver  
(ii) Each data unit knows the entire path from sender to receiver  
(iii) It does not follow store and forward concept.

6. Behappy Corporation has set up its new centre at Noida, Uttar Pradesh for its office and web-based activities. It has 4 blocks of buildings.

(SP2022) (4)



Distance between the various blocks is as follows:

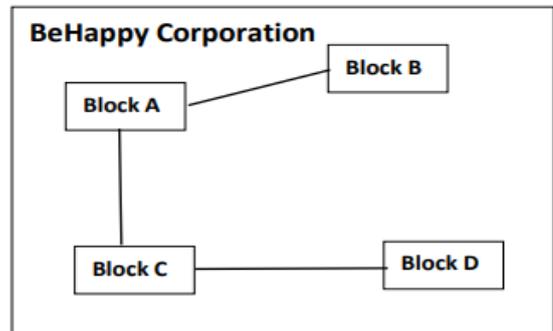
A to B	40m
B to C	120m
C to D	100m
A to D	170m
B to D	150m
A to C	70m

Number of computers in each block :

Block A	25
Block B	50
Block C	125
Block D	10

(a) Suggest and draw the cable layout to efficiently connect various blocks of buildings within the Noida centre for connecting the digital devices.

A)



b) Suggest the placement of the following device with justification. (i) Repeater (ii) Hub/Switch

**Repeater** : Between C and D, as the distance between them is 100 mts.

**Hub/Switch** : In each block as they help to share data packets within the devices of the network in each block.

(c) Which kind of network (PAN/LAN/WAN) will be formed if the Noida office is connected to its head office in Mumbai?

A) WAN

(d) Which fast and very effective wireless transmission medium should preferably be used to connect the head office at Mumbai with the centre at Noida?

A) Satellite.

### 2020.21

(1) Name the protocol that is used to send emails.

A) SMTP

(2) Name the transmission media best suitable for connecting to hilly areas.

A) Microwave/Radio wave

(3) Write the expanded form of Wi-Fi.

A) Wireless Fidelity

(4) Rearrange the following terms in increasing order of data transfer rates.

Gbps, Mbps, Tbps, Kbps, bps

A) Bps, Kbps, Mbps, Gbps, Tbps

(5) Differentiate between Web server and Web browser. Write any two popular web browsers.

A) **Web Browser:** A web browser is a software application for accessing information on the World Wide Web. When a user requests a web page from a particular website, the web browser retrieves the necessary content from a web server and then displays the page on the user's device.

**Web Server:** A web server is a computer that runs websites. The basic objective of the web server is to store, process and deliver web pages to the users. This intercommunication is done using Hypertext Transfer Protocol (HTTP).

**Popular web browsers:** Google Chrome, Mozilla Firefox, Internet Explorer, etc

(6) Expand the following terms:

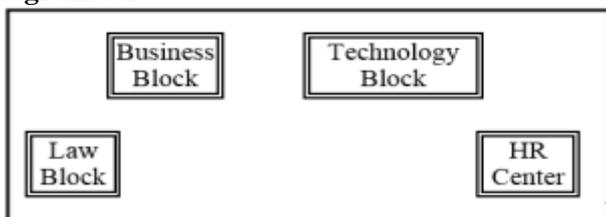
a) SMTP: Simple Mail Transfer Protocol

b) XML : eXtensible Markup Language

c) LAN : Local Area Network

d) IPR : Intellectual Property Rights

(7) MyPace University is setting up its academic blocks at Naya Raipur and is planning to set up a network. The University has 3 academic blocks and one Human Resource Center as shown in the diagram below:



**Center to Center distances between various blocks/center is as follows:**

Law Block to business Block	40m
Law Block to Technology Block	80m
Law Block to HR Center	105m
Business Block to Technology Block	30m
Business Block to HR Center	35m
Technology Block to HR Center	15m

**Number of computers in each of the Blocks/Center is as follows:**

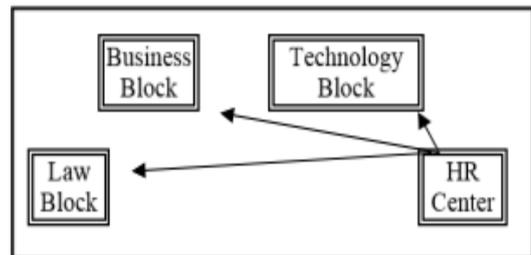
Law Block	15
Technology Block	40
HR Center	115
Business Block	25

(a) Suggest the most suitable place (ie Block/Center) to install the server of this University with a suitable reason.

A) Most suitable place to install the server is HR center, as this center has maximum number of computers.

(b) Suggest an ideal layout for connecting these Blocks/Centers for a wired connectivity.

A)



(c) Which device will you suggest to be placed/installed in each of these blocks/centers to efficiently connect all the computers within these blocks/centers.

A) Switch

(d) Suggest the placement of a Repeater in the network with justification.

A) Repeater may be placed when the distance between 2 buildings is more than 70 meter.

(e) The university is planning to connect its admission office in Delhi, which is more than 1250km from university. Which type of network out of LAN, MAN, or WAN will be formed? Justify your answer.

A) WAN, as the given distance is more than the range of LAN and MAN.

### 2019-20

(1) \_\_\_\_\_ is a network of physical objects embedded with electronics, software, sensors and network connectivity.

A) The internet of things Or Internet

(2) \_\_\_\_\_ is a device that forwards data packets along networks

A) Router

(3) \_\_\_\_\_ describes the maximum data transfer rate of a network or internet connection.

A) Band width

(4) Give the full forms of the following:

- (i) **HTTP** : Hyper text transfer protocol
- (ii) **FTP** : File transfer protocol
- (iii) **VoIP** : Voice Over Internet Protocol
- (iv) **SSH** : Secure Shell

(5) How many pair of wires are there in twisted pair cable (Ethernet)? What is the name of port, which is used to connect Ethernet cable to a computer or a laptop?

A) Two insulated copper wires, Ethernet port

(6) Software Development Company has set up its new center at Raipur for its office and web based activities. It has 4 blocks of buildings named Block A, Block B, Block C, Block D.

No. of Computers :

Block A	25
Block B	50
Block C	125
Block D	10

Shortest distances between various Blocks in meters:

Block A to Block B	60 m
Block B to Block C	40 m
Block C to Block A	30 m
Block D to Block C	50 m

(i) Suggest the most suitable place (ie block) to house the server of this company with a suitable reason.

A) Block C, it has maximum number of computer.

(ii) Suggest the type of networks to connect all the blocks with suitable reason.

A) LAN

(iii) The company is planning to link all the blocks through secure and high-speed wired medium. Suggest a way to connect all the blocks.

A) Star topology (or Diagram)

(iv) Suggest the most suitable wired medium for efficiently connecting each computer installed in every block out of the following network cables:

\* Coaxial Cable \* Ethernet Cable

\* Single Pair Telephone Cable

A) Ethernet Cable

(7) It is an internet service for sending written messages electronically from one computer to another. Write the service name.

A) e-mail

A) **Viruses** require an active host program or an already-infected and active operating system in order for viruses to run, cause damage and infect other executable files or documents. **Worms** are stand-alone malicious programs that can self-replicate.

(3) \_\_\_\_\_ is an example of **Public cloud**.

A) Google Drive (or any other correct example)

(4) Identify the type of cyber crime for the following situations:

(i) A person complains that Rs. 4.25 lacs have been fraudulently stolen from his/her account online via some online transactions in two days using NET BANKING.

A) Bank Fraud

(ii) A person complains that his/her debit/credit card is safe with him still some body has done shopping/ATM transaction on this card.

A) Identity Theft

(iii) A person complains that somebody has created a fake profile on Facebook and defaming his/her character with abusive comments and pictures.

A) Cyber Stalking

(5) As a citizen of India, What advise you should give to others for e-waste disposal?

A) As a citizen of India, We can advice the following principle of waste management : Reduce, Reuse and Recycle.

(6) What can be done to reduce the risk of Identity theft? Write any two ways.

A) (i) Don't Give out Personal Information to anyone.

(ii) Don't Carry Your Social Security Card.

(7) Ravi received a mail form IRS department ( as shown above). On clicking " ClickHere" ,he was taken to a site designed to imitate an official-looking website, such as IRS.gov. He uploaded some important information on it. Identify and explain the cyber crime being discussed in the above scenario.

**Ans)** It is an example of phishing. phishing is a term used to describe a malicious individual or group of individuals who scam users. They do so by sending e-mails or creating web pages that are designed to collect an individual's online bank, credit card, or other login information.

(8) Differentiate between open source and open data.

**Ans)** These licenses are based on the copyright protection of the code; thus, the "open" of open source refers to the source code. Difference between open data and open source is that of data versus application. Data can be numbers, locations, names, etc.

(9) Enumerate any two disability issues while teaching and using computers.

**Ans)** There are several types of disabilities that can affect computer accessibility. Although there is no single universally accepted classification, an indicative list of impairments includes the following : Visual impairments: blindness, low vision and color blindness.

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### Other Old Syllabus Questions from 2020 & 2021 Papers

(1) Your friend Ranjana complains that somebody has created a fake profile on Facebook and defaming her character with abusive comments and pictures. Identify the type of cybercrime for these situations. A) Cyber Stalking

(2) Differentiate between Viruses and Worms in context of networking and data communication threats.

**PRESENT SYLLABUS QUESTIONS**  
**FROM C++ SYLLABUS QUESTION PAPERS**

**Full Forms :**

It is very very important model. Will be asked for one or two marks. I have given previously asked full forms in bold. For an example, 2 or 3 old questions I have given below:

- 1) (i) MBPS (ii) WAN (iii) CDMA (iv) WLL (2019)  
2) 1. GSM 2. TDMA (2018 MP1)

**NETWORKS FULL FORMS**

**ARPANET** - Advanced Research Projects Agency Network  
**CDMA** - Code Division Multiple Access  
**TDMA** - Time Division Multiple Access  
**FTP** - FILE TRANSFER PROTOCOL  
**FSF** - FREE SOFTWARE FOUNDATION  
**GPRS** - General Packet Radio Service  
**GNU** - GNU's not Unix  
**GSM** - Global System for Mobile (communication)  
**HTML** - Hyper Text Markup Language  
**HTTP** - Hyper Text Transfer Protocol  
**MAN** - Metropolitan Area Network  
**MODEM** - Modulator - Demodulator  
**MBPS** - Mega Bytes Per Second  
**PPP** - Point To Point Protocol  
**SMS** - Short Message/Messaging Service  
**SMTP** - Simple Mail Transfer Protocol  
**TCP/IP** - Transfer Control Protocol/Internet Protocol  
**URL** - Uniform Resource Locator  
**VoIP** - Voice Over Internet Protocol  
**WAN** - Wide Area Network  
**WLL(WiLL)** - Wireless in Local Loop  
**WWW** - World Wide Web  
**XML** - eXtensible Markup Language

**THE ABOVE FULL FORMS ARE PREVIOUSLY ASKED QUESTIONS**

NSFNET - National Science Foundation Network  
LAN - Local Area Network  
PAN - Personal Area Network  
NIU - Network Interface Unit  
NIC - Network Interface Card  
TAP - Terminal Access Point(NIU = NIC = TAP)  
bps - Bits Per Second  
Bps - Bytes Per Second  
Kbps - Kilo bits Per Second  
KBps - Kilo Bytes Per Second  
Mbps - Mega Bits Per Second  
Gbps - Giga Bits Per Second  
GBps - Giga Bytes Per Second  
KHz - Kilo Hertz  
MHz - Mega Hertz  
GHz - Giga Hertz  
THz - Tera Hertz  
NFS - Network File System  
VGM - Voice Grade Medium  
DGM - Data Grade Medium  
STP - Shielded Twisted Pair  
UTP - Unshielded Twisted Pair  
LED - Light Emitting Diode

LD - Laser Diode  
OFC - Optic Fiber Cable, Fiber Optic Cable  
PDA - Personal Digital Assistants  
AM - Amplitude Modulation  
FM - Frequency Modulation  
PM - Phase Modulation  
A/F - Audio Frequency  
(Txd - Transmit, Rxd - Receive,  
RTS - Request to Send, CD - Carrier Detect,  
DSR - Data Set Ready, CTS - Clear to Send  
DTR - Data Terminal Ready)  
RJ45 - Registered Jack - 45  
BNC - Bayone - Neill - Concelman  
AUI - Attachment Unit Interface  
SNA - Systems Network Architecture  
VFIR - Very Fast Infrared  
URI - Uniform Resource Identifier  
URN - Uniform Resource Name  
P-P - Point to Point  
MIME - Mail and Multipurpose Internet Mail Extensions  
POP - Post Office Protocol  
NNTP - Network News Transfer Protocol  
HTTP - Hyper Text Transfer Protocol  
NTP - Network Time Protocol  
IMAP - Internet Mail Transfer Protocol  
SLIP - Serial Line Internet Protocol  
SIP - Session Initiation Protocol  
PPP - Point to Point Protocol  
IPCP - IP Control Protocol  
NCP - Network Control Protocol  
LCP - Link Control Protocol  
ITU - International Telecommunications Union  
PC - Personal Computer  
ISP - Internet Service Provider  
SIM - Subscriber Identity Module  
TDM - Time Division Multiplexing  
IDEN - Integrated Digital Enhanced Network  
WCDMA - Wideband CDMA  
PSTN - Public Switched Telephone Network  
1G, 2G, 3G, 4G, 5G - Fifth Generation  
UMTS - Universal Mobile Telecommunications System / Universal Mobile Telephone System  
EDGE - Enhanced Data rates for Global Evolution  
SMSC - Short Message Service Center  
HLR - Home Location Register  
Email - Electronic Mail  
Fax - Facsimile  
VSNL - Videsh Sanchar Nigam Limited  
DNS - Domain Name Server  
DHTML - Dynamic Hyper Text Markup Language  
DECnet - Digital's family of communication protocols  
IE - Internet Explorer  
WiFi - Wireless Fidelity  
LTE - Long Term Evolution  
HDTV - High Definition Television  
WiMAX - Worldwide Interoperability for Microwave Access  
ISD - International Subscriber Dialing  
ISDN - Integrated Services Digital Network  
IRC - Internet Relay Chat  
BWA - Broadband Wireless Access  
PHP - Hypertext Preprocessor  
(earlier called Personal Home Page)  
UNCITRAL - United Nation's Commission for International Trade related laws.  
IT Act - The Information Technology Amendment Act  
IP - Intellectual Property  
FAT - File Allocation Table

**Theory Question: Fundamental Concepts**

1) Mention one advantage of networking(2001). 1  
Ans: Advantages/Need for networking or Network Goals:

(i) **Resource Sharing:** Hardware Resources like printers, Softwares can be shared between all computers in the network.

(ii) **Reliability:** A file can have copies in two or more computers.

(iii) **Cost Factor**

(iv) **Communication Medium:** Using a network, it is possible for managers, working far apart, to prepare financial report of the company, etc

2) What was the role of ARPANET in the Computer Network? (D2010)1m (OR)

What is the significance of ARPANET in the network? (MP108-10) 1

Ans) The first evolution of network was jointly designed by The Advanced Research Projects Agency (ARPA) and Department of Defence (DoD) of united states in 1969 and was called ARPANET. It was an experimental project, which connected a few computers of some of the reputed universities of USA and DoD. ARPANET allowed access and use of computer resource sharing projects. This ARPANET was handed over to Defence Communication Agency (DCA) for further development.

3) What is NFS? (2001)1

4) Differentiate between Internet and Intranet.

Ans) Internet is a network of computer networks which operates world-wide using a common set of communications protocols. (D2006)1

Intranet is an inter-connected network within one organization that uses Web technologies for the sharing of information internally.

5) What do you understand by a backbone network? (1998)1

Ans: A backbone is central interconnecting structure that connects one or more networks just like the trunk of a tree or the spine of a human being.

**LAN,MAN,WAN,PAN**

1. Assume that 50 employees are working in an organization. Each employee has been allotted a separate workstation to work. In this way, all computers are connected through the server and all these workstations are distributed over two floors. In each floor, all the computers are connected to a switch. Identify the type of network? (2019MP1)

Ans: LAN(Local Area Network)

2) Daniel has to share the data among various computers of his two offices branches situated in the same city. Name the network (out of LAN, WAN, PAN and MAN) which is being formed in this process. (2017MP)1

Ans : MAN

3. Differentiate between PAN and LAN types of networks. (2016)1

PAN (Personal Area Network)	LAN (Local Area Network)
A personal area	LAN interconnects a high

network PAN is a computer network organized around an individual person.	number of access or node points or stations within a confined physical area upto a kilometer
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4. Which type of network (out of LAN, PAN and MAN) is formed, when you connect two mobiles using Bluetooth to transfer a Video. 2013

Ans: PAN (Personal Area Network)

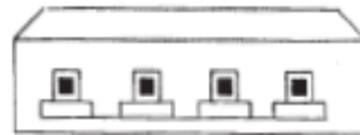
5 In networking, what-is WAN? How is it different from LAN? (2011)1

Ans A WAN (wide area network), is not restricted to a geographical location, although it might be confined within the bounds of a state or country. A WAN connects several LANs, and may be limited to an enterprise (a corporation or an organization) or accessible to the public. The technology is high speed and relatively expensive. The Internet is an example of a worldwide public WAN.

A LAN (local area network) is a group of computers and network devices connected together, usually within the same building or campus.

6) What is the difference between LAN and WAN? Ans LAN (Local Area Network): (OD2009)1

Interconnects a high number of access or node points or stations within a confined physical area. An example is the territory covered in a single office building that houses various departments/offices. All these areas are interconnected using a LAN.



**WAN (Wide Area Network)**

It is used to connect systems with no limitation of geographical area. It is used to serve many locations distributed over a large geographical area. A system of overnight teller machines used by a banking organisation covering the North of India is an example of a WAN. Internet is also an example of the same.

7) What is the difference between MAN and WAN? (2003)(1999) 1m

8) What is the difference between LAN and WAN? (2000) 1m

LAN	WAN
Diameter of not more than a few kilometers.	Span entire countries
A total data rate of atleast several Mbps	Data rate less than 1 Mbps(Megabits per Second)
Complete ownership by a single organization	Owned by multiple organization
Very low error rates	Comparatively higher error rates

9) What is the difference between LAN and MAN? (1998) 1

## SWITCHING TECHNIQUES

1) Name two switching techniques used to transfer data between two terminals (computers). (D2009)1

Ans Circuit Switching, Message Switching and Packet Switching

2) What is the difference between Message Switching technique and Packet Switching technique? (2015) (D2005)(2002) 1m

Ans:

Message Switching	Packet Switching
The source computer sends data ( <b>message</b> ) to the switching office, which stores data in a <b>buffer</b> . It then looks for a free link to another switching office and sends data to that office. This process continues until data is delivered to the destination computer	The source computer sends data (message) in a fixed size of <b>Packet</b> to the switching office, which stores data in <b>main memory</b> . It then looks for a free link to another switching office and sends data to that office. This process continues until data is delivered to the destination computer
Message Switching follows store and forward principle for complete message.	Packet Switching follows store and forward principle for fixed packets
No limit on block size.	Fixes an upper limit for packet size

3) Define Packet switching? (2004)1m

4) Compare any two Switching techniques. MP109-10)1

## GUIDED & UNGUIDED MEDIA

1. Your friend wishes to install a wireless network in his office. Explain him the difference between guided and unguided media. (2019MP)1

Answer: Guided media uses cables to connect computers, whereas unguided media uses waves.

2. Differentiate between communication using Optical Fiber and Ethernet Cable in context of wired medium of communication technologies.

Ans) (2017)2

Optical Fibre	Ethernet Cable
Very Fast	Slower as compared to Optical Fiber
Expensive	Less Expensive as compared to Optical Fiber
Immune to electromagnetic interference	Prone to electromagnetic interference

3. Out of the following, which is the fastest (i) wired and (ii) wireless medium of communication? (2015)1

Infrared, Coaxial Cable, Ethernet Cable, Microwave, Optical Fiber

Ans (i) Wired - Optical Fiber

(ii) Wireless - Infrared OR Microwave

4. Write two advantages of using an optical fibre cable over an Ethernet cable to connect two service stations, which are 200m away from each other.

Ans: Two advantages of using an optical fibre cable over an Ethernet cable: (2014) 1

Provides high speed

Electrical and magnetic interference does not affect the transmission.

5. How is Coaxial cable different from Optical Fibre? (D2008)(OD2005)1

Ans) Coaxial Cable: Comparatively Slow, Economic, convenient to lay down, used in Bus topology of networks

Optical Fibre: Very fast, expensive, reliable, no interference

6) Write one difference between Coaxial and optical cable? (2004)1

7) Write an advantage and a disadvantage of using optical fibre cables? (2003)1

8) Name two transmission media for networking.

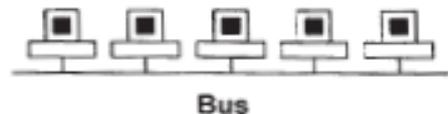
Ans) Optical Fiber, Ethernet Cable or twisted pair cable or UTP or STP, Co-axial Cable, Infrared, Radio Link OR Radiowave, Microwave link OR Microwave, Satellite Link. (OD2006) 1m

9) Name two communication channels used in networking and explain any one. (2001)2

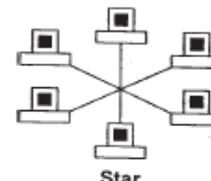
## TOPOLOGIES

1) Differentiate between Bus Topology and Star Topology of Networks. What are the advantages and disadvantages of Star Topology over Bus Topology? (2018)(D2009)(D2006)

Ans: Bus Topology: It is characterised by common transmission medium shared by all the connected hosts, managed by dedicated nodes. It offers simultaneous flow of data and control.



Star Topology: It is characterised by central switching node (communication controller) and unique path (point to point link) for each host. It is easy to add and remove additional hosts by upgrading the centralised node.



**Advantages of Star Topology over Bus Topology:** •

Faster communication as compared to Bus topology

• Independent line of connection allows freedom of removing or adding nodes from the network

\*Fault detection is easy.

\*Fault isolation is easy.

**Disadvantages of Star Topology over Bus**

**Topology:** • Expensive as compared to Bus topology

• Long cable length

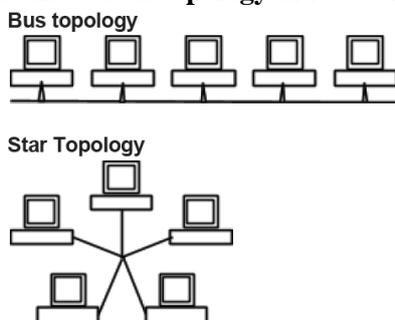
- 2) Write two advantages and two disadvantages for STAR topology? (2004)1
- 3) Write one advantage and one disadvantage of the following topologies in network: (2003)2  
i) STAR Topology ii) BUS Topology
- 4) Mention one difference between Linear and Star topologies in networking. (2001)1
- 5) Write the two advantages and two disadvantages of BUS Topology in network? (2000)2
- 6) Write two advantages and disadvantages of the following topologies in a Network. (2002)1  
i) BUS ii) RING
- 7) Give two advantages and disadvantages of following network topologies: (1999)2  
i) BUS ii) Tree

**8) Identify the type of topology on the basis of the following: (2017MP)**

- a. Since every node is directly connected to the server, a large amount of cable is needed which increases the installation cost of the network.
- b. It has a single common data path connecting all the nodes. 2

Ans: a. Star Topology b. Bus Topology

**9. Illustrate the layout for connecting 5 computers in a Bus and a Star topology of Networks. (2015)2**

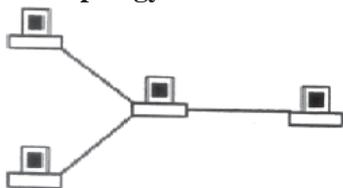


OR any valid illustration of Bus and Star Topology.

**10) Write one advantage of Bus Topology of network. Also, illustrate how 4 computers can be connected with each other using star topology of network. (2012)2**

Ans Cable length required for this topology is the least compared to other networks.

**Illustration of 4 computers connected with each other using star topology of network.**



**Theory Question : Communication Devices**

- 1) What is the purpose of using a repeater in the context of networking? (2003)1
- 2) What are repeaters? (1998)1
- A) A repeater is a network device that amplifies and restores signals for long distance transmission.

It is used in long network lines, which exceed the maximum rated distance for a single run.

**Repeaters are of two types:**

(i) **Amplifier** : amplifies all incoming signals over the network. (it amplifies both the signal and any concurrent noise)

(ii) **Repeater** : collected inbound packet and then retransmits the packet as if it were starting from the source station.

**3) What is a Hub? (D2008)1**

Ans) A Hub is used for a central connection between two or more computers on a network. (OR)

A Hub is a network device used to connect two or more computers. (OR)

A Hub is an unintelligent network device to connect computers.

**Hubs are of two types:**

(i) **Active hubs**: electrically amplify the signal as it moves from one connected device to another.

(ii) **Passive hubs**: allow the signal to pass from one computer to another without any change.

**4) What is a Modem? (OD2008)1**

Ans) **Modem** is a Modulation Demodulation device that converts analog signal to digital signal and vice versa.

**5) What is the purpose of using a MODEM? (2000)1**

**6) What is a Modem? (2002)1**

**7) What is a bridge? (1999)1**

A) A bridge is a device that lets you link two networks together. Bridges are smart enough to know which computers are on which side of the bridge, so they only allow those messages that need to get to the other side of the bridge. This improves performance on both sides of the bridge.

As a packet arrives at the bridge, the bridge examines the physical destination address of the packet. The bridge then decides whether or not to let the packet cross. (OR)

A bridge is a network device that establishes an intelligent connection between two local networks with the same standard but with different types of cables.

**8) What are Routers? (2000)1**

A) A router is a network device that is used to separate different segments in a network to improve performance and reliability. A router works like a bridge but can handle different protocols.

Compared to hubs and switches, routers are smarter still. Routers use a more complete packet address to determine which router or workstation should receive each packet next. Based on a network road map called routing table routers can help ensure that packets are travelling the most efficient paths to their destination. If a link between routers fails, the sending router can determine an alternate route to keep traffic moving.

**DATA TRANSFER UNITS**

**1) Define the term Bandwidth. Give any one unit of Bandwidth. (MP208-10)(MP209-10)1**

Ans) The amount of data that can be transmitted in a fixed amount of time is known as **bandwidth**.

For digital devices, the bandwidth is usually expressed in bits per second (bps) or bytes per second. For analog devices, the bandwidth is expressed in cycles per second, or Hertz (Hz). (OR)

Bandwidth is referred to the volume of information per unit of time that a transmission medium (like an Internet connection) can handle.

2) Which of the following is not an unit for data transfer rate? (D2010)1

- (i) bps (ii) abps (iii) gbps (iv) kbps

Ans. (ii)abps

3) Which of the following is not a unit for data transfer rate? (OD2010)1

- (i) mbps (ii) kbps (iii) sbps (iv) gbps

Ans. (iii) sbps

4) Which of the following unit measures the speed with which data can be transmitted from one node to another node of a network? Also, give the expansion of the suggested unit. (D2007)1

- i) Mbps ii) KMps iii) MGps

Ans) Mbps (Mega Bits Per Second)

**Theory Question : Protocols (1 Mark)**

1) Tarani Wadhwa is in India and she is interested in communicating with her uncle in Australia. She wants to show one of her own designed gadgets to him and also wants to demonstrate its working without physically going to Australia. Which protocol out of the following will be ideal for the same? 2019

- (i) POP3 (ii) SMTP (iii) VoIP (iv) HTTP

Ans)

2) Which protocol helps us to transfer files to and from a remote computer? (2016)

Ans) FTP (OR) Telnet (OR) TCP

3) What out of the following, will you use to have an audio-visual chat with an expert sitting in a far-away place to fix-up a technical issue? 2012

- (i) VoIP (ii) Email (iii) FTP

Ans (ii) VoIP

4) What is protocol? Which protocol is used to search information from internet using an internet browser? (D2009)

Ans) A protocol is the set of rules for governing communication between two communication devices. It also infers documentation, negotiations and establishment of rules. Protocol used to search information from internet using an internet browser is : TCP/IP OR HTTP

5) What is protocol? Which protocol is used to copy a file from/to a remotely located server?

Ans A protocol is the set of rules for governing communication between two communication devices. It also infers documentation, negotiations and establishment of rules. Protocol used to copy a file from/to a remotely located server is FTP (File Transfer Protocol) (OD2009)

6) What is the purpose of using FTP? (1999)1

7) What is the difference between HTTP and FTP? Ans: (2013)1

HTTP	FTP
1. HTTP, is a protocol used to transfer files from a web server onto a browser in order to view a Web page that is on the Internet.	1. FTP, is a protocol used to upload files from a workstation to a FTP server or download files from a FTP server to a workstation.
2. It is used to define the format and Transfer the web page.	2. It is used to transfer the file from one system to another.

**URL, Web Browsers**

1) What is the importance of URL in networking? (MP208-10) (MP209-10)1

Ans) URL stands for Uniform Resource Locator. Each page that is created for Web browsing is assigned a URL that effectively serves as the page's worldwide name or address. . A URL is also referred to as a Web address.

URL's have three parts: the protocol , the DNS name of the machine on which the page is located and a local name uniquely indicating the specific page(generally the filename).

2) Name any two common Web browsers. (OD2010)1

Ans. Internet explorer, Firefox, Netscape Navigator, Google Chrome, Opera, Safari

3) What is the purpose of using a Web Browser? Name any one commonly used Web Browser.

Ans) The Web Browser fetches the page requested, interprets the text and formatting commands that it contains, and displays the page properly formatted on the screen. (MP108-10)1

Example of a Web Browser:

Mozilla Firefox OR Internet Explorer OR Netscape Navigator OR Safari OR OPERA

4) Give one suitable example of each URL and Domain Name (2012)1

Ans URL Example:

http://www.w3schools.com/html/default.asp (OR) [www.youtube.com](http://www.youtube.com)

Domain Name Example: w3schools.com (OR)

**Theory Question : XML & HTML**

1. Differentiate between XML and HTML.

(2011) (OD2005) 1

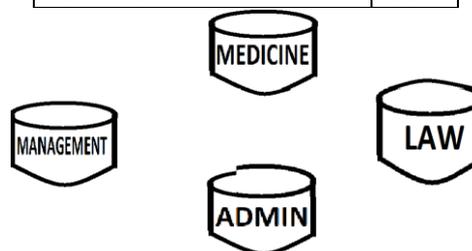
HTML	XML
Full form is Hyper Text Mark Up Language	Full form of XML is extensible mark up language
It contains predefined tags	It contains user defined tags
predominant markup language for the creation of web pages.	Initially visualized as a language for defining new document formats for the World Wide Web
It provides a means to describe the structure of text-based information in	XML is textbased formats that provide mechanisms for describing document

a document by denoting certain text as headings, paragraphs, lists, and to supplement that text with interactive forms, embedded images, and other objects using predefined Tags.	structures with the help of user defined Tags.
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Admin Block to Medicine Block	40
Admin Block to Law Block	60
Management Block to Medicine Block	50
Management Block to Law Block	110
Law Block to Medicine Block	40

**Number of Computers installed at various locations are as follows:**

Admin Block	150
Management Block	70
Medicine Block	20
Law Block	50



(i) Suggest the most suitable location to install the main server of this institution to get efficient connectivity.

(ii) Suggest the devices to be installed in each of these buildings for connecting computers installed within the building out of the following:

Modem Switch Gateway Router

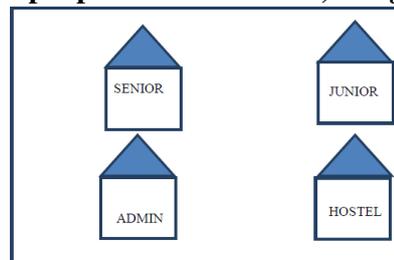
(iii) Suggest by drawing the best cable layout for effective network connectivity of the blocks having server with all the other blocks.

(iv) Suggest the most suitable wired medium for efficiently connecting each computer installed in every building out of the following network cables:

Co-axial cable Ethernet Cable  
Single Pair Telephone Cable.

**2. Multipurpose Public School, Bangluru is Setting up the network between its Different Wings of school campus. There are 4 wings Named as SENIOR(S), JUNIOR(J), ADMIN(A) and HOSTEL(H). 2019MP**

**Multipurpose Public School, Bangluru**



**Distance between various wings are given below:**

WingAtoWingS	100m
WingAtoWingJ	200m
WingAtoWingH	400m
WingStoWingJ	300m
WingStoWingH	100m
WingJtoWingH	450m

**2) When do you prefer XML over HTML and why? (MP209-10)1**

**Ans)** The first benefit of XML is that because you are writing your own markup language, you are not restricted to a limited set of tags defined by proprietary vendors.

Rather than waiting for standards bodies to adopt tag set enhancements (a process which can take quite some time), or for browser companies to adopt each other's standards (yeah right!), **with XML, you can create your own set of tags at your own pace.**

**Mislleneous**

**1) The following is a 32 bit binary number usually represented as 4 decimal values, each representing 8 bits, in the range 0 to 255 (known as octets) separated by decimal points. 140.179.220.200**

**What is it? What is its importance? (2017MP)1**

**Ans:** It is an IP Address. It is used to identify the computers on a network.

**18) What do you mean by IP Address? How is it useful in Computer Security? 1**

**Ans)** An Internet Protocol (IP) address is a numerical identification and logical address that is assigned to devices connected in a computer network. An IP Address is used to uniquely identify devices on the Internet and so one can quickly know the location of the system in the network.

**12. Write two characteristics of Wi-Fi. 2014 (1)**

**Ans: The characteristics of Wi-Fi are as follows:**

1. It allows the devices to connect with the network without any wire.
2. Group of devices can be connected with single internet connection.

**4 Marks Problem : Model 1 (All in a single city)**

**1. Jonathan and Jonathan Training Institute is planning to set up its centre in Amritsar with four specialized blocks for Medicine, Management, Law courses alongwith an Admission block in separate buildings. The physical distances between these blocks and the number of computers to be installed in these blocks are given below. You as a network expert have to answer the queries as raised by their board of directors as given in (i) to (iv). (2019)**

**Shortest distances between various locations in metres:**

Admin Block to Management Block	60
---------------------------------	----

Number of Computers installed at various wings are as follows:

Wings	NumberofComputers
WingA	20
WingS	150
WingJ	50
WingH	25

- (i) Suggest the best wired medium and draw the cable layout to efficiently connect various wings of Multipurpose Public School, Bangluru.
- (ii) Name the most suitable wing where the Server should be installed. Justify your answer.
- (iii) Suggest a device/software and its placement that would provide data security for the entire network of the School.
- (iv) Suggest a device and the protocol that shall be needed to provide wireless Internet access to all smartphone/laptop users in the campus of Multipurpose Public School, Bangluru.

### 3) CASE STUDY BASED QUESTION: (2018)

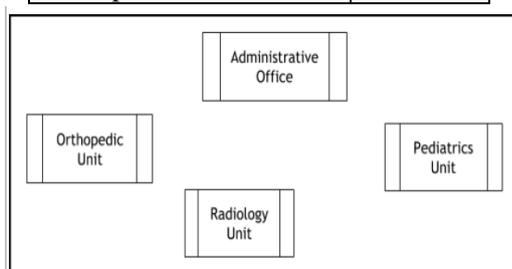
Ayurveda Training Educational Institute is setting up its centre in Hyderabad with four specialized departments for Orthopedics, Neurology and Pediatrics along with an administrative office in separate buildings. The physical distances between these department buildings and the number of computers to be installed in these departments and administrative office are given as follows. You, as a network expert, have to answer the queries as raised by them in (i) to (iv)

#### Shortest distances between various locations in meters:

Administrative office to Orthopedics Unit	55
Neurology Unit to Administrative Office	30
Orthopedics Unit to Neurology Unit	70
Pediatrics Unit to Neurology Unit	50
Pediatrics Unit to Administrative Office	40
Pediatrics Unit to Orthopedics Unit	110

#### Number of Computers installed at various locations are as follows:

Pediatrics Unit	40
Administrative Office	140
Neurology	50
Orthopedics Unit	80



- (i) Suggest the most suitable location to install the main server of this institution to get efficient connectivity.

- (ii) Suggest the best cable layout for effective network connectivity of the building having server with all the other buildings.

(iii) Suggest the devices to be installed in each of these buildings for connecting computers installed within the building out of the following:

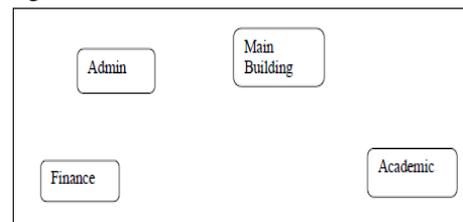
\* Gateway                      \* Modem                      \* Switch

(iv) Suggest the topology of the network and network cable for efficiently connecting each computer installed in each of the buildings out of the following:

**Topologies:** Bus Topology, Star Topology

**Network Cable:** Single Pair Telephone, Coaxial Cable, Ethernet Cable.

4) Sanskar University of Himachal Pradesh is setting up a secured network for its campus at Himachal Pradesh for operating their day-to-day office & web based activities. They are planning to have network connectivity between four buildings. Answer the question (i) to (iv) after going through the building positions in the campus & other details which are given below:



The distances between various buildings of university are given as:-

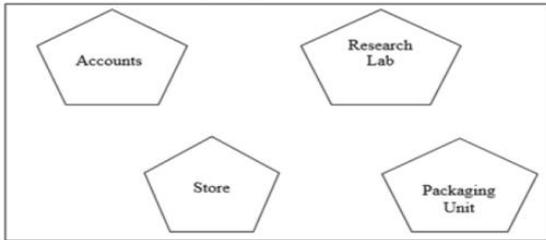
Building 1	Building 2	Distance(in mtrs.)
Main	Admin	50
Main	Finance	100
Main	Academic	70
Admin	Finance	50
Finance	Academic	70
Admin	Academic	60

Building	No. of Computers
Main	150
Admin	75
Finance	50
Academic	60

As a network expert, you are required to give best possible solutions for the given queries of the university administration:-

- (a) Suggest cable layout for the connections between the various buildings,
- (b) Suggest the most suitable building to house the server of the network of the university,
- (c) Suggest the placement of following devices with justification: 1. Switch/Hub 2. Repeater
- (d) Suggest the technology out of the following for setting-up very fast Internet connectivity among buildings of the university
1. Optical Fibre 2. Coaxial cable 3. Ethernet Cable

5) Rehaana Medicos Center has set up its new center in Dubai. It has four buildings as shown in the diagram given below: (2017MP)



Distances between various buildings are as follows:

Accounts to Research Lab	55 m
Accounts to Store	150 m
Store to Packaging Unit	160 m
Packaging Unit to Research Lab	60 m
Accounts to Packaging Unit	125 m
Store to Research Lab	180 m

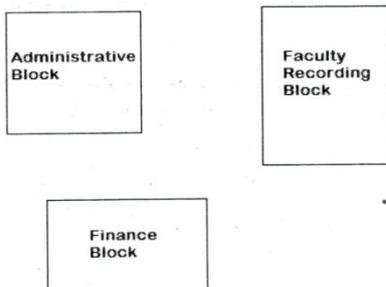
Number of Computers

Accounts	25
Research Lab	100
Store	15
Packaging Unit	60

As a network expert, provide the best possible answer for the following queries:

- Suggest a cable layout of connections between the buildings.
- Suggest the most suitable place (i.e. buildings) to house the server of this organization.
- Suggest the placement of the following device with justification: a) Repeater b) Hub/Switch
- Suggest a system (hardware/software) to prevent unauthorized access to or from the network.

6) Rovenza Communication International (RCI) is an online corporate training provider company for IT related courses. The company is setting up their new campus in Kolkata. You as a network expert have to study the physical locations of various blocks and the number of computers to be installed. In the planning phase, provide the best possible answer for the queries (i) to (iv) raised by them. 2013



Block to Block distance (in Mtrs.)

From	To	Distance
Administrative Block	Finance Block	60
Administrative Block	Faculty Recording Block	120
Finance Block	Faculty Recording Block	70

Expected computers to be installed in each block

Block	Computers
Administrative Block	30
Finance Block	20
Faculty Recording Block	100

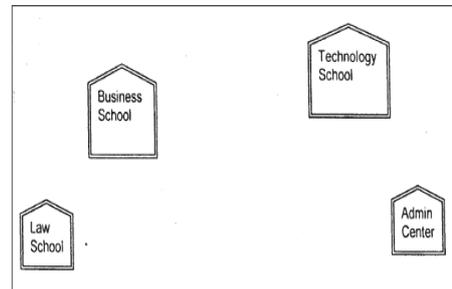
- Suggest the most appropriate block, where RCI should plan to install the server.
- Suggest the most appropriate layout to connect all three blocks for efficient communication.
- Which type of network out of the following is formed by connecting the computers of these three blocks?

LAN                      MAN                      WAN

- Which wireless channel out of the following should be opted by RCI to connect to students from all over the world?

Infrared                      Microwave                      Satellite

7. Great Studies University is setting up its Academic schools at Sunder Nagar and planning to set up a network. The university has 3 academic schools and one administration center as shown in the diagram below: (2011)



Center to center distances between various buildings is as follows :

Law School to Business School	60m
Law School to Technology School	90m
Law School to Admin Center	115m
Business School to Technology School	40m
Business School to Admin Center	45m
Technology School to Admin Center	25m

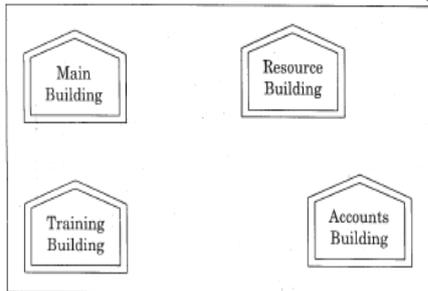
Number of Computers in each of the Schools/Center is follows:

Law School	25
Technology School	50
Admin Center	125
Business School	35

- Suggest the most suitable place (i.e. School/Center) to install the server of this university with a suitable reason.
- Suggest an ideal layout for connecting these schools/ center for a wired connectivity.
- Which device will you suggest to be placed/installed in each of these schools /center to efficiently connect all the computers within these schools / center?
- The university is planning to connect its admission office in the closest big city, which is more than 350 km

from the university. Which type of network out of LAN, MAN or WAN will be formed? Justify your answer.

8) “Vidya for All” is an educational NGO. It is setting up its new campus at Jaipur for its web-based activities. The campus has four buildings as shown in the diagram below: (2010)



Center to center distances between various buildings as per architectural drawings (in meters) is as follows:

Main Building to Resource Building	120 m
Main Building to Training Building	40 m
Main Building to Accounts Building	135 m
Resource Building to Training Building	125 m
Resource Building to Accounts Building	45 m
Training Building to Accounts Building	110 m

Expected Number of Computers in each Building is as follows:

Main Building	15
Resource Building	25
Training Building	250
Accounts Building	10

(e1) Suggest a cable layout of connections between the buildings.

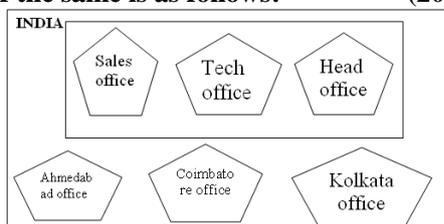
(e2) Suggest the most suitable place (i.e. building) to house the server for this NGO. Also, provide a suitable reason for your suggestion.

(e3) Suggest the placement of the following devices with justification: (i) Repeater (ii) Hub/Switch

(e4) The NGO is planning to connect its International office situated in Delhi. Which out of the following wired communication links, will you suggest for a very high speed connectivity ?

- (i) Telephone Analog Line(ii) Optical Fiber
- (iii) Ethernet Cable

9) “Hindustan Connecting World Association “is planning to start their offices in four major cities in India to provide regional IT infrastructure support in the field of Education & Culture. The company has planned to set up their head office in New Delhi in three locations and have named their New Delhi offices as “Sales Office “,”Head Office “and “Tech Office “.The company’s regional offices are located at “Coimbatore”,”Kolkata”and “Ahmadabad”. A rough layout of the same is as follows: (2007)



Approximate distance between these offices as per network survey team is as follows:

Place From	Place To	Distance
Head Office	Sales Office	10 KM
Head Office	Tech Office	70 KM
Head Office	Kolkata Office	1291KM
Head Office	Ahmadabad Office	790 KM
Head Office	Coimbatore Office	1952KM

In continuation of the above, the company experts have planned to install the following number of computers in each of their offices:

Head Office	100
Sales Office	20
Tech Office	50
Kolkata Office	50
Ahmadabad Office	50
Coimbatore Office	50

1) Suggest network type(out of LAN,MAN,WAN) for connecting each of the following set of their offices:

Head Office and Tech Office

Head Office and Coimbatore Office

2) Which device you will suggest to be produced by the company for connecting all the computers with in each of their offices out of the following devices?

Modem Telephone Switch/Hub

3) Which of the following communication media, will suggest to be procured by the company for connecting their local offices in New Delhi for very effective and fast communication?

Ethernet Cable, Optical Fibre, Telephone Cable

4) Suggest a cable/writing layout for connecting the company’s local offices located in New Delhi. Also, suggest an effective method /technology for connecting the company’s regional offices at “Kolkata”,”Coimbatore”and “Ahmadabad”.

10) INDIAN PUBLIC SCHOOL in Darjeeling is setting up the network between its different wings. There are 4 wings named as SENIOR(S), JUNIORS (J), ADMIN (A) and HOSTEL (H).

(2006)

Distance between various wings is given below:

Number of Computers:

Wing A	10
Wing S	200
Wing J	100
Wing H	50

i) Suggest a suitable Topology for networking the computer of all wings.

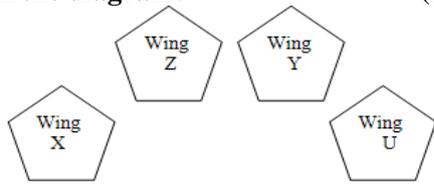
ii) Name the wing where the server to be installed. Justify your answer.

iii) Suggest the placement of Hub/Switch in the network.

iv) Mention in economic technology to provide internet accessibility to all wings.

11) The Cyber Mind Organization has set up its new Branch at Mizoram for its office and web

based activities. It has 4 Wings of buildings as shown in the diagram: (2005)



Center to center distances between various blocks

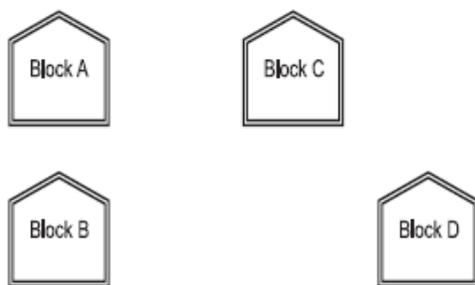
Wing X to Wing Z	40 m
Wing Z to Wing Y	60 m
Wing Y to Wing X	135 m
Wing Y to Wing U	70 m
Wing X to Wing U	165 m
Wing Z to Wing U	80 m

Number of computers

Wing X	50
Wing Z	130
Wing Y	40
Wing U	15

- 1) Suggest a most suitable cable layout of connections between the Wings, and topology.
- 2) Suggest the most suitable place (i.e., Wing) to house the server of this organization with a suitable reason, with justification.
- 3) Suggest the placement of the following devices with justification:
  - (i) Repeater
  - (ii) Hub/Switch
- 4) The organization is planning to link its head office situated in Delhi with the offices at Srinagar. Suggest an economic way to connect it; the company is ready to compromise on the speed of connectivity. Justify your answer.

12) Knowledge Supplement Organisation has set up its new center at Mangalore for its office and web based activities. It has 4 blocks of buildings as shown in the diagram below: (MP109-10)4



Center to center distances between various blocks

Block A to Block B	50 m
Block B to Block C	150 m
Block C to Block D	25 m
Block A to Block D	170 m
Block B to Block D	125 m
Block A to Block C	90 m

Number of Computers

Block A	25
Block B	50
Block C	125
Block D	10

- e1) Suggest a cable layout of connections between the blocks.

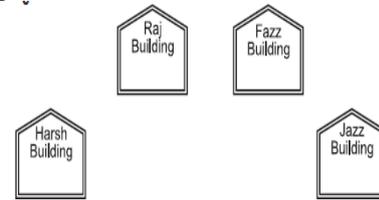
e2) Suggest the most suitable place (i.e. block) to house the server of this organization with a suitable reason.

e3) Suggest the placement of the following devices with justification

- (i) Repeater
- (ii) Hub/Switch

e4) The organization is planning to link its front office situated in the city in a hilly region where cable connection is not feasible, suggest an economic way to connect it with reasonably high speed?

13) Ravya Industries has set up its new center at Kaka Nagar for its office and web based activities. The company compound has 4 buildings as shown in the diagram below: (MP209-10)4



Center to center distances between various buildings is as follows:

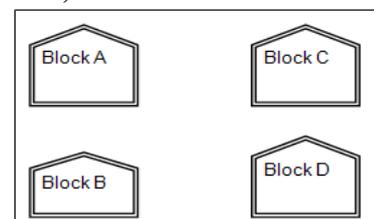
Harsh Building to Raj Building	50 m
Raj Building to Fazz Building	60 m
Fazz Building to Jazz Building	25 m
Jazz Building to Harsh Building	170 m
Harsh Building to Fazz Building	125 m
Raj Building to Jazz Building	90 m

Number of Computers in each of the buildings is follows:

Harsh Building	15
Raj Building	150
Fazz Building	15
Jazz Building	25

- e1) Suggest a cable layout of connections between the buildings.
- e2) Suggest the most suitable place (i.e. building) to house the server of this organization with a suitable reason.
- e3) Suggest the placement of the following devices with justification:
  - (i) Internet Connecting Device/Modem
  - (ii) Switch
- e4) 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.

14) Knowledge Supplement Organisation has set up its new center at Mangalore for its office and web based activities. It has 4 blocks of buildings as shown in the diagram below: (MP108-09)



Center to center distances between various blocks

Block A to Block B	50 m
Block B to Block C	150 m
Block C to Block D	25 m
Block A to Block D	170 m
Block B to Block D	125 m
Block A to Block C	90 m

Number of Computers

Block A	25
Block B	50
Block C	125
Block D	10

e1) Suggest a cable layout of connections between the blocks.

e2) Suggest the most suitable place (i.e. block) to house the server of this organisation with a suitable reason.

e3) Suggest the placement of the following devices with justification

- i) Repeater      ii) Hub/Switch

e4) The organization is planning to link its front office situated in the city in a hilly region where cable connection is not feasible, suggest an economic way to connect it with reasonably high speed?

**ANSWERS**

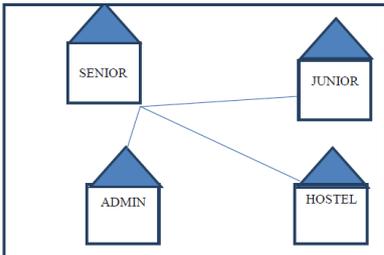
(1) (i) Admin Block (ii) Switch

(iii) Best Cable Layout:

(iv) Ethernet Cable

\*\*\*

2. (i) Best wired medium: Optical Fibre OR CAT5 OR CAT6 OR CAT7 OR CAT8 OR Ethernet Cable



(ii) Wing Senior(S)- Because it has maximum number of computers.

(iii) Firewall - Placed with the server at Senior

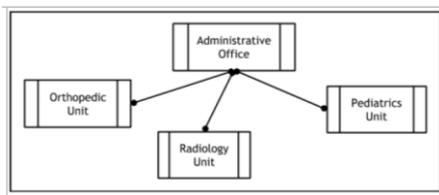
(iv) Device Name: WiFi Router OR WiMax OR RF Router OR Wireless Modem OR RF Transmitter

Protocol : WAP OR 802.16 OR TCP/IP OR VOIP OR MACP OR 802.11

\*\*\*

3) (i) Administrative Office

(ii)



OR

Administrative Office is connected to Orthopedic, Radiology, Pediatrics units directly in a Star Topology

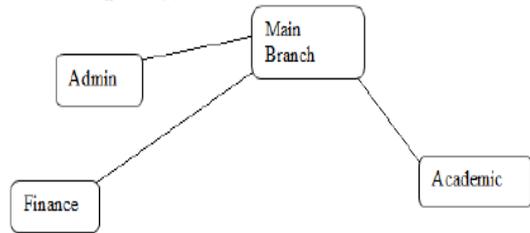
(iii) Switch

(iv) Topology : Star Topology

Network Cable: Ethernet Cable / Coaxial Cable

\*\*\*

4) (a) Star topology



(b) Server should be placed at Main Building as it has the maximum number of computers.

(c) Hub/Switch each would be needed in all the buildings to interconnect the group of cables from the different computers in each building

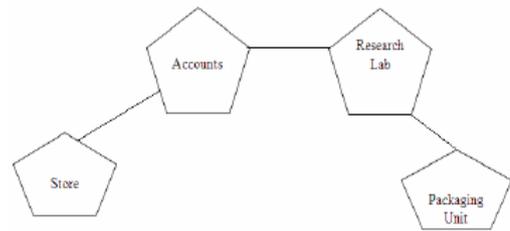
A repeater needs to be placed along the wire between main building & finance building as the distance between them is more than 70 mtr.

(d) Optical Fibre

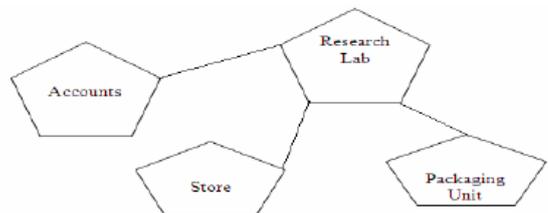
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5) i)

(i) Layout 1



Layout 2



ii) The most suitable place/ building to house the server of this organization would be building Research Lab, as this building contains the maximum number of computers.

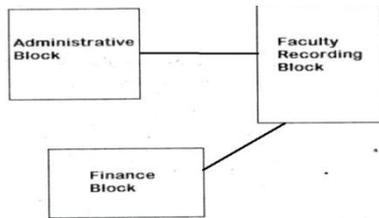
iii) a) For layout1, since the cabling distance between Accounts to Store is quite large, so a repeater would ideally be needed along their path to avoid loss of signals during the course of data flow in this route. For layout2, since the cabling distance between Store to Research Lab is quite large, so a repeater would ideally be placed.

b) In both the layouts, a Hub/Switch each would be needed in all the buildings to interconnect the group of cables from the different computers in each building.

iv) Firewall

6) (i) Faculty Recording Block is most appropriate block to install the server.

(ii)

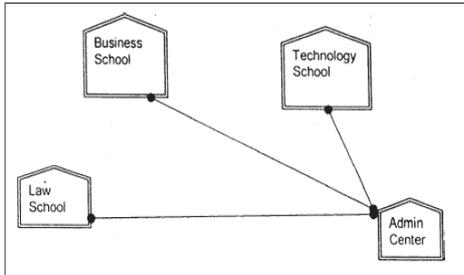


(iii) LAN (iv) Satellite

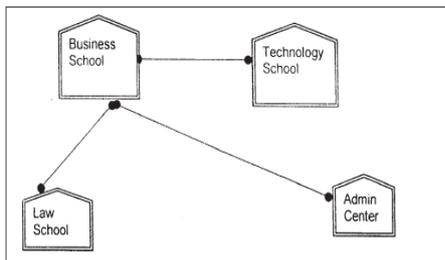
7.(i) Option 1 : Admin center as it has the most number of computers

Option 2. Business School as it will require minimum cable length to connect other blocks

(ii) Option 1:



Option 2:

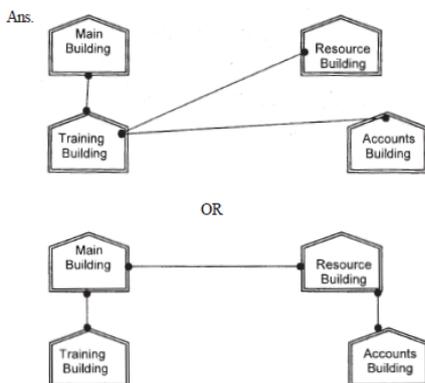


(iii) Switch

(iv) WAN as the distance is more than the range of LAN or MAN.

\*\*\*

8) e1)



(e2) Training Building as it contains maximum number of computers.

(e3)(i) A Repeater should be placed when the distance between any two connecting buildings exceeds 70 m.

(ii) Every building will need one Hub / Switch, to send signals to all of the workstations connected to it

(e4) (ii) Optical Fibre

\*\*\*

9)1) Head Office and Tech Office: LAN

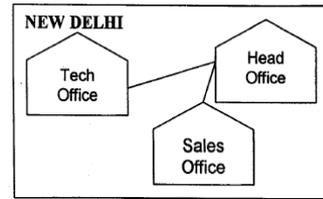
Head Office and Coimbatore Office: WAN

2) Switch / Hub

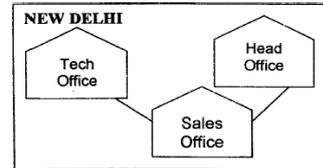
3) Optical Fibre

4) Optical Fiber/Star Topology

Wireless



OR



\*\*\*

10) i) Star Topology OR Bus Topology

ii) Wing S as it has the maximum number of computers (OR) Wing A as it is placed in the Admin Wing (for security reasons)

iii) Inside all the four wings

iv) Any one of the following:

Dialup, TCP/IP, DSL, Modem, Broadband, Cable, ISDN, Telephone Line, Co-axial, Ethernet Cable, Radiowave

\*\*\*

11)1)

2) Wing Z as it has largest number of computers

3)

4) TCP/IP Dial Up (Most Suitable answer 1) (OR)

Telephone Link (Most Suitable answer 2) (OR)

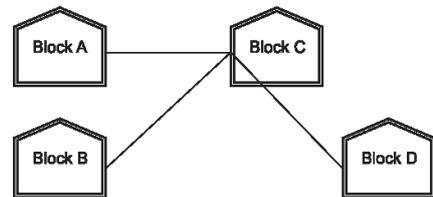
Microwave (OR) Radio Link/Radio Wave (OR)

Satellite Link (OR) WAN

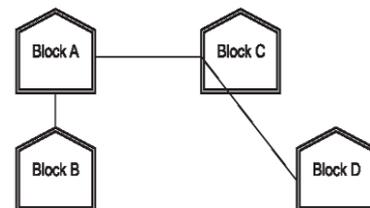
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12)e1).

Layout Option 1:



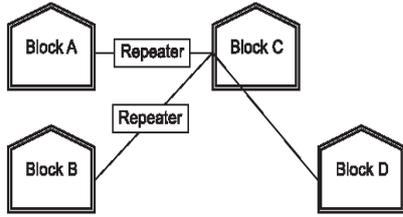
Layout Option 2: Since the distance between Block A and Block B is quite short



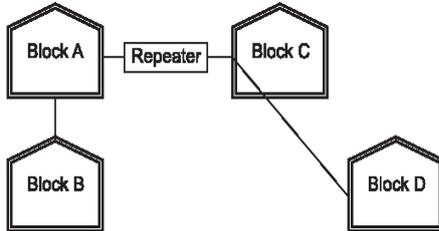
e2) The most suitable place / block to house the server of this organisation would be Block C, as this block contains the maximum number of computers, thus decreasing the cabling cost for most of the computers as well as increasing the efficiency of the maximum computers in the network.

e3) (i) For Layout 1, since the cabling distance between Blocks A and C, and that between B and C are quite large, so a repeater each, would ideally be

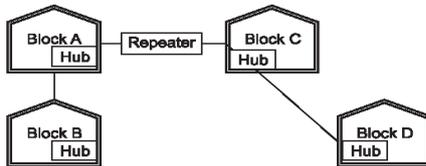
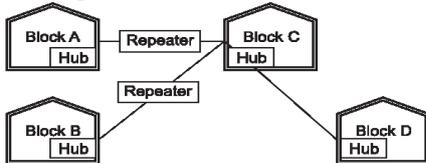
needed along their path to avoid loss of signals during the course of data flow in these routes.



For layout 2, since the distance between Blocks A and C is large so a repeater would ideally be placed in between this path.



(ii) In both the layouts, a hub/switch each would be needed in all the blocks, to interconnect the group of cables from the different computers in each block.

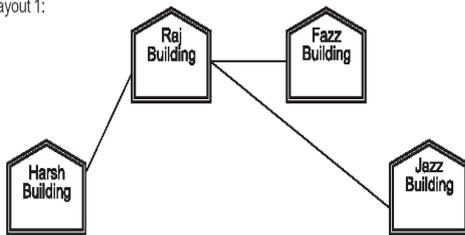


e4) The most economic way to connect it with a reasonable high speed would be to use radio wave transmission, as they are easy to install, can travel long distances, and penetrate buildings easily, so they are widely used for communication, both indoors and outdoors. Radio waves also have the advantage of being omni directional, which is they can travel in all the directions from the source, so that the transmitter and receiver do not have to be carefully aligned physically.

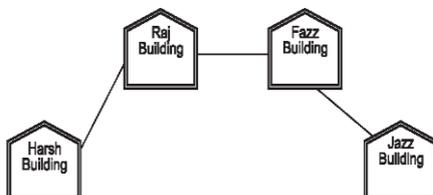
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13) e1)

Layout 1:



Layout 2: Since the distance between Fazz Building and Jazz Building is quite short



e2) The most suitable place / block to house the server of this organisation would be Raj Building, as this

block contains the maximum number of computers, thus decreasing the cabling cost for most of the computers as well as increasing the efficiency of the maximum computers in the network.

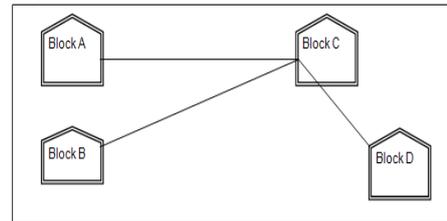
e3) (i) Raj Building

(ii) In both the layouts, a hub/switch each would be needed in all the buildings, to interconnect the group of cables from the different computers in each block

e4) The type of network that shall be formed to link the sale counters situated in various parts of the same city would be a MAN, because MAN (Metropolitan Area Networks) are the networks that link computer facilities within a city.

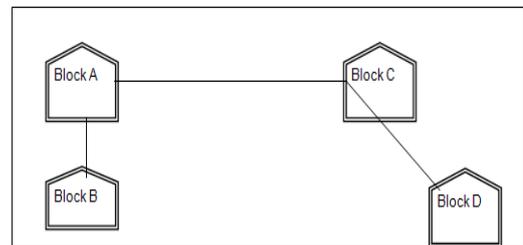
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14) e1) Layout 1:



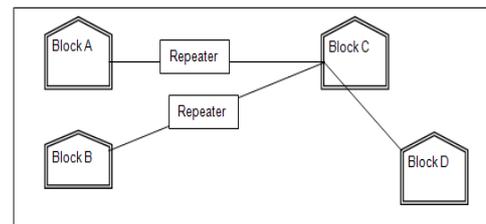
Layout Option 2:

Since the distance between Block A and Block B is quite short

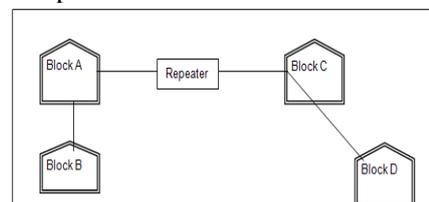


e2) The most suitable place / block to house the server of this organisation would be Block C, as this block contains the maximum number of computers, thus decreasing the cabling cost for most of the computers as well as increasing the efficiency of the maximum computers in the network.

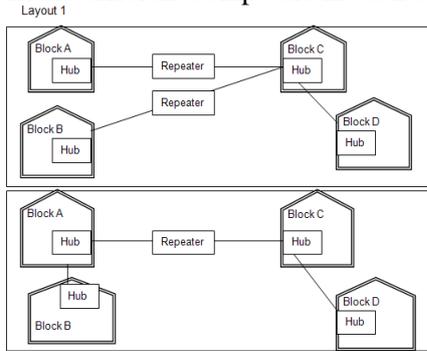
e3) For Layout 1, since the cabling distance between Blocks A and C, and that between B and C are quite large, so a repeater each, would ideally be needed along their path to avoid loss of signals during the course of data flow in these routes



For layout 2, since the distance between Blocks A and C is large so a repeater would ideally be placed in between this path



In both the layouts, a hub/switch each would be needed in all the blocks, to interconnect the group of cables from the different computers in each block

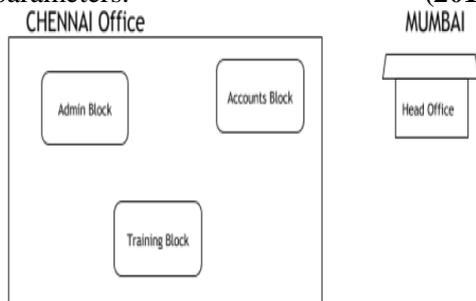


e4) The most economic way to connect it with a reasonable high speed would be to use radio wave transmission, as they are easy to install, can travel long distances, and penetrate buildings easily, so they are widely used for communication, both indoors and outdoors. Radio waves also have the advantage of being omni directional, which is they can travel in all the directions from the source, so that the transmitter and receiver do not have to be carefully aligned physically.

**4Marks Problem : Model 2 (Between 2 distant places)**

1)Hi Standard Tech Training Ltd is a Mumbai based organization which is expanding its office set-up to Chennai. At Chennai office compound, they are planning to have 3 different blocks for Admin, Training and Accounts related activities. Each block has a number of computers, which are required to be connected in a network for communication, data and resource sharing.

As a network consultant, you have to suggest the best network related solutions for them for issues/problems raised by them in (i) to (iv), as per the distances between various blocks/locations and other given parameters. (2017)



Shortest distances between various blocks/locations:

Admin Block to Account Block	300 Metres
Accounts Block to Training Block	150 Metres
Admin Block to Training Block	200 Metres
MUMBAI Head Office to CHENNAI Office	1300 KM

Number of computers installed at various blocks are as follows:

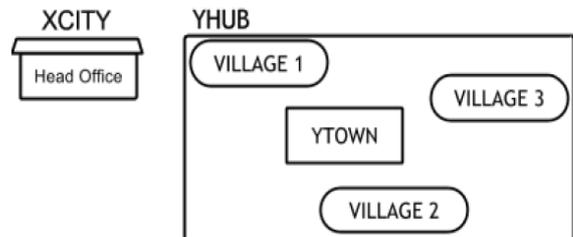
Training Block	150
Accounts Block	30
Admin Block	40

i) Suggest the most appropriate block/ location to house the SERVER in the CHENNAI Office (out of the 3 blocks) to get the best and effective connectivity. Justify your answer.

- ii) Suggest the best wired medium and draw the cable layout (Block to Block) to efficiently connect various blocks within the CHENNAI office compound.
- iii) Suggest a device/software and its placement that would provide data security for the entire network of the CHENNAI office.
- iv) Suggest a device and the protocol that shall be needed to provide wireless Internet access to all smartphone/laptop users in the CHENNAI office

2)Intelligent Hub India is a knowledge community aimed to uplift the standard of skills and knowledge in the society. It is planning to setup its training centers in multiple towns and villages pan India with its head offices in the nearest cities. They have created a model of their network with a city, a town and 3 villages as follows: (2016) 4

As a network consultant, you have to suggest the best network related solutions for their issues/problems raised in (i) to (iv), keeping in mind the distances between various locations and other given parameters.



Shortest distances between various locations:

VILLAGE 1 to YTOWN	2 KM
VILLAGE 2 to YTOWN	1.5 KM
VILLAGE 3 to YTOWN	3 KM
VILLAGE 1 to VILLAGE 2	3.5 KM
VILLAGE 1 to VILLAGE 3	4.5 KM
VILLAGE 2 to VILLAGE 3	3.5 KM
CITY Head Office to YHUB	30 Km

Number of Computers installed at various locations are as follows:

YTOWN	100
VILLAGE 1	10
VILLAGE 2	15
VILLAGE 3	15
CITY OFFICE	5

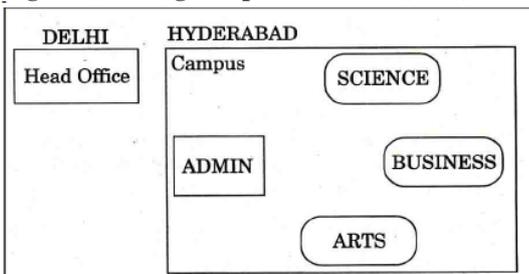
Note: In Villages, there are community centers, in which one room has been given as training center to this organization to install computers. The organization has got financial support from the government and top IT companies.

- (i) Suggest the most appropriate location of the SERVER in the YHUB (out of the 4 locations), to get the best and effective connectivity. Justify your answer.
- (ii) Suggest the best wired medium and draw the cable layout (location to location) to efficiently connect various locations within the YHUB.
- (iii) Which hardware device will you suggest to connect all the computers within each location of YHUB?
- (iv) Which service/protocol will be most helpful to conduct live interactions of Experts from Head Office and people at YHUB locations?

3) Xcelencia Edu Services Ltd. is an educational organization. It is planning to set up its India campus at Hyderabad with its head office at Delhi. The Hyderabad campus has 4 main buildings -

**ADMIN, SCIENCE, BUSINESS and MEDIA.**

You as a network expert have to suggest the best network related solutions for their problems raised in (i) to (iv), keeping in mind the distances between the buildings and other given parameters. (2015)



Shortest Distances between various buildings:

ADMIN to SCIENCE	65M
ADMIN to BUSINESS	100m
ADMIN to ARTS	60M
SCIENCE to BUSINESS	75M
SCIENCE to ARTS	60M
BUSINESS to ARTS	50M
DELHI Head Office to HYDERABAD Campus	1600KM

Number of Computers installed at various building are as follows:

ADMIN	100
SCIENCE	85
BUSINESS	40
ARTS	12
DELHI Head Office	20

(i) Suggest the most appropriate location of the server inside the HYDERABAD campus (out of the 4 buildings), to get the best connectivity for maximum no. of computers. Justify your answer.

(ii) Suggest and draw the cable layout to efficiently connect various buildings 'within the HYDERABAD campus for connecting the computers.

(iii) Which hardware device will you suggest to be procured by the company to be installed to protect and control the internet uses within the campus?

(iv) Which of the following will you suggest to establish the online face-to-face communication between the people in the Admin Office of HYDERABAD campus and DELHI Head Office?

(a) E- mail (b) Text Chat

(c) Video Conferencing (d) Cable TV

**4) Tech Up Corporation (TUC) is a professional consultancy company. The 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 (iv) below: 2014**

**Physical locations of the blocks of TUC**

CONFERENCE BLOCK

HUMAN RESOURCE BLOCK

FINANCE BLOCK

Block to Block distances (in Mtrs.)

Block (From)	Block (To)	Distance
Human Resource	Conference	60
Human Resource	Finance	120
Conference	Finance	80

Expected Number of Computer to be installed in each block

Block	Computers
Human Resource	125
Finance	25
Conference	60

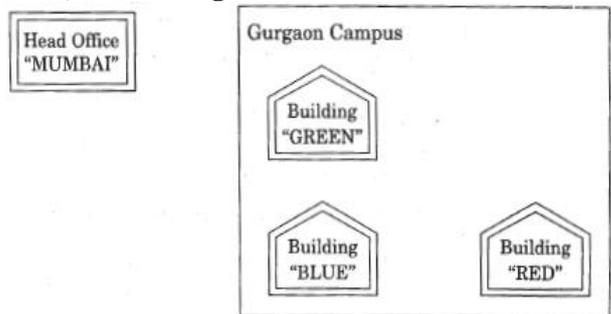
(i) What will be the most appropriate block, where TU should plan to install their server?

(ii) Draw a cable layout to connect all the buildings in the most appropriate manner for efficient communication.

(iii) What will be the possible connectivity out of the following you will suggest to connect the new setup of offices Hyderabad with its London based office.

Infrared Satellite Link Ethernet Cable

**5) Workalot Consultants are setting up a secured network for their office campus at Gurgaon for their day-to-day office and web-based activities. They are planning to have connectivity between 3 buildings and the head office situated in Mumbai. Answer the questions (i) to (iv) after going through the building positions in the campus and other details, which are given below: (2012)3**



Distances between various buildings

Building "GREEN" to Building "RED"	110 m
Building "GREEN" to Building "BLUE"	45 m
Building "BLUE" to Building "RED"	65 m
Gurgaon Campus to Head Office	1760 KM

Number of Computers

Building "GREEN"	32
Building "RED"	150
Building "BLUE"	45
Head Office	10

(i) Suggest the most suitable place (i.e. building) to house the server of this organization. Also give a reason to justify your location.

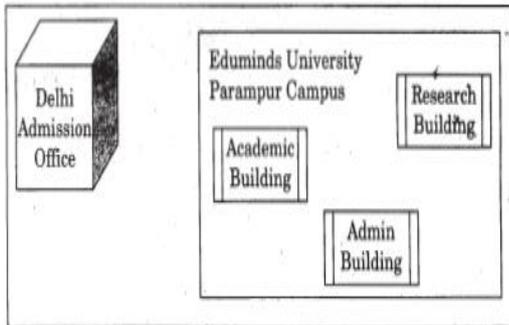
(ii) Suggest a cable layout of connections between the buildings inside the campus.

(iii) Suggest the placement of the following devices with justification: (1) Switch (2) Repeater

(iv) The organization is planning to provide a high speed link with its head office situated in the MUMBAI using a wired connection. Which of the following cable will be most suitable for this job?

- (i) Optical Fibre (ii) Co-axial Cable (iii) Ethernet Cable

6) Eduminds University of India is starting its first campus in a small town Parampur of Central India with its center admission office in Delhi. The university has 3 major buildings comprising of Admin Building, Academic Building and Research Building in the 5 KM area Campus. As a network expert, you need to suggest the network plan as per (E1) to (E4) to the authorities keeping in mind the distances and other given parameters. (2009 OD)



Expected Wire distances between various locations:

Research Building to Admin Building	90m
Research Building to Academic Building	80m
Academic Building to Admin Building	15m
Delhi Admission Office to Parampur Campus	1450 km

Expected number of computers to be installed at various locations in the university are as follows:

Research Building	20
Academic Building	150
Admin Building	35
Delhi Admission Office	5

(E1) Suggest to the authorities, the cable layout amongst various buildings inside the university campus for connecting the buildings.

(E2) Suggest the most suitable place (i.e. building) to house the server of this organisation, with a suitable reason.

(E3) Suggest an efficient device from the following to be installed in each of the buildings to connect all the computers :

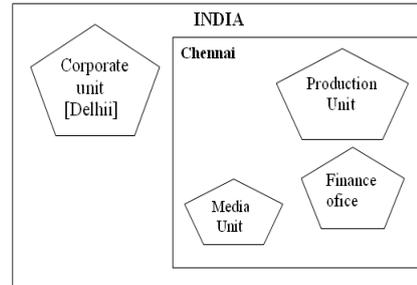
- (i) GATEWAY (ii) MODEM (iii) SWITCH

(E4) Suggest the most suitable (very high speed) service to provide data connectivity between Admission Building located in Delhi and the campus located in Par am pur from the following options:

- Telephone line  Fixed-Line Dial-up connection  
 Co-axial Cable Network  GSM  
 Leased line  Satellite Connection

7) "China Middleton Fashion" is planning to expand their network in India, starting with two cities in India to provide infrastructure for distribution of their product. The company

has planned to setup their main office in Chennai at three different locations and have named their offices as "Production Unit", "Finance Unit" and "Media Unit ".The Company has its corporate unit in Delhi. A rough layout of the same is as follows: (2008 OD)



Approximate distance between these Units is as follows:

From	To	Distance
Production Unit	Finance Unit	70 Mtr
Production Unit	Media Unit	15 KM
Production Unit	Corporate Unit	2112 KM
Finance Unit	Media Unit	15 KM

In continuation of the above, the company experts have planned to install the following number of computers in each of their offices:

Production Unit	158
Finance Unit	79
Media Unit	90
Corporate Unit	51

1) Suggest the kind of network required (out of LAN, MAN, WAN) for connecting each of the following office units: i) Production Unit and Media Unit

ii) Production Unit and Finance Unit

2) Which one of the following devices will you suggest for connecting all the computers with in each of their office units? i) Switch/Hub ii) Modem iii) Telephone

3) Which of the following communication media, you will suggest to be procured by the company for connecting their local office units in Chennai for very effective (High Speed) communication?

i) Telephone cable ii) Optical Fibre iii) Ethernet Cable  
 4) Suggest a cable/wiring layout for connecting the company's local office units located in Chennai. Also, suggest an effective method/technology for connecting the company's office unit located in Delhi.

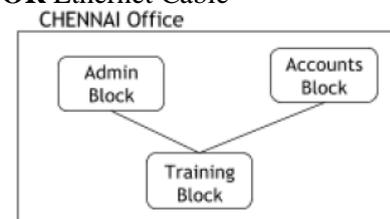
### Answers

#### 4Marks Problem : Model 2 (Between 2 distant places)

1)i) Training Block - Because it has maximum number of computers.

ii) Best wired medium:

Optical Fibre OR CAT5 OR CAT6 OR CAT7 OR CAT8 OR Ethernet Cable



iii) Firewall - Placed with the server at the Training Block

iv) **Device Name:** WiFi Router OR WiMax OR RF Router OR Wireless Modem OR RF Transmitter  
**Protocol :** WAP OR 802.16 OR TCP/IP OR VOIP OR MACP OR 802.11

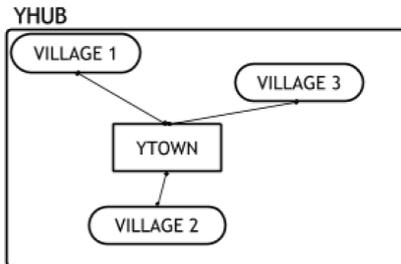
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2) (i) YTOWN

**Justification**

- Since it has the maximum number of computers.
- It is closest to all other locations.

(ii) Optical Fiber

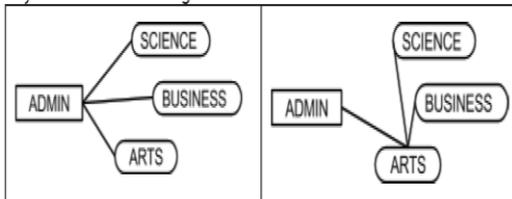


(iii) Switch OR Hub (iv) Videoconferencing OR VoIP OR any other correct service/protocol

\*\*\*

3) (i) ADMIN (due to maximum number of computers)

Any one of the following



(ii)

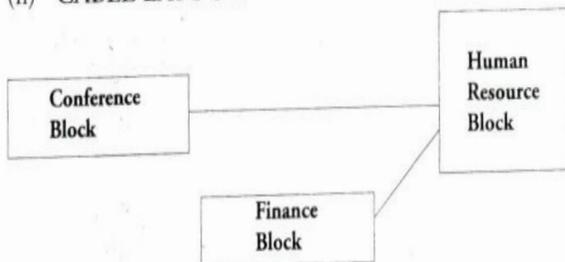
(iii) Firewall OR Router (iv) Video Conferencing

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4) (i) Human Resource Block is appropriate to install server.

(ii)

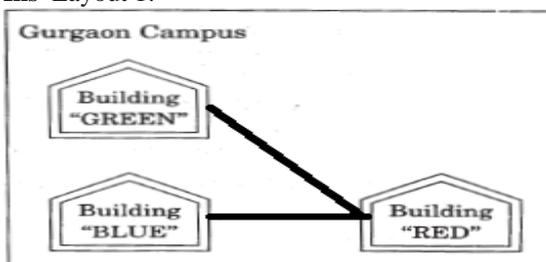
(ii) CABLE LAYOUT:



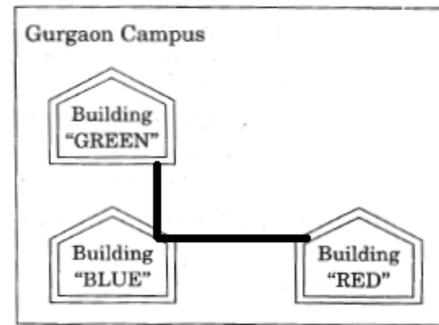
(iii) Satellite Link. (iv) Switch

5)(i) **Ans** Building "RED", since it contains maximum number of computers (OR) Building "BLUE", since it is closest to "GREEN" and "RED"

(ii) **Ans** Layout 1:



Layout 2



(iii) (1) **Switch:** In each of the buildings, since a network switch is a networking device that joins multiple computers together within one local area network (LAN).

(2) **Repeater:** For the Layout 1 drawn in (e2)- Between buildings "GREEN" and "RED", since distance between these two buildings is greater than 70 m which will otherwise lead to loss of signal intensity for data to be transferred. For the Layout 2 drawn in (e2): Repeater is not needed, since distance between both the buildings connected to "Ganga" is less than 70 m, not leading to any signal loss

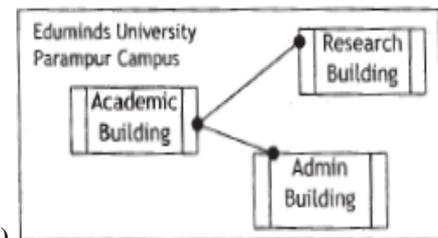
OR

Any other placement of Repeater with proper justification

(iv) (i) Optical Fibre

\*\*\*

6) (E1)



**Ans)**

(E2) **Ans** Academic Building as it contains maximum number of computers. (E3) SWITCH

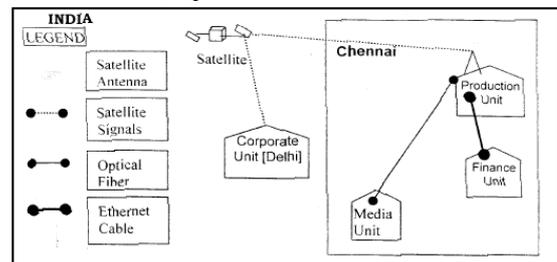
(E4) **Ans** Satellite Connection OR Leased line

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7) 1) Production Unit and Media Unit : MAN

Production Unit and Finance Unit : LAN

2) Switch / Hub 3) Optical Fibre



Optical Fiber/Star Topology

4) Wireless/Satellite Link/leased Line

**“If wealth is lost, nothing is lost,  
 If health is lost, something is lost,  
 If character is lost, everything is lost”**

# DATABASE MANAGEMENT

## SYLLABUS:

**Database concepts:** Introduction to database concepts and its need

**Relational data model:** relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key)

**Structured Query Language:** Introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command **Aggregate functions** (max, min, avg, sum, count), group by, having clause, **joins** : Cartesian product on two tables, equi-join and natural join

**Interface of python with an SQL database:** connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications.

## CBSE SAMPLE PAPER: 2021.22

**1) Differentiate between char(n) and varchar(n) data types with respect to databases. (2)**

- A) char (n) :** (i) Stores a fixed length string between 1 and 255 characters.  
 (ii) If the value is of smaller length, adds blank spaces  
 (iii) Some space is wasted

**varchar(n):** (i) Stores a variable length string

- (ii) No blanks are added even if value is of smaller length  
 (iii) No wastage of space

**2) Write the output of the queries (a) to (d) based on the table, Furniture given below: (2)**

**Table : FURNITURE**

FID	NAME	DATEOF PURCHASE	COST	DISCOUNT
B001	Double Bed	03-Jan-2018	45000	10
T010	Dining Table	10-Mar-2020	51000	5
B004	Single Bed	19-Jul-2021	22000	0
C003	Long Back Chair	30-Dec-2016	12000	3
T006	Console Table	17-Nov-2019	15000	12
B006	Bunk Bed	01-Jan-2021	28000	14

**(a) SELECT SUM(DISCOUNT) FROM FURNITURE WHERE COST>15000;**

**A) 29**

**(b) SELECT MAX(DATEOFPURCHASE) FROM FURNITURE;**

**A) 19-Jul-2021**

**(c) SELECT \* FROM FURNITURE WHERE DISCOUNT >5 AND FID LIKE "T%";**

**A)**

T006	Console Table	17-Nov-2019	15000	12
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**(d) SELECT DATEOFPURCHASE FROM FURNITURE WHERE NAME IN ("Dining Table", "Console Table");**

**A) 10-Mar-2020  
17-Nov-2019**

**3) Which command is used to view the list of tables in a database? (1)**

**A) SHOW TABLES;**

**4) Give one point of difference between an equi-join and a natural join. (1)**

**A) Equi Join :** (i) The join in which columns from two tables are compared for equality.  
 (ii) Duplicate columns are shown.

**Natural Join:** (i) The join in which only one of the identical columns existing in both tables is present.  
 (ii) No duplication of columns.

**5) Consider the table, MOVIEDETAILS given below: (2)**

**Table : MOVIEDETAILS**

MOVI EID	TITLE	LANGU AGE	RAT ING	PLAT FORM
M001	Minari	Korean	5	Netflix
M004	MGR Magan	Tamil	4	Hotstar
M010	Kaagaz	Hindi	3	Zee5
M011	Harry Potter and the Chamber of Secrets	English	4	Prime Video
M015	Uri	Hindi	5	Zee5
M020	Avengers: Enggame	English	4	Hotstar

**a) Identify the degree and cardinality of the table.**

**A) Degree : 5, Cardinality : 6**

**b) Which field should be made the primary key? Justify your answer.**

**A) MOVIEID** should be made the primary key as it uniquely identified each record of the table.

**6(a) Identify the candidate key(s) from the table MOVIEDETAILS.**

**A) MOVIEID and TITLE**

**(b) Consider the table SCHEDULE given below:**

**Table : SCHEDULE**

SLOTID	MOVIEID	TIMESLOT
S001	M010	10 AM to 12 PM
S002	M020	2 PM to 5 PM
S003	M010	6 PM to 8 PM
S004	M011	9 PM to 11 PM

**Which field will be considered as the foreign key if the tables MOVIEDETAILS and SCHEDULE are related in a database?**

**A) MOVIEID**

7.i) A table, ITEM has been created in a database with the following fields: (1)

ITEMCODE, ITEMNAME, QTY, PRICE  
Give the SQL command to add a new field, DISCOUNT(of type integer) to the ITEM table.

A) ALTER TABLE Item  
ADD (Discount INT);

7.ii) Categorize following commands into DDL and DML commands. (2)

INSERT INTO, DROP TABLE,  
ALTER TABLE, UPDATE...SET

A) DDL : DROP TABLE, ALTER TABLE  
DML: INSERT INTO, UPDATE...SET

8. Charu has to create a database named MYEARTH in MYSQL. She now needs to create a table named CITY in the database to store the records of various cities across the globe. The table CITY has the following structure.

Table : CITY

FIELD NAME	DATA TYPE	REMARKS
CITYCODE	CHAR(5)	Primary Key
CITYNAME	CHAR(30)	
SIZE	INTEGER	
AVGTEMP	INTEGER	
POLLUTIONRATE	INTEGER	
POPULATION	INTEGER	

Help her to complete the task by suggesting appropriate SQL commands.

A) CREATE DATABASE MYEARTH;  
CREATE TABLE CITY  
(  
CITYCODE CHAR(5) PRIMARY KEY,  
CITYNAME CHAR(30),  
SIZE INT,  
AVGTEMP INT,  
POPULATIONRATE INT,  
POPULATION INT,  
);

9. Write queries (a) to (d) based on the tables EMPLOYEE and DEPARTMENT given below:

Table : EMPLOYEE

EID	NAME	DOB	DEPT ID	DESIG	SALARY
120	Alisha	23-Jan-1978	D001	Manager	75000
123	Nitin	10-Oct-1977	D002	AO	59000
129	Navjot	12-Jul-1971	D003	Supervisor	40000
130	Jimmy	30-Dec-1980	D004	Sales Rep	
131	Faiz	06-Apr-1984	D001	Dep Manager	65000

Table : DEPARTMENT

DEPTID	DEPTNAME	FLOORNO
D001	Personal	4
D002	Admin	10
D003	Production	1
D004	Sales	3

(a) To display the average salary of all employees, department wise.

A) SELECT AVG (SALARY)  
FROM EMPLOYEE  
GROUP BY DEPTID;

(b) To display name and respective department name of each employee whose salary is more than 50000.

A) SELECT NAME, DEPTNAME  
FROM EMPLOYEE, DEPARTMENT  
WHERE EMPLOYEE.DEPTID =  
DEPARTMENT.DEPTID  
AND SALARY>50000;

(c) To display the names of employees whose salary is not known, in alphabetical order.

A) SELECT NAME FROM EMPLOYEE  
WHERE SALARY IS NULL  
ORDER BY NAME;

(d) To display DEPTID from the table EMPLOYEE without repetition.

A) SELECT DISTINCT DEPTID  
FROM EMPLOYEE;

### 2020-21

(1) In SQL, name the clause that is used to display the tuples in ascending order of an attribute.

A) ORDER BY

(2) In SQL, what is the use of IS NULL operator?

A) To check if the column has null value / no value

(3) Write any one aggregate function used in SQL

A) SUM / AVG / COUNT / MAX / MIN

(4) Which of the following is a DDL command?

a) SELECT b) ALTER c) INSERT d) UPDATE

A) b) ALTER

(5) In SQL, write the query to display the list of tables stored in a database.

A) SHOW TABLES

(6) Which of the following types of table constraints will prevent the entry of duplicate rows?

a) Unique b) Distinct c) Primary Key d) NULL

A) c) Primary Key

(7) A departmental store MyStore is considering to maintain their inventory using SQL to store the

data. As a database administrator, Abhay has decided that :

- Name of the database - mystore
- Name of the table - STORE
- The attributes of STORE are as follows:
  - ItemNo – numeric
  - ItemName – character of size 20
  - Scode - numeric
  - Quantity – numeric

**Table : STORE**

ItemNo	ItemName	Scode	Quantity
2005	Sharpener Classis	23	60
2003	Ball Pen 0.25	22	50
2002	Get Pen Premium	21	150
2006	Get Pen Classic	21	250
2001	Eraser Small	22	220
2004	Eraser Big	22	110
2009	Ball Pen 0.5	21	180

(a) Identify the attribute best suitable to be declared as a primary key,

A) ItemNo

(b) Write the degree and cardinality of the table STORE.

A) Degree = 4, Cardinality = 7

(c) Insert the following data into the attributes ItemNo, ItemName and SCode respectively in the given table STORE.

ItemNo = 2010, ItemName = "Note Book" and Scode = 25

A) INSERT INTO store (ItemNo,ItemName, Scode) VALUES(2010, "Note Book",25);

(d) Abhay want to remove the table STORE from the database MyStore. Which command will he use from the following:

- DELETE FROM store;
- DROP TABLE store;
- DROP DATABASE mystore;
- DELETE store FROM mystore;

A) DROP TABLE store;

(e) Now Abhay wants to display the structure of the table STORE, i.e, name of the attributes and their respective data types that he has used in the table. Write the query to display the same.

A) Describe Store;

(8) What do you understand by Candidate Keys in a table? Give a suitable example of Candidate Keys from a table containing some meaningful data.

A) A table may have more than one such attribute/group of attributes that identifies a tuple uniquely, all such attribute(s) are known as Candidate Keys.

**Table:Item**

Ino	Item	Qty
I01	Pen	500
I02	Pencil	700
I04	CD	500
I09		700
I05	Eraser	300
I03	Duster	200

In the above table Item, ItemNo can be a candidate key

(9) Write the full forms of DDL and DML. Write any two commands of DML in SQL.

A) DDL – Data Definition Language

DML – Data Manipulation Language

**DML Commands Examples:**

INSERT, DELETE, UPDATE

(10) Write the outputs of the SQL queries (i) to (iii) based on the relations Teacher and Posting given below:

**Table : Teacher**

T_ ID	Name	Age	Department	Date_of_join	Salary	Gen der
1	Jugal	34	Computer Sc	10/01/2017	12000	M
2	Sharmila	31	History	24/03/2008	20000	F
3	Sandeep	32	Mathematics	12/12/2016	30000	M
4	Sangeeta	35	History	01/07/2015	40000	F
5	Rakesh	42	Mathematics	05/09/2007	25000	M
6	Shyam	50	History	27/06/2008	30000	M
7	Shiv Om	44	Computer Sc	25/02/2017	21000	M
8	Shalakra	33	Mathematics	31/07/2018	20000	F

**Table : Posting**

P_ID	Department	Place
1	History	Agra
2	Mathematics	Raipur
3	Computer Science	Delhi

i. SELECT Department, count(\*) FROM Teacher GROUP BY Department;

A)

Department	Count(*)
History	3
Computer Sc	2
Mathematics	3

ii. SELECT Max(Date\_of\_Join),

Min(Date\_of\_Join) FROM Teacher;

A) Max - 31/07/2018 or 2018-07-31 Min- 05/09/2007 or 2007-09-05

iii. SELECT Teacher.name,Teacher.Department, Posting.Place FROM Teachr, Posting WHERE Teacher.Department = Posting.Department AND Posting.Place="Delhi";

A)

Name	Department	Place
Jugal	Computer Sc	Delhi
Shiv Om	Computer Sc	Delhi

(11) Write SQL commands for the following queries (i) to (v) based on the relations Teacher and Posting given below:

**Table : Teacher**

T_ ID	Name	Age	Department	Date_of_join	Salary	Gen der
1	Jugal	34	Computer Sc	10/01/2017	12000	M
2	Sharmila	31	History	24/03/2008	20000	F
3	Sandeep	32	Mathematics	12/12/2016	30000	M
4	Sangeeta	35	History	01/07/2015	40000	F
5	Rakesh	42	Mathematics	05/09/2007	25000	M
6	Shyam	50	History	27/06/2008	30000	M
7	Shiv Om	44	Computer Sc	25/02/2017	21000	M
8	Shalakra	33	Mathematics	31/07/2018	20000	F

**Table : Posting**

P_ID	Department	Place
1	History	Agra
2	Mathematics	Raipur
3	Computer Science	Delhi

i. To show all information about the teacher of History department.

A) SELECT \* FROM teacher WHERE department="History";

ii. To list the names of female teachers who are in Mathematics department.

A) SELECT name FROM teacher WHERE department="Mathematics" AND gender="F";

iii. To list the names of all teachers with their date of joining in ascending order.

A) SELECT name FROM teacher ORDER BY date\_of\_join;

iv. To display teacher's name, salary, age for male teachers only.

A) SELECT name, salary, age FROM teacher WHERE gender='M';

v. To display name, bonus for each teacher where bonus is 10% of salary

A) SELECT name, salary\*0.1 AS Bonus FROM teacher;

### 2019-20

(1) Which key word is used to sort the records of a table in descending order?

A) DESC

(2) Which clause is used to sort the records of a table?

A) ORDER BY

(3) Which command is used to modify the records of the table?

A) UPDATE

(4) Which clause is used to remove the duplicating rows of the table?

A) DISTINCT

(5) Differentiate between Primary key and Candidate key.

A) A Candidate Key can be any column or a combination of columns that can qualify as unique key in database. There can be multiple Candidate Keys in one table where as A Primary Key is a column or a combination of columns that uniquely identify a record. Only one Candidate Key can be Primary Key.

(6) Differentiate between Degree and Cardinality.

A) Degree : It is the total number of attributes in the table. Cardinality: It is the total number of tuples in the table

(7) Write a output for SQL queries (i) to (iii), which are based on the table: STUDENT given below:

Table:STUDENT

Roll No	Name	Class	DOB	Gender	City	Marks
1	Nanda	X	06-06-1995	M	Agra	551
2	Saurabh	XII	07-05-1993	M	Mumbai	462
3	Sanal	XI	06-05-1994	F	Delhi	400
4	Trisla	XII	08-08-1995	F	Mumbai	450
5	Store	XII	08-10-1995	M	Delhi	369
6	Marisla	XI	12-12-1994	F	Dubai	250
7	Neha	X	08-12-1995	F	Moscow	377
8	Nishant	X	12-06-1995	M	Moscow	489

(i) SELECT COUNT(\*), City FROM STUDENT GROUP BY CITY HAVING COUNT(\*)>1;

Ans. COUNT(\*) City  
2 Mumbai  
2 Delhi  
2 Moscow

(ii) SELECT MAX(DOB),MIN(DOB) FROM STUDENT;

Ans. MAX(DOB) MIN(DOB)  
08-12-1995 07-05-1993

(iii) SELECT NAME,GENDER FROM STUDENT WHERE CITY="Delhi";

Ans. NAME GENDER  
Sanal F  
Store M

(8) Write SQL queries for (i) to (iv), which are based on the table: STUDENT given in the previous question:

(i) To display the records from table student in alphabetical order as per the name of the student.

Ans. SELECT \* FROM STUDENT ORDER BY NAME;

(ii) To display Class, Dob and City whose marks is between 450 and 551.

Ans. SELECT CLASS,DOB,CITY FROM STUDENT WHERE MARKS BETWEEN 450 AND 551;

(iii) To display Name, Class and total number of students who have secured more than 450 marks, class wise.

Ans. SELECT NAME,CLASS, COUNT(\*) FROM STUDENT GROUP BY CLASS HAVING MARKS>450;

(iv) To increase marks of all students by 20 whose class is "XII".

Ans. UPDATE STUDENT SET MARKS= MARKS+20 where class="XII";

## PRESENT SYLLABUS QUESTIONS FROM C++ SYLLABUS QUESTION PAPERS

### Model 1:For a given table, key/cardinality/ etc

1. Observe the following table and answer the parts(i) and(ii) accordingly . 2019SP2

Table:Product

Pno	Name	Qty	PurchaseDate
101	Pen	102	12-12-2011
102	Pencil	201	21-02-2013
103	Eraser	90	09-08-2010
109	Sharpener	90	31-08-2012
113	Clips	900	12-12-2011

Answer: (i) Write the names of most appropriate columns, which can be considered as candidate keys.

Ans) Candidate Key: Pno, Name

(ii) What is the degree and cardinality of the above table?

Ans) Degree:4 Cardinality:5

2) Observe the following tables VIDEO and MEMBER carefully and write the name of the RDBMS operation out of (i) SELECTION (ii) PROJECTION (iii) UNION (iv) CARTESIAN PRODUCT, which has been used to produce the output as shown below. Also, find the Degree and Cardinality of the final result. 2018

TABLE: VIDEO

VNO	VNAME	TYPE
F101	The Last Battle	Fiction
C101	Angels and Devils	Comedy
A102	Daredevils	Adventure

TABLE : MEMBER

MNO	MNAME
M101	Namish Gupta
M102	Sana Sheikh
M103	Lara James

TABLE : FINAL RESULT

VNO	VNAME	TYPE	MNO	MNAME
F101	The Last Battle	Fiction	M101	Namish Gupta
F101	The Last Battle	Fiction	M102	Sana Sheikh
F101	The Last Battle	Fiction	M103	Lara James
C101	Angels and Devils	Comedy	M101	Namish Gupta
C101	Angels and Devils	Comedy	M102	Sana Sheikh
C101	Angels and Devils	Comedy	M103	Lara James
A102	Daredevils	Adventure	M101	Namish Gupta
A102	Daredevils	Adventure	M102	Sana Sheikh
A102	Daredevils	Adventure	M103	Lara James

Ans) Cartesian Product

Degree = 5 Cardinality = 9

3. Observe the following table MEMBER carefully and write the name of the RDBMS operation out of (i) SELECTION (ii) PROJECTION (iii) UNION (iv) CARTESIANPRODUCT, which has been used to produce the output as shown in RESULT. Also, find the Degree and Cardinality of the RESULT. (2017)

MEMBER

No	MNAME	STREAM
M001	JAYA	SCIENCE
M002	ADITYA	HUMANITIES
M003	HANSRAJ	SCIENCE
M004	SHIVAK	COMMERCE

TABLE : RESULT

NO	MNAME	STREAM
M002	ADITYA	HUMANITIES

Ans) (i) SELECTION

Degree=3 Cardinality=1

4. Observe the table 'Club' given below: (2017MP)

CLUB

Member_id	Member_Name	Address	Age	Fee
M001	Sumit	New Delhi	20	2000
M002	Nisha	Gurgaon	19	3500
M003	Niharika	New Delhi	21	2100
M004	Sachin	Faridabad	18	3500

i. What is the cardinality and degree of the above given table?

ii. If a new column contact\_no has been added and three more members have joined the club then how these changes will affect the degree and cardinality of the above given table.

A) i. Cadinality: 4 Degree: 5

ii. Cardinality: 7 Degree: 6

5.The following STUDENTS and EVENTS tables carefully and write the name of the RDBMS operation which will be used to produce the output as shown in LIST ? Also, find the Degree and Cardinality of the LIST. (2016 D)

STUDENTS		EVENTS	
NO	NAME	EVENTCODE	EVENTNAME
1	Tara Mani	1001	Programming
2	Jaya Sarkar	1002	IT Quiz
3	Tarini Trikha		

LIST			
NO	NAME	EVENTCODE	EVENTNAME
1	Tara Mani	1001	Programming
1	Tara Mani	1002	IT Quiz
2	Jaya Sarkar	1001	Programming
2	Jaya Sarkar	1002	IT Quiz
3	Tarini Trikha	1001	Programming
3	Tarini Trikha	1002	IT Quiz

A) Cartesian Product

Degree = 4 Cardinality = 6

6) Observe the following table carefully and write the names of the most appropriate columns, which can be considered as (i) candidate keys and (ii) primary key. (2015)

Code	Item	Qty	Price	Transaction Date
1001	Plastic Folder 14"	100	3400	2014-12-14
1004	Pen Stand Standard	200	4500	2015-01-31
1005	Stapler Mini	250	1200	2015-02-28
1009	Punching Machine Small	200	1400	2015-03-12
1003	Stapler Big	100	1500	2015-02-02

Ans) Candidate keys : Code, Item

Primary keys : Code

## MODEL 2: THEORY QUESTION

### KEYS

1) What do you understand by Primary Key? Give a suitable example of Primary Key from a table containing some meaningful data. (OD 2010) 2

Ans. An attribute or set of attributes which are used to identify a tuple uniquely is known as Primary Key.

Table: Item

Ino	Item	Qty
I01	Pen	300
I02	Pencil	780
I04	CD	450
I09	Floppy	700

PRIMARY KEY

2) What is the importance of a primary key in a table? Explain with suitable example. (OD 2007)

Ans:Primary Key: A primary key is a set of one or more attributes that can uniquely identify tuples within the relations. A primary key comprises a single column or set of columns. No two distinct rows

in a table can have the same value (or combination of values) in those columns. Depending on its designing, a table may have arbitrarily many candidate keys but at most one primary key. The primary key is non redundant. If it does not have duplicate values in the same relation.

**Eg:** Consider a table consists the following attributes: AdmnNo,FirstName,LastName,SirName, M1, M2, M3, Total,Avg,FName

Here we can uniquely identify the rows in the relation with following key combinations:

- AdmnNo
- FirstName,LastName,SirName
- FirstName,LastName,FName, etc.

We can set any one of the above candidate keys as primary key, others are called as alternate keys.

**3) Give a suitable example of a table with sample data and illustrate Primary and Candidate Keys in it. (2012 D)**

**Ans** A table may have more than one such attribute/group of attribute that identifies a row/tuple uniquely, all such attribute(s) are known as Candidate Keys. Out of the Candidate keys, one is selected as Primary Key.

**Ex: Table: Stock**

Ino	Item	Qty
101	Pen	560
102	Pencil	780
104	CD	450
109	Floppy	700
105	Eraser	300
103	Duster	200

Here: Ino – Primary Key

Ino, Item – Candidate Keys,

**4) Give a suitable example of a table with sample data and illustrate Primary and Alternate Keys in it. (2012OD)**

**Ans** A table may have more than one such attribute/group of attribute that identifies a row/tuple uniquely, all such attribute(s) are known as Candidate Keys. Out of the Candidate keys, one is selected as Primary Key. while the rest are the Alternate Keys.

**Ex: Table: Stock**

Ino	Item	Qty
101	Pen	560
102	Pencil	780
104	CD	450
109	Floppy	700
105	Eraser	300
103	Duster	200

**Here:** Ino, Item – Candidate Keys,

Ino – Primary Key

Item – Alternate Key

**Explain the concept of candidate key with the help of an appropriate example. (2013)(2010D)(D2009)**

**5) What is the purpose of a key in a table? Give an example of a key in a table. (OD 2009)**

**Ans)** An attribute/group of attributes in a table that identifies each tuple uniquely is known as a Key.

**Table:Item**

Ino	Item	Qty
I01	Pen	560
I02	Pencil	780
I04	CD	450
I09	Floppy	700
I05	Eraser	300
I03	Duster	200

↑Key

**6) Differentiate between Candidate key and Primary key in context of RDBMS. (D2008)**

**Differentiate between Candidate Key and alternate Key in context of RDBMS. (OD 2008)**

**Differentiate between primary key and alternate key. (D2007)**

**What is an alternate key? (D2006)**

**What do you understand by the terms primary key and degree of a relation in relational data base? (D2005)**

**What do you understand by the candidate key and cardinality of a relation in relational data base? (OD 2005)**

**What is primary key in a table? (2003)**

**Ans) Candidate Key:** All attribute combinations inside a relation that can serve primary key are Candidate Keys as they are candidates for the primary key position.

**Primary Key:** A primary key is a set of one or more attributes that can uniquely identify tuples within the relations.

**Alternate Key:** A candidate key that is not the primary key is called an Alternate Key.

(Where Candidate Key: All attribute combinations inside a relation that can serve primary key (uniquely identifies a row in a relation) are Candidate Keys as they are candidates for the primary key position.)

**Table: Stock**

Ino	Item	Qty
101	Pen	560
102	Pencil	780
104	CD	450
109	Floppy	700
105	Eraser	300
103	Duster	200

**Here:** Ino, Item – Candidate Keys,

Ino – Primary Key

Item – Alternate Key

**7) What is a relation? What is the difference between a tuple and an attribute? (1998)**

**Ans:** In relational data model, the data is organized into table (rows and columns). These tables are called relations. A row in a table represents a relationship among a set of values.

Rows of the relations are called as tuples and columns of the relations are called as attributes.

8) What do you understand by Degree and Cardinality of a table? (MP109-10) (MP108-09)2

Ans) Degree: Number of Columns in a table

Cardinality: Number of rows in a table

Ex: TABLE : MEMBER

MNO	MNAME
M101	Namish Gupta
M102	Sana Sheikh
M103	Lara James

Here, Cardinality = 3, Degree = 2

What do you understand by the candidate key and cardinality of a relation in relational data base?

(OD 2005)

### OPERATIONS

9. Explain the concept of Cartesian Product between tables, with the help of appropriate example. (2014)(2001)

Answer) Cartesian Product (binary operator): It operates on two relations and is denoted by X.

The Cartesian product of two relations yields a relation with all possible combinations of the tuples of the two relations operated upon.

All tuples of first relation are concatenated with all the tuples of second relation to form the tuples of the new relation.

The Cartesian product of two relations A and B is written as AXB. The Cartesian product yields a new relation which has a degree (number of attributes) equal to the sum of the degrees of the two relations operated upon.

The number of tuples (cardinality) of the new relation is the product of the number of tuples of the two relations operated upon.

Eg: There are two relations as follows:

Relation 1: Student

Student Number	StudentName	Hosteler
1	Ravi	Y
2	Robert	N
3	Raheem	Y

Relation 2: Instructor

InstructorName	Subject
K.Suman	Computer Science
P.Pavan	Electronics

The Cartesian product of these two relations, Student X Instructor, will yield a relation that have a degree of 5(3+2:sum of degrees of Student and Instructor) and a cardinality 6 (3 X 2: Product of cardinalities of two relations).

The resulting relation is as follows:

Student Number	Student Name	Hosteler	Instructor Name	Subject
1	Ravi	Y	K.Suman	Computer Science
1	Ravi	Y	P.Pavan	Electronics
2	Robert	N	K.Suman	Computer Science
2	Robert	N	P.Pavan	Electronics
3	Raheem	Y	K.Suman	Computer Science
3	Raheem	Y	P.Pavan	Electronics

### Resultant Relation = Relation1 X Relation2

The resulting relation contains all possible combinations of tuples of the two relations.

10) What do you understand by Union & Cartesian Product operations in relational algebra?(2011D)2

Ans) Union (binary operator): It operates on two relations and is indicated by U.

For example, R= R1 U R2 represents union operation between two relations R1 and R2. The degree of R is equal to degree of R1. The cardinality of R is sum of cardinality of R1 and cardinality of R2.

Following have to be considered for the operation R1 U R2.

Degree of R1 = Degree of R2

jth attribute of R1 and jth attribute of R2 must have a common domain.

Example :

Relation R1

Student_ID	Name
S120	Raju
S121	Nani

Relation R2

Student_Code	Student_Name
K550	Chinna
K551	Munna

Resultant Relation : R = R1 U R2

Student_ID	Name
S120	Raju
S121	Nani
K550	Chinna
K551	Munna

11) What do you understand by Selection & Projection operations in relational algebra?

(2011 OD)

Ans Selection for selecting the rows of table

Projection for selecting the columns of table

Ex: Table

MEMBER

No	MNAME	STREAM
M001	JAYA	SCIENCE
M002	ADITYA	HUMANITIES
M003	HANSRAJ	SCIENCE
M004	SHIVAK	COMMERCE

TABLE : TABSEL

NO	MNAME	STREAM
M002	ADITYA	HUMANITIES

TABLE : TABPROJ

No	STREAM
M001	SCIENCE
M002	HUMANITIES
M003	SCIENCE
M004	COMMERCE

Here, Table TABSEL is result of Selection operation

Table TABPROJ is result of projection operation

### DDL & DML

1) Differentiate between DDL & DML commands.

Identify DDL & DML commands from the following:-

2018MP

(UPDATE, SELECT, ALTER, DROP)

Ans) DDL stands for Data Definition language and comprises of commands which will change the structure of database object.

DML stands for Data Manipulation Language and comprises of commands which are used to insert, edit, view & delete the data stored in a database object.

DDL Commands: ALTER, DROP

DML Commands: UPDATE, SELECT

## 2) What are DDL and DML? (OD 2006)

(Differentiate between data definition language and data manipulation language.(2002))

**Ans: DDL** means Data Definition Language. SQL DDL provides commands for defining relation schemas, deleting relations, creating indexes and modifying relation schemas. (Provides statements for the creation and deletion of tables and indexes.)

**DML** Means Data Manipulation Language. SQL DML provides statements to enter, update, delete data and perform complex queries on these tables.

(includes a query language to insert, delete and modify tuples in the database)

DML is used to put values and manipulate them in tables and other database objects and DDL is used to create tables and other database objects.

### STRUCTURED QUERY LANGUAGE STUDENT MARKS TABLE

In the following section many of the commands is explained through the example "Student marks table".

S.no	Attribute	Type
1	AdmnNo	Integer
2	SName	Character
3	Sub1	Real Number
4	Sub2	Real Number
5	Sub3	Real Number
6	Total	Real Number
7	Avg	Real Number
8	Divison	Character

#### 1. Create Table:

```
CREATE TABLE <table-name> (<column name><data type>[(size)],<column name><data type>[(size)],...);
```

**Example:** To create a table consisting the Admnno, SName, Sub1, Sub2, Sub3, Total,Avg,Divison attributes.

```
CREATE TABLE Student (AdmnNo integer,SName char(20), Sub1 number(5,2), sub2 number(5,2), sub3 number(5,2), Total number(5,2),Avg number(5,2), Div Char(10));
```

#### 2.Constraints:

- NOT NULL :** The attribute that contains this constraints should not be vacant.
- Unique constraints:** This constraint ensures that no two rows have the same value in the specified column(s).
- Primary key constraints:** This constraint declares a column as the primary key of the table.( Primary keys cannot allow NULL values)
- Default constraints:** A default value can be specified for a column using DEFAULT clause. When a user does not enter a value for the column, automatically the defined default value is inserted in the field.

- Check constraints:** this constraint limits values that can be inserted into a column of a table.

**Above table can be created using the constraints as follows:**

```
CREATE TABLE Student (AdmnNo number(4) NOT NULL PRIMARY KEY, SName char(20), Sub1 number(5,2) CHECK(Sub1<=100.0), Sub2 number(5,2) CHECK(Sub2<=100.0), Sub3 number(5,2) CHECK (Sub3<=100.0), Total number(5,2),Avg number(5,2),Div char(10));
```

#### 3.INSERT Command:

```
INSERT INTO <tablename>[<column list>] VALUES(<value>,<value>...);
```

**Eg:**

##### i) To insert our desired attributes only:

```
INSERT INTO Student (Admnno,SName,Sub1,Sub2,Sub3) Values (1000,'pradeep',75.5,90.5,57.0);
```

##### ii) To insert all the attributes:

```
INSERT INTO Student Values (1001, 'sudeep',77.50,95.0,68.50, 41.0,80.33,'First'); (for inserting number of rows in a easy way...) INSERT INTO STUDENT(Admnno,SName,Sub1,Sub2, Sub3) VALUES (&Admnno, &SName, &Sub1, &Sub2, &Sub3);
```

Then it will ask first student data...Enter the data...then press / at command prompt. It will ask you next student data, etc.)

#### Sample Data Inserted

Adm n No	SName	Sub 1	Sub 2	Sub 3	Tot al	Avg	Di v
1000	Pradeep	75.5	95.0	57.0			
1001	Sudeep	77.5	95.0	68.5	241.0	80.33	First
1002	Philip	32.5	60.0	59.5			
1003	Pradeep	45.5	65.5	70.0			
1004	Naidu	77.5	25.5	65.5			
1005	Sudeep	80.5	72.5	67.0			

**4.Select command:** Select command of SQL lets you make queries on the database. A query is a command that is given to produce certain specified information from the database table(s).

#### Simple Form:

```
SELECT<column name>[,<column name>...] FROM <table name>;
```

#### Eg: Select AdmnNo,SName from Student.

(Will display only AdmnNo and SName attributes of the table student.)

#### Select \* from Student.

(Will display all the attributes of the table Student.)

**5.DISTINCT Keyword:** This keyword eliminates duplicate rows from the results of a SELECT statement.

**Eg:** Select **DISTINCT** SName from Student

#### SName

Pradeep  
Sudeep  
Philip  
Naidu

**6. ALL Keyword:** This keyword will not eliminate duplicate rows from the results of a SELECT statement.

**Eg:** Select **ALL** SName from student

#### SName

Pradeep

Sudeep  
Philip  
Pradeep  
Naidu  
Sudeep

### 7. Selecting specific rows using WHERE clause with SELECT:

**Syntax:** SELECT <column name>[< column name>,...]  
FROM <table name> WHERE <condition>;

**Eg:**

SELECT Admnno,SName FROM Student WHERE  
Sub1>=40 AND Sub2>=40 AND Sub3>=40;  
SELECT SName FROM Student WHERE  
SName='Sudeep' OR SName='Philip';

SName

Sudeep

Philip

Sudeep

SELECT SName FROM Student WHERE  
SName<>'Naidu'

**OR**

SELECT SName FROM Student WHERE (NOT

Admn No	SName	Sub1	Sub2	Sub3	Total	Avg	Div
1000	Pradeep	75.5	95.0	57.0	227.5	75.85	First
1001	Sudeep	77.5	95.0	68.5	241.0	80.33	First
1002	Philip	32.5	60.0	59.5	152.0	50.66	Fail
1003	Pradeep	45.5	65.5	70.0	181	60.3	First
1004	Naidu	77.5	25.5	65.5	168.5	56.16	Fail
1005	Sudeep	80.5	72.5	67.0	220	73.3	First

SName='Naidu')

SName

Pradeep

Sudeep

Philip

Pradeep

Sudeep

SELECT Sname from student WHERE SName  
in('Pradeep','Sudeep');

SName

Pradeep

Sudeep

Pradeep

Sudeep

SELECT SName FROM Student WHERE SName NOT  
IN('Sudeep','Pradeep');

SName

Philip

Naidu

SELECT SName FROM Student WHERE SName LIKE  
'%eep'

SName

Pradeep

Sudeep

Pradeep

Sudeep

### 8. Condition based on a Range using BETWEEN:

**Eg:** SELECT AdmnNo, SName FROM Student  
WHERE AdmnNo BETWEEN 1003 AND 1005;

AdmnNo	SName
1003	Pradeep
1004	Naidu
1005	Sudeep

### 9.ORDER BY:

SELECT AdmnNo, SName from student ORDER BY  
SName ASC;

Admn No	SName
1004	Naidu
1002	Philip
1000	Pradeep
1003	Pradeep
1001	Sudeep
1005	Sudeep

SELECT AdmnNo, SName from student ORDER BY  
AdmnNo DESC;

Admn No	SName
1005	Sudeep
1004	Naidu
1003	Pradeep
1002	Philip
1001	Sudeep
1000	Pradeep

### 10. UPDATE COMMAND:

UPDATE Student SET Total= Sub1+Sub2+Sub3;

UPDATE Student SET Avg=Total/3;

UPDATE Student SET Div='First' WHERE (Avg>=60.0);

UPDATE Student SET Div='Second' WHERE

(Avg>=50.0 AND Avg<60.0);

UPDATE Student SET Div='Third' WHERE (Avg>=35.0

AND Avg<50.0);

UPDATE Student SET Div='Fail' WHERE (Sub1<35.0

OR Sub2<35.0 OR Sub3<35.0);

**After the execution of the above commands, the sample data will be as follows:**

### 11. ALTER TABLE:

ALTER TABLE student MODIFY (Div Char(6));

ALTER TABLE student ADD(CNo NUMBER(10));

### 12. Functions:

SELECT Min(Sub1) FROM Student;

(Will give the Minimum marks of Subject1)

Min(SUB1)

32.5

SELECT Max(Sub2) FROM Student;

(Will give the Maximum marks of Subject2)

MAX(SUB2)

95

SELECT Sum(Sub3) FROM Student;

(Will give the Sum of marks of Subject3)

SUM(SUB3)

387.5

SELECT Avg(Sub1) FROM Student;

(Will give the Average of Subject1)

AVG(SUB1)

64.83

SELECT Count(DISTINCT SName) FROM Student;

( Will display 4)

COUNT(DISTINCT SNAME)

4

SELECT Count(SName) FROM Student;

( Will display 6)

COUNT(SNAME)

6

Count – To count non-null values in a column

Count(\*) – To count total number of rows in a table.

### 13. Creating table from Existing Table:

CREATE TABLE PassStudent as (SELECT AdmnNo,  
SName FROM Student WHERE (Sub1>=40.0 AND  
Sub2>=40.0 AND Sub3>=40.0));

### 14. Inserting the Results of a Query:

INSERT INTO PassStudent(admnno,sname)

SELECT AdmnNO, SName FROM Student

WHERE (Sub1>=40.0 AND Sub2>=40.0 AND Sub3>=40.0);

**15. CREATE VIEW:**

CREATE VIEW FailStudent AS SELECT \* FROM Student WHERE Div='Fail';

**16. DELETE:**

DELETE FROM Student WHERE AdmnNo=1004;

(To delete a record, whose AdmnNo=1004)

DELETE FROM Student;

(To delete all records of student)

**17.DROP TABLE:**

DROP TABLE Student;

**18. DROP VIEW:**

DROP VIEW Failstudent;

**19.Commit** (To save the changes)

**20.Rollback** (for Undo)

(iv) To display details of all Passengers travelling in Trains whose TNO is 12015.

(v) SELECT MAX(TRAVELDATE), MIN(TRAVELDATE) FROM PASSENGERS WHERE GENDER = 'FEMALE';

(vi) SELECT END, COUNT(\*) FROM TRAINS GROUP BY END HAVING COUNT(\*)>1;

(vii) SELECT DISTINCT TRAVELDATE FROM PASSENGERS;

(viii) SELECT TNAME, PNAME FROM TRAINS T, PASSENGERS P WHERE T.TNO = P.TNO AND AGE BETWEEN 50 AND 60;

**2. Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables. (2019SP & Others)**

**MODEL 1(VERY IMP) : TWO TABLES**

**1. Write SQL queries for (i) to (iv) and write outputs for SQL queries (v) to (viii) which are based on the table given below: (2019) 8**

**Table: Trains**

TNo	TNAME	START	END
11096	Ahimsa Express	Pune Junction	Ahmedabad Junction
12015	Ajmer Shatabdi	New Delhi	Ajmer Junction
1651	Pune Hbj Special	Pune Junction	Habibganj
13005	Amritsar Mail	Howrah Junction	Amritsar Junction
12002	Bhopal Shatabdi	New Delhi	Habibganj
12417	Prayag Raj Express	Allahabad Junction	New Delhi
14673	Shaheed Express	Jaynagar	Amritsar Junction
12314	Sealdah Rajdhani	New Delhi	Sealdah
12498	Shane Punjab	Amritsar Junction	New Delhi
12451	Shram Shakti Express	Kanpur Central	New Delhi
12030	Swarna Shatabdi	Amritsar Junction	New Delhi

**Table: Passenger**

PNR	TNO	PNAME	GENDER	AGE	TRAVELDATE
P001	13005	R N AGRAWAL	MALE	45	2018-12-25
P002	12015	P TIWARY	MALE	28	2018-11-10
P003	12015	S TIWARY	FEMALE	22	2018-11-10
P004	12030	S K SAXENA	MALE	42	2018-10-12
P005	12030	S SAXENA	FEMALE	35	2018-10-12
P006	12030	P SAXENA	FEMALE	12	2018-10-12
P007	13005	N S SINGH	MALE	52	2018-05-09
P008	12030	J K SHARMA	MALE	65	2018-05-09
P009	12030	R SHARMA	FEMALE	58	2018-05-09

**Note: All dates are given in 'YYY-MM-DD' format**

(i) To display details of all Trains which Start from New Delhi.

(ii) To display the PNR, PNAME, GENDER and AGE of all Passengers whose AGE is below 50.

(iii) To display total number of MALE and FEMALE Passengers.

**TRAINER**

TID	TNAME	CITY	HIREDATE	SALARY
101	SUNAINA	MUMBAI	1998-10-15	90000
102	ANAMIKA	DELHI	1994-12-24	80000
103	DEEPTI	CHANDIGARG	2001-12-21	82000
104	MEENAKSHI	DELHI	2002-12-25	78000
105	RICHA	MUMBAI	1996-01-12	95000
106	MANIPRABHA	CHENNAI	2001-12-12	69000

**COURSE**

CID	CNAME	FEES	STARTDATE	TID
C201	AGDCA	12000	2018-07-02	101
C202	ADCA	15000	2018-07-15	103
C203	DCA	10000	2018-10-01	102
C204	DDTP	9000	2018-09-15	104
C205	DHN	20000	2018-08-01	101
C206	O LEVEL	18000	2018-07-25	105

**WRITE SQL QUERIES**

i) To Display the Trainer name, City from table Trainer.

A) SELECT TNAME, CITY from TRAINER;

ii) Display all details of table COURSE

A) SELECT \* FROM COURSE;

iii) Display the Trainer Name, City & Salary in descending order of their Hiredate.

Ans:

SELECT TNAME, CITY, SALARY FROM TRAINER ORDER BY HIREDATE DESC;

iv) To display all the details of those trainers whose name ends with 'A'

A) select \* from Trainer where Tname like '%A'

v) Display all details from the table COURSE in ascending order of their STARTDATE

Ans:

SELECT \* FROM COURSE ORDER BY STARTDATE ASC;

vi) To display CName and Fees of those Courses Whose Fees range in between 10000-15000.

A) select CName, Fees from Course where Fees between 10000 and 15000;

vii) To display total salary of trainers from city name ends with "I".

A) **SELECT SUM(SALARY) FROM TRAINER WHERE CNAME LIKE '%I';**

viii) To display all Trainer Details from city "Mumbai"

Ans: **SELECT \* FROM TRAINER WHERE CITY = 'Mumbai';**

ix) To display CName, Fees and StartDate of all Courses which are started before 15<sup>th</sup> July 2018

Ans) **SELECT CNAME, FEES, STARTDATE FROM COURSE WHERE STARTDATE < '2018-07-15';**

x) To display the last date (recent most) HIREDATE from the table TRAINER

Ans: **SELECT MAX(HIREDATE) FROM TRAINER;**

xi) To display the TNAME and CITY of Trainer who joined the Institute in the month of December 2001.

Ans: **SELECT TNAME, CITY FROM TRAINER WHERE HIREDATE BETWEEN '2001-12-01' AND '2001-12-31';** OR

**SELECT TNAME, CITY FROM TRAINER WHERE HIREDATE >= '2001-12-01' AND HIREDATE <= '2001-12-31';** OR

**SELECT TNAME, CITY FROM TRAINER WHERE HIREDATE LIKE '2001-12%';**

xii) To display TNAME, HIREDATE, CNAME, STARTDATE from tables TRAINER and COURSE of all those courses whose FEES is less than or equal to 10000.

Ans: **SELECT TNAME, HIREDATE, CNAME, STARTDATE FROM TRAINER, COURSE WHERE TRAINER.TID=COURSE.TID AND FEES <= 10000;**

xiii) To display CNAME, Fees, TName, City from tables Trainer and Course of all those persons whose Hiredate Before Year 2000.

Ans) **SELECT CNAME, FEES, TNAME, CITY FROM TRAINER, COURSE WHERE TRAINER.TID= COURSE.TID AND HIREDATE < '2000-01-01';**

(xiV) To display number of Trainers from each city.

Ans) **SELECT CITY, COUNT(\*) FROM TRAINER;**

### WRITE SQL OUTPUTS

(a) **SELECT TID, TNAME, FROM TRAINER WHERE CITY NOT IN('DELHI', 'MUMBAI');**

Ans: **TID TNAME**  
103 DEEPTI

106 MANIPRABHA

(b) **SELECT DISTINCT TID FROM COURSE;**

Ans: **DISTINCT TID**

101

103  
102  
104  
105

c) **SELECT TID, COUNT(\*), MIN(FEES) FROM COURSE GROUP BY TID HAVING COUNT(\*) > 1;**

Ans: **TID COUNT(\*) MIN(FEES)**  
101 2 12000

d) **SELECT COUNT(\*), SUM(FEES) FROM COURSE WHERE STARTDATE < '2018-09-15';**

Ans: **COUNT(\*) SUM(FEES)**  
4 65000

(e) **SELECT MIN(STARTDATE) FROM COURSE;**

Ans) **MIN(STARTDATE)**  
2018-07-02

(f). **SELECT MAX(STARTDATE), MIN(FEES) FROM COURSE;**

A) **max(StartDate) min(Fees)**  
2018-10-01 9000

(g) **SELECT CITY, SUM(SALARY) FROM TRAINER GROUP BY CITY HAVING COUNT(\*) > 1;**

A) **CITY SUM(SALARY)**  
MUMBAI 18,5000  
DELHI 15,8000

(h) select TNAME, CITY, SALARY from TRAINER T, COURSE C where T.TID!=C.TID;

A) **TNAME CITY SALARY**  
ManiPrabha Chennai 69000

Note: 3 to 4 recent questions models are merged in the above question.

3) Consider the following relations

MobileMaster & MobileStock:- 2018MP

#### MobileMaster

M_Id	M_Company	M_Name	M_Price	M_Mf Date
MB001	Samsung	Galaxy	4500	2013-02-12
MB003	Nokia	N1100	2250	2011-04-15
MB004	Micromax	Unite3	4500	2016-10-17
MB005	Sony	XperiaM	7500	2017-11-20
MB006	Oppo	SelfieEx	8500	2010-08-21

#### MobileStock

S_Id	M_Id	M_Qty	M_Supplier
S001	MB004	450	New Vision
S002	MB003	250	Praveen Gallery
S003	MB001	300	Classic Mobile Store
S004	MB006	150	A-one Mobiles
S005	MB003	150	The Mobile
S006	MB006	50	Mobile Centre

Write the SQL query for questions from (i) to (iv) & write the output of SQL command for questions from (v) to (viii) given below:-

(i) Display the Mobile company, Mobile name & price in descending order of their manufacturing date.

Ans) **SELECT M\_Compnay, M\_Name, M\_Price FROM MobileMaster ORDER BY M\_Mf\_Date DESC;**

(ii) List the details of mobile whose name starts with „S“.

Ans) **SELECT \* FROM MobileMaster WHERE M\_Name LIKE „S%“;**

(iii) Display the Mobile supplier & quantity of all mobiles except „MB003“.

Ans) **SELECT M\_Supplier, M\_Qty FROM MobileStock WHERE M\_Id <> „MB003“;**

(iv) To display the name of mobile company having price between 3000 & 5000.

Ans) **SELECT M\_Company FROM MobileMaster WHERE M\_Price BETWEEN 3000 AND 5000;**

(v) **SELECT M\_Id, SUM(M\_Qty) FROM MobileStock GROUP BY M\_Id;**

M_Id	SUM(M_Qty)
MB004	450
MB003	400
MB001	300
MB006	200

(vi) **SELECT MAX(M\_Mf\_Date), MIN(M\_Mf\_Date) FROM MobileMaster;**

MAX(M_Mf_Date)	MIN(M_Mf_Date)
2017-11-20	2010-08-21

(vii) **SELECT M1.M\_Id, M1.M\_Name, M2.M\_Qty, M2.M\_Supplier FROM MobileMaster M1, MobileStock M2 WHERE M1.M\_Id=M2.M\_Id AND M2.M\_Qty>=300;**

M_Id	M_Name	M_Qty	M_Supplier
MB004	Unite3	450	New_Vision
MB001	Galaxy	300	Classic Mobile Store

(viii) **SELECT AVG(M\_Price) FROM MobileMaster;**

Ans) 5450

4. Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables (2016)

Table: VEHICLE

VCODE	VEHICLETYPE	PERKM
V01	VOLVO BUS	150
V02	AC DELUXE BUS	125
V03	ORDINARY BUS	80
V05	SUV	30
V04	CAR	18

Note: PERKM is Freight Charges per kilometer

Table: TRAVEL

CNO	CNAME	TRAVELDATE	KM	VCODE	NOP
101	K.Niwal	2015-12-13	200	V01	32
103	Fredrick Sym	2016-03-21	120	V03	45
105	Hitesh Jain	2016-04-23	450	V02	42
102	Ravi Anish	2016-01-13	80	V02	40
107	John Malina	2015-02-10	65	V04	2
104	Sahanubhuti	2016-01-28	90	V05	4
106	Ramesh Jaya	2016-04-06	100	V01	25

Note:

- Km is Kilometers travelled
- NOP is number of passengers travelled in vehicle

(i) To display CNO, CNAME, TRAVELDATE from the table TRAVEL in descending order of CNO.

Ans **SELECT CNO, CNAME, TRAVELDATE FROM TRAVEL ORDER BY CNO DESC;**

(ii) To display the CNAME of all the customers from the table TRAVEL who are traveling by vehicle with code V01 or V02.

Ans **SELECT CNAME FROM TRAVEL WHERE VCODE='V01' OR VCODE='V02'; (OR) SELECT CNAME FROM TRAVEL WHERE VCODE IN ('V01', 'V02');**

(iii) To display the CNO and CNAME of those customers from the table TRAVEL who travelled between '2015-12-31' and '2015-05-01'.

Ans **SELECT CNO, CNAME from TRAVEL WHERE TRAVELDATE >='2015-05-01' AND TRAVELDATE <= '2015-12-31'; (OR) SELECT CNO, CNAME from TRAVEL WHERE TRAVELDATE BETWEEN '2015-05-01' AND '2015-12-31'; (OR)**

**SELECT CNO, CNAME from TRAVEL WHERE TRAVELDATE <= '2015-12-31' AND TRAVELDATE >= '2015-05-01'; (OR) SELECT CNO, CNAME from TRAVEL WHERE TRAVELDATE BETWEEN '2015-12-31' AND '2015-05-01';**

(iv) To display all the details from table TRAVEL for the customers, who have travel distance more than 120 KM in ascending order of NOP.

Ans **SELECT \* FROM TRAVEL WHERE KM > 120 ORDER BY NOP;**

(v) **SELECT COUNT(\*), VCODE FROM TRAVEL GROUP BY VCODE HAVING COUNT(\*) > 1;**

Ans **COUNT(\*) VCODE**

2 V01

2 V02

(vi) **SELECT DISTINCT VCODE FROM TRAVEL;**

Ans **DISTINCT VCODE**

V01

V02

V03

V04

V05

vii) **SELECT A.VCODE, CNAME, VEHICLETYPE FROM TRAVEL A, VEHICLE B WHERE**

**A.VCODE=B.VCODE AND KM<90;**

Ans **VCODE    C NAME    VEHICLETYPE  
V02    Ravi Anish    AC DELUXE BUS  
V04    John Malina    CAR**

(viii) SELECT CNAME,KM\*PERKM  
FROM TRAVEL A,VEHICLE B  
WHERE A.VCODE=B.VCODE AND  
A.VCODE='V05';

Ans CNAME KM\*PERKM  
Sahanubhuti 2700

5. Consider the following DEPT and EMPLOYEE tables. Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii). (2015)

Table: DEPT

DCODE	DEPARTMENT	LOCATION
D01	INFRASTRUCTURE	DELHI
D02	MARKETING	DELHI
D03	MEDIA	MUMBAI
D05	FINANCE	KOLKATA
D04	HUMAN RESOURCE	MUMBAI

Table: EMPLOYEE

ENO	NAME	DOJ	DOB	GENDER	DCODE
1001	George K	2013-09-02	1991-09-01	MALE	D01
1002	Ryma Sen	2012-12-11	1990-12-15	FEMALE	D03
1003	Mohitesh	2013-02-03	1987-09-04	MALE	D05
1007	Anil Jha	2014-01-17	1984-10-19	MALE	D04
1004	Manila Sahai	2012-12-09	1986-11-14	FEMALE	D01
1005	R SAHAY	2013-11-18	1987-03-31	MALE	D02
1006	Jaya Priya	2014-06-09	1985-06-23	FEMALE	D05

Note: DOJ refers to date of joining and DOB refers to date of Birth of employees.

(i) To display Eno, Name, Gender from the table EMPLOYEE in ascending order of Eno.

Ans SELECT Eno,Name,Gender FROM Employee ORDER BY Eno;

(ii) To display the Name of all the MALE employees from the table EMPLOYEE.

Ans SELECT Name FROM Employee WHERE Gender='MALE';

(iii) To display the Eno and Name of those employees from the table EMPLOYEE who are born between '1987- 01- 01' and '1991- 12- 01'.

Ans SELECT Eno,Name FROM Employee WHERE DOB BETWEEN '1987-01-01' AND '1991-12-01' OR

SELECT Eno,Name FROM Employee WHERE DOB >='1987-01-01' AND DOB <='1991-12-01';

(iv) To count and display FEMALE employees who have joined after '1986- 01- 01'.

Ans SELECT count(\*) FROM Employee WHERE GENDER='FEMALE' AND DOJ > '1986-01-01';

OR  
SELECT \* FROM Employee WHERE GENDER='FEMALE' AND DOJ > '1986-01-01';

(v) SELECT COUNT(\*),DCODE FROM EMPLOYEE

GROUP BY DCODE HAVING COUNT(\*)>1;

Ans COUNT DCODE  
2 D01

2 D05

(vi) SELECT DISTINCT DEPARTMENT FROM DEPT;

Ans Department  
INFRASTRUCTURE  
MARKETING  
MEDIA  
FINANCE  
HUMAN RESOURCE

(vii) SELECT NAME, DEPARTMENT FROM EMPLOYEE E, DEPT D WHERE

E.DCODE=D.DCODE AND ENO<1003;

Ans NAME DEPARTMENT

George K INFRASTRUCTURE

Ryma Sen MEDIA

(viii) SELECT MAX(DOJ), MIN(DOB) FROM EMPLOYEE;

Ans MAX(DOJ) MIN(DOB)

2014-06-09 1984-10-19

(For Questions 6 to 26 : Answers at the end of session)

6. Answer the question (b) and (c) on the basis of the following tables SHOPPE and ACCESSORIES.

Table: SHOPPE (2014)

ID	SName	Area
S01	ABC Computronics	CP
S02	All Infotech Media	GK II
S03	Tech Shopee	CP
S04	Geeks Techno Soft	Nehru Place
S05	Hitech Store	Nehru Place

Table: ACCESSORIES

ID	Iname	Price	Sno
A01	Mother Board	12000	S01
A02	Hard Disk	5000	S01
A03	Keyboard	500	S02
A04	Mouse	300	S01
A05	Mother Board	13000	S02
A06	Keyboard	400	S03
A07	LCD	6000	S04
A08	LCD	5500	S05
A09	Mouse	350	S05
A10	Harddisk	4500	S03

Write a SQL query (1 to 4)

4

- To display Name and Price of all the Accessories in ascending order of their Price.
- To display Id and Sname of all Shopee located in Nehru Place;
- To display Minimum and Maximum price of each Name of Accessories.
- To display Name, Price of all the Accessories and their respective SName where they are available.

Write the output of the following SQL command

- SELECT DISTINCT NAME FROM ACCESSORIES WHERE PRICE>=5000;
- SELECT AREA, COUNT(\*),FROM SHOPPE GROUP BY AREA;
- SELECT COUNT(DISTINCT AREA) FROM SHOPPE;
- SELECT NAME, PRICE\*0.05 DISCOUNT FROM ACCESSORIES WHERE SNO IN('S02','S03');

7. Write SQL queries for (b) to (g) and write the outputs for the SQL queries mentioned shown in (h1) to (h4) on basis of tables PRODUCTS and SUPPLIERS. (2013)

**Table: PRODUCTS**

PI D	PNAME	QT Y	PRIC E	COMPA NY	UPC ODE
101	DIGITAL CAMERA 14X	120	12000	RENIX	S01
102	DIGITAL PAD 11i	100	22000	DIGI POP	S02
104	PEN DRIVE 16 GB	500	1100	STOREKI NG	S01
106	LED SCREEN 32	70	28000	DISPEX PERTS	S02
105	CAR GPS SYSTEM	60	12000	MOVEON	S03

**Table: SUPPLIERS**

SUPCODE	SNAME	CITY
S01	GET ALL INC	KOLKATA
S03	EASY MARKET CORP	DELHI
S02	DIGI BUSY GROUP	CHENNAI

(b) To display the details of all the products in ascending order of product names (ie PNAME)

(c) To display product name and price of all those products whose price is in range of 10000 and 15000 (both values inclusive).

(d) To display the number of products, which are supplied supplier. Ie, the expected output should be

**S01 2**

**S02 2**

**S03 1**

(e) To display the price, product name and quantity (ie qty) of those products which have quantity more than 100

(f) To display the names of those suppliers, who are either from DELHI or from CHENNAI.

(g) To display the name of the companies and the name of the products in descending order of company names.

**(h) Obtain the outputs of the following SQL queries based on the data given in tables PRODUCTS and SUPPLIERS above.**

(h1) SELECT DISTINCT SUPCODE FROM PRODUCTS;

(h2) SELECT MAX(PRICE), MIN(PRICE) FROM PRODUCTS;

(h3) SELECT PRICE\*QTY AMOUNT FROM PRODUCTS WHERE PID=104;

(h4) SELECT PNAME, SNAME FROM PRODUCTS P, SUPPLIERS S WHERE P.SUPCODE=S.SUPCODE AND QTY>100;

**8) Consider the following tables CARDEN and CUSTOMER and answer (b) and (c) parts of this question: Table: CARDEN (2012)**

Ccode	CarName	Make	Color	Cap acit y	Char ge
501	A-Star	Suzuki	RED	3	14
503	Indigo	Tata	SILVER	3	12
502	Innova	Tovota	WHITE	7	15
509	SX4	Suzuki	SILVER	4	14
510	C Class	Mercedes	RED	4	35

**Table: CUSTOMER**

CCode	Cname	Ccode
1001	Hemant Sahu	501
1002	Raj Lal	509
1003	Feroza Shah	503
1004	Ketan Dhal	502

**(b) Write SQL commands for the following statements: 4**

(i) To display the names of all silver colored Cars.

(ii) To display name of car, make and capacity of cars in descending order of their sitting capacity.

(iii) To display the highest charges at which a vehicle can be hired from CARDEN.

(iv) To display the customer name and the corresponding name of the cars hired by them.

**(c) Give the output of the following SOL queries:**

(i) SELECT COUNT (DISTINCT Make) FROM CARDEN;

(ii) SELECT MAX (Charges), MIN (Charges) FROM CARDEN;

(iii) SELECT COUNT (\*), Make FROM CARDEN;

(iv) SELECT CarName FROM CARDEN WHE~ Capacity = 4;

**9) Consider the following tables EMPLOYEE and SALGRADE and answer (b) and (c) parts of this questions. (2011)**

Table: EMPLOYEE

ECODE	NAME	DESIG	SGRADE	DOJ	DOB
101	AbdulAhmad	EXECUTIVE	S03	23-Mar-2003	13-Jan-1980
102	Ravi.Chander	HEAD-IT	S02	12-Feb-2010	22-Jul-1987
103	John Ken	RECEPTIONIST	S03	24-June-2009	24-Feb-1983
105	NazarAmeen	GM	S02	11-Aug-2006	03-Mar-1984
108	Priyam Sen	CEO	S01	29-Dec-2004	19-Jan-1982

Table: SALGRADE

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

**(b) Write SQL commands for the following statements:**

(i) To display the details of all EMPLOYEES, in descending order of DOJ

(ii) To display NAME and DE51G of those EMPLOYEES, whose 5ALGRADE is either 502 or 503

(iii) To display the content of all the EMPLOYEES table, whose DOJ is in between '09-Feb-2006' and '08-Aug-2009'.

(iv) To add a new row with the following:

109, 'Harish Roy', 'HEAD-IT', 'S02', '09-Sep-2007', '21-Apr-1983'

**(c) Give the output of the following SQL queries: 2**

(i) SELECT COUNT (SGRADE),SGRADE FROM EMPLOYEE GROUP BY SGRADE;

(ii) SELECT MIN(DOB), MAX (DOJ) FROM EMPLOYEE;

(iii) SELECT NAME , SALARYFROM EMPLOYEE E, SALGRADE S WHERE

E.SGRADE= S.SGRADE AND E.ECODE<103;

Ans Name Salary

(iv) SELECT SGRADE, SALARY+HRA ET:)M SALGRADE WHERE SGRADE= 'S02';

**10) Consider the following tables STORE and SUPPLIERS and answer (b1) and (b2) parts of this question: (D 2010)**

Table: STORE

ItemNo	Item	Scode	Qty	Rate	LastBuy
2005	Sharpener Classic	23	60	8	31-Jun-09
2003	Ball Pen 0.25	22	50	25	01-Feb-10
2002	Gel Pen Premium	21	150	12	24-Feb-10
2006	Gel Pen Classic	21	250	20	11-Mar-09
2001	Eraser Small	22	220	6	19-Jan-09
2004	Eraser Big	22	110	8	02-Dec-09
2009	Ball Pen 0.5	21	180	18	03-Nov-09

Table: SUPPLIERS

Scode	Sname
21	Premium Stationers
23	Soft Plastics
22	Tetra Supply

**b1) Write SQL commands for the following statements:4**

- (i) To display details of all the items in the Store table in ascending order of LastBuy.  
(ii) To display ItemNo and Item name of those items from Store table whose Rate is more than 15 Rupees.  
(iii) To display the details of those items whose Supplier code (Scode) is 22 or Quantity in Store (Qty) is more than 110 from the table Store.  
(iv) To display Minimum Rate of items for each Supplier individually as per Scode from the table Store.

**b2) Give the output of the following SQL queries:2**

- Note:** In all output Questions ignore Column Headings  
(i) SELECT COUNT(DISTINCT Scode) FROM Store;  
(ii) SELECT Rate\*Qty FROM Store WHERE ItemNo=2004;  
(iii) SELECT Item,Sname FROM Store S, Suppliers P WHERE S.Scode=P.Scode AND ItemNo=2006;  
(iv) SELECT MAX>LastBuy) FROM Store;

**11) Consider the following tables GARMENT and FABRIC. Write SQL commands for the statements**

- (i) to (iv) and give outputs for SQL queries (v) to (viii) (D2009)6

Table: GARMENT

GCODE	DESCRIPTION	PRICE	FCODE	READYDATE
10023	PENCIL SKIRT	1150	F03	19-DEC-08
10001	FORMAL SHIRT	1250	F01	12-JAN-08
10012	INFORMAL SHIRT	1550	F02	06-JUN-08
10024	BABY TOP	750	F03	07-APR-07
10090	TULIP SKIRT	850	F02	31-MAR-07
10019	EVENING GOWN	850	F03	06-JUN-08
10009	INFORMAL PANT	1500	F02	20-OCT-08
10007	FORMAL PANT	1350	F01	09-MAR-08
10020	FROCK	850	F04	09-SEP-07
10089	SLACKS	750	F03	20-OCT-08

Table: FABRIC

FCODE	TYPE
F04	POLYESTER
F02	COTTON
F03	SILK
F01	TERELENE

- (i) To display GCODE and DESCRIPTION of each GARMENT in descending order of GCODE  
(ii) To display the details of all the GARMENTS, which have READYDATE in between 08-DEC-07 and 16-JUN-08(inclusive of both the dates).  
(iii) To display the average PRICE of all the GARMENTS, which are made up of FABRIC with FCODE as F03.  
(iv) To display FABRIC wise highest and lowest price of GARMENTS from GARMENT table. (Display FCODE of each GARMENT along with highest and lowest price)  
(v) SELECT SUM (PRICE) FROM GARMENT WHERE FCODE = 'F01' ;  
(vi) SELECT DESCRIPTION, TYPE FROM GARMENT, FABRIC WHERE GARMENT.FCODE = FABRIC.FCODE AND GARMENT. PRICE >= 1260 ;  
(vii) SELECT MAX (FCODE) FROM FABRIC;  
(viii) SELECT COUNT (DISTINCT PRICE) FROM GARMENT ;

**(12) Consider the following tables DRESS and MATERIAL. Write SQL commands for the statements**

- (i) to (iv) and give outputs for SQL queries (v) to (viii). (2009 OD)6

Table: DRESS

DCODE	DESCRIPTION	PRICE	MCODE	LAUNCHDATE
10001	FORMAL SHIRT	1250	M001	12-JAN-08
10020	FROCK	750	M004	09-SEP-07
10012	INFORMAL SHIRT	1450	M002	06-JUN-08
10019	EVENING GOWN	850	M003	06-JUN-08
10090	TULIP SKIRT	850	M002	31-MAR-07
10023	PENCIL SKIRT	1250	M003	19-DEC-08
10089	SLACKS	850	M003	20-OCT-08
10007	FORMAL PANT	1450	M001	09-MAR-08
10009	INFORMAL PANT	1400	M002	20-OCT-08
10024	BABY TOP	650	M003	07-APR-07

Table: MATERIAL

MCODE	TYPE
MOO1	TERELENE
MOO2	COTTON
MOO4	POLYESTER
MOO3	SILK

- (i) To display DCODE and DESCRIPTION of each dress in ascending order of DCODE.  
(ii) To display the details of all the dresses which have LAUNCHDATE in between 05-DEC-07 and 20-JUN-08 (inclusive of both the dates).  
(iii) To display the average PRICE of all the dresses which are made up of material with MCODE as M003.

(iv) To display materialwise highest and lowest price of dresses from DRESS table. (Display MCODE of each dress along with highest and lowest price)

(v) SELECT SUM(PRICE) FROM DRESS WHERE MCODE='M001';

(vi) SELECT DESCRIPTION, TYPE FROM DRESS, MATERIAL WHERE DRESS.DCODE = MATERIAL.MCODE AND DRESS.PRICE >= 1250;

(vii) SELECT MAX(MCODE) FROM MATERIAL;

(viii) SELECT COUNT(DISTINCT PRICE) FROM DRESS;

**13) Consider the following tables Product and Client. Write SQL commands for the statement (i) to (iv) and give outputs for SQL queries (v) to (viii) (D 2008)**

Table: **PRODUCT**

P_ID	Product Name	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	Client Name	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

(i) To display the details of those Clients whose city is Delhi.

(ii) To display the details of Products whose Price is in the range of 50 to 100 (Both values included).

(iii) To display the ClientName, City from table Client, and ProductName and Price from table Product, with their corresponding matching P\_ID.

(iv) To increase the Price of all Products by 10

(v) SELECT DISTINCT Address FROM Client.

(vi) SELECT Manufacturer, MAX(Price), Min(Price), Count(\*) FROM Product GROUP BY Manufacturer;

(vii) SELECT ClientName, ManufacturerName FROM Product, Client WHERE Client.Prod\_Id=Product.P\_Id;

(viii) SELECT ProductName, Price \* 4 FROM Product.

**14) Consider the following tables Item and Customer. Write SQL commands for the statement (i) to (iv) and give outputs for SQL queries (v) to (viii) (OD 2008)**

Table: **ITEM**

I_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	Customer Name	City	I_ID
01	N.Roy	Delhi	LC03
06	H.Singh	Mumbai	PC03
12	R.Pandey	Delhi	PC06
15	C.Sharma	Delhi	LC03
16	K.Agarwal	Banglore	PC01

(i) To display the details of those Customers whose city is Delhi.

(ii) To display the details of Item whose Price is in the range of 35000 to 55000 (Both values included).

(iii) To display the CustomerName, City from table Customer, and ItemName and Price from table Item, with their corresponding matching I\_ID.

(iv) To increase the Price of all Items by 1000 in the table Item.

(v) SELECT DISTINCT City FROM Customer.

(vi) SELECT ItemName, MAX(Price), Count(\*) FROM Item GROUP BY ItemName;

(vii) SELECT CustomerName, Manufacturer FROM Item, Customer WHERE Item.Item\_Id=Customer.Item\_Id;

(viii) SELECT ItemName, Price \* 100 FROM Item WHERE Manufacturer = 'ABC';

**15) Consider the following tables Consignor and Consignee. Write SQL command for the statements(i)to(iv) And give outputs for the SQL queries (v) to (viii). (OD2007)6**

TABLE : **CONSIGNOR**

CnorID	CnorName	CnorAddress	City
ND01	R singhal	24,ABC Enclave	New Delhi
ND02	Amit Kumar	123,Palm Avenue	New Delhi
MU15	R Kohil	5/A,South,Street	Mumbai
MU50	S Kaur	27-K,Westend	Mumbai

TABLE : **CONSIGNEE**

CneeID	CnorID	CneeName	CneeAddress	CneeCity
MU05	ND01	Rahul Kishore	5,Park Avenue	Mumbai
ND08	ND02	P Dhingra	16/j,Moore Enclave	New Delhi
KO19	MU15	A P Roy	2A,Central/avenue	Kolkata
MU32	ND02	S mittal	P 245, AB Colony	Mumbai
ND48	MU50	B P jain	13,Block d,a,viha	New Delhi

(i) To display the names of all consignors from Mumbai.

(ii) To display the cneeID, cnorName, cnorAddress, CneeName, CneeAddress for every Consignee.

(iii) To display the consignee details in ascending order of CneeName.

(iv) To display number of consignors from each city.

(v) SELECT DISTINCT City FROM CONSIGNEE;

(vi) SELECT A.CnorName A, B.CneeName B FROM Consignor A, Consignee B WHERE A.CnorID=B.CnorID AND B.CneeCity='Mumbai';

(vii) SELECT CneeName,CneeAddress FROM Consignee WHERE CneeCity Not IN ('Mumbai', 'Kolkata');

(viii) SELECT CneeID, CneeName FROM Consignee WHERE CnorID = 'MU15' OR CnorID = 'ND01';

**16) Consider the following tables. Write SQL command for the statements (i)to(iv)and give outputs for the SQL queries (v) to (viii). (D2006) 6**

TABLE : **SENDER**

SenderID	SenderName	SenderAddress	SenderCity
ND01	R jain	2,ABC Appts	New Delhi
MU02	H sinha	12, Newton	Mumbai
MU15	S haj	27/ A,Park Street	New Delhi
ND50	T Prasad	122-K,SDA	Mumbai

**TABLE :RECIPIENT**

RecID	Sender ID	ReCName	RecAddress	ReCCity
KO05	ND01	R Bajpayee	5,Central Avenue	Kolkata
ND08	MU02	S Mahajan	116, A Vihar	New Delhi
MU19	ND01	H sing	2A,Andheri East	Mumbai
MU32	MU15	P K swamy	B5, CS Terminus	Mumbai
ND48	ND50	S Tripathi	13, B1 D,Mayur Vihar	New Delhi

- (i)To display the names of all senders from Mumbai.
- (ii)To display the recID, senderName, senderAddress, RecName, RecAddress for every receipt.
- (iii)To display the sender details in ascending order of SenderName.
- (iv)To display number of Recipients from each city.
- (v) SELECT DISTINCT SenderCity FROM Sender;
- (vi) SELECT A.SenderName A, B.RecName FROM Sender A, Recipient B WHERE A.SenderID=B. SenderID AND B.RecCity='Mumbai';
- (vii)SELECT RecName,RecAddress FROM Recipient WHERE RecCity Not IN ('Mumbai', 'Kolkata');
- (viii) SELECT RecID, RecName FROM Recipient WHERE SenderID = 'MU02' OR SenderID = 'ND50';

**17) Study the following tables FLIGHTS and FARES and write SQL commands for the questions (i) to (iv) and give outputs for SQL queries (v) to(vi). (OD 2006)**

**TABLE: FLIGHTS**

FL_NO	STARTING	ENDING	NO_FLIGHTS	NO_STOPS
IC301	MUMBAI	DELHI	8	0
IC799	BANGALORE	DELHI	2	1
MC101	INDORE	MUMBAI	3	0
IC302	DELHI	MUMBAI	8	0
AM812	KANPUR	BANGLORE	3	1
IC899	MUMBAI	KOCHI	1	4
AM501	DELHI	TRIVENDRUM	1	5
MU499	MUMBAI	MADRAS	3	3
IC701	DELHI	AHMEDABAD	4	0

**TABLE:FARES**

FL_NO	AIRLINES	FARE	TAX%
IC701	INDIAN AIRLINES	6500	10
MU499	SAHARA	9400	5
AM501	JET AIRWAYS	13450	8
IC899	INDIAN AIRLINES	8300	4
IC302	INDIAN AIRLINES	4300	10
IC799	INDIAN AIRLINES	1050	10
MC101	DECCAN AIRLINES	3500	4

- (i) Display FL\_NO and NO\_FLIGHTS from "KANPUR" TO "BANGALORE" from the table FLIGHTS.
- (ii) Arrange the contents of the table FLIGHTS in the ascending order of FL\_NO.
- (iii) Display the FL\_NO and fare to be paid for the flights from DELHI to MUMBAI using the tables FLIGHTS and FARES, where the fare to be paid = FARE+FARE+TAX%/100.
- (iv) Display the minimum fare "Indian Airlines" is offering from the tables FARES.
- v)Select FL\_NO,NO\_FLIGHTS, AIRLINES from FLIGHTS, FARES Where STARTING = "DELHI" AND FLIGHTS.FL\_NO = FARES.FL\_NO
- (vi) SELECT count (distinct ENDING) from FLIGHTS.

**18) Study the following tables DOCTOR and SALARY and write SQL commands for the questions (i) to (iv) and give outputs for SQL queries (v) to (vi) (D2006):**

**TABLE: DOCTOR**

ID	NAME	DEPT	SEX	EXPERIENCE
101	Johan	ENT	M	12
104	Smith	ORTHOPEDIC	M	5
107	George	CARDIOLOGY	M	10
114	Lara	SKIN	F	3
109	K George	MEDICINE	F	9
105	Johnson	ORTHOPEDIC	M	10
117	Lucy	ENT	F	3
111	Bill	MEDICINE	F	12
130	Murphy	ORTHOPEDIC	M	15

**TABLE: SALARY**

ID	BASIC	ALLOWANCE	CONSULTATION
101	12000	1000	300
104	23000	2300	500
107	32000	4000	500
114	12000	5200	100
109	42000	1700	200
105	18900	1690	300
130	21700	2600	300

- (i) Display NAME of all doctors who are in "MEDICINE" having more than 10 years experience from the Table DOCTOR.
- (ii) Display the average salary of all doctors working in "ENT" department using the tables DOCTORS and SALARY Salary =BASIC+ALLOWANCE.
- (iii) Display the minimum ALLOWANCE of female doctors.
- (iv) Display the highest consultation fee among all male doctors.
- (v) SELECT count (\*) from DOCTOR where SEX = "F"
- (vi) SELECT NAME, DEPT , BASIC from DOCTOR, SALRY Where DEPT = "ENT" AND DOCTOR.ID = SALARY.ID

**19) Consider the following tables EMPLOYEES and EMPSalary. write SQL commands for the Statements (i) to (iv) and give outputs for SQL queries (v) to (viii). (D2005)**

**EMPLOYEES**

EMPID	FIRSTNAME	LASTNAME	ADDRESS	CITY
010	GEORGE	Smith	83 First Street	Howard
105	MARY	Jones	842VineAve	Losantiville
152	SAM	Tones	33 Elm st	Paris
215	SARAH	Ackerman	440 U.S.110	Upton
244	MANILA	Sengupta	24 Friends Street	New Delhi
300	ROBERT	Samuel	9 Fifth Cross	Washington
335	HENRY	Williams	12 Moore Street	Boston
400	RACHEL	Lee	121 Harrison	New York
441	PETER	Thompson	11 Red road	Paris

### EMPSALRAY

EMP ID	SALAR Y	BENEF ITS	DESIGNAT ION
010	75000	15000	Manager
105	65000	15000	Manager
152	80000	25000	Director
215	75000	12500	Manager
244	50000	12000	Clerk
300	45000	10000	Clerk
335	40000	10000	Clerk
400	32000	7500	Salesman
441	28000	7500	Salesman

(i) To display Firstname, Lastname, Address and City of all employees living in Paris from the table EMPLOYEES.

(ii) To display the content of EMPLOYEES table in descending order of FIRSTNAME.

(iii) To display the Firstname, Lastname, and Total Salary of all managers from the tables, where Total Salary is calculated as Salary+Benefits.

(iv) To display the Maximum salary among Managers and Clerks from the table EMPSALARY.

(v) SELECT FIRSTNAME,SALARY FROM EMPLOYEES,EMPSALARY WHERE DESTINATION = 'Salesman' AND

EMPLOYEES.EMPID=EMPSALARY.EMPID;

(vi) SELECT COUNT (DISTINCT DESIGNATION ) FROM EMPSALARY

(vii) SELECT DESIGNATION , SUM(SALARY) FROM EMPSALARY GROUP BY DESIGNATION HAVING COUNT(\*) > 2;

(viii)SELECT SUM (BENEFITS) FROM EMPSALARY WHERE DESIGNATION='Clerk';

20) Consider the following tables WORKERS and DESIG. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii).

(OD 2005)

### WORKERS

W_I D	FIRST NAME	LASTNAME	ADDRESS	CITY
102	Sam	Tones	33 Elm St.	Paris
105	Sarah	Ackerman	44 U.S.110	New York
144	Manila	Sengupta	24 Friends Street	New Delhi
210	George	Smith	83 First Street	Howard
255	Mary	Jones	842 Vine Ave.	Losantiville
300	Robert	Samuel	9 Fifth Cross	Washington
335	Henry	Williams	12 Moore Street	Boston
403	Ronny	Lee	121 Harrison St.	New York
451	Pat	Thompson	11 Red Road	Paris

### DESIG

W_I D	SALAR Y	BENEFIT S	DESIGNATI ON
102	75000	15000	Manager
105	85000	25000	Director
144	70000	15000	Manager
210	75000	12500	Manager
255	50000	12000	Clerk
300	45000	10000	Clerk
335	40000	10000	Clerk
400	32000	7500	Salesman
451	28000	7500	Salesman

(i) To display W\_ID Firstname, address and City of all employees living in New York from the Table WORKERS

(ii) To display the content of workers table in ascending order of LASTNAME.

(iii) To display the FIRSTNAME, LASTNAME and Total Salary of all Clerks from the tables WORKERS And DESIG, where Total

salary is calculated as Salary + benefits.

(iv) To display the minimum salary among managers and Clerks from the tables DESIG.

(v) SELECT FIRSTNAME, SALARY FROM WORKERS, DESIG WHERE DESIGNATION = "MANAGER" AND WORKERS.W\_ID = DESIG.W\_ID

(vi)SELECT COUNT(DISTINCT DESIGNATION) FROM DESIGN ;

(vii) SELECT DESIGNATION, SUM(SALARY) FROM DESIG GROUP BY DESIGNATION HAVING COUNT (\*) < 3;

(viii) SELECT SUM(BENIFTS) FROM DESIG WHERE DESIGNATION="salesman";

21. Give the following table for database a LIBRARY. (2004)

TABLE : BOOKS

BOOK _ID	BOOK_N AME	AUTHORNAM E	PUBLIS HER	PRICE	TYPE	QUA NTI TY
F0001	The Tears	William Hopkins	First Publ.	750	Fiction	10
F0002	Thunder bolts	Anna Roberts	First Publ.	700	Fiction	5
T0001	My first C++	Brains & Brooke	EPB	250	Text	10
T0002	C++ Brain works	A.W.Rossaine	TDH	325	Text	5
C001	Fast Cook	Lata Kapoor	EPB	350	Cookery	8

TABLE:ISSUED

BOOK_ID	QUANTITY_ISSUE D
F0001	3
T0001	1
C0001	5

Write SQL queries from b to g.

(b)To show Book name, Author name and Price of books of EPB publisher.

(c) To list the names of the books of FICTIONS type.

(d) To display the names and prices of the books in descending order of their price.

(e) To increase the price of all books of First Pub.by 50.

(f) To Display the Book\_ID, Book\_Name and Quantity Issued for all books Which have been issued.

(g) To insert a new row in the table Issued having the following data: "F0002",4

(h) Give the output of the following queries on the above tables

(i) Select Count(Distinct Publishers) From Books

(ii) Select Sum(Price) From Books Where Quantity>5

(iii) Select Book\_Name,Author\_Name From Books Where Price<500

(iv) Select Count(\*) From Books

22. Write SQL commands for (b) to (g) and write the outputs for (h) on the basis of tables TINTERIORS and NEWONES. (2003)

**TABLE: INTERIORS**

NO	ITEMNAME	TYPE	DATEOFSTOCK	PRICE	DISCOUNT
1	Red rose	Double Bed	23/02/02	32000	15
2	Soft touch	Baby cot	20/01/02	9000	10
3	Jerry's home	Baby cot	19/02/02	8500	10
4	Rough wood	Office Table	01/01/02	20000	20
5	Comfort zone	Double Bed	12/01/02	15000	20
6	Jerry look	Baby cot	24/02/02	7000	19
7	Lion king	Office Table	20/02/02	16000	20
8	Royal tiger	Sofa	22/02/02	30000	25
9	Park sitting	Sofa	13/12/01	9000	15
10	Dine paradise	Dinning Table	19/02/02	11000	15

**TABLE:NEWONES**

NO	ITEM NAME	TYPE	DATEOFSTOCK	PRICE	DISCOUNT
11	White wood	Double bed	23/03/03	20000	20
12	James 007	Sofa	20/02/03	15000	15
13	Tom look	Baby cot	21/02/03	7000	10

Table: COACH

PCode	Name	Acode
1	Ahmad Hussain	1001
2	Ravinder	1008
3	Janila	1001
4	Naaz	1003

**b) Write SQL commands for the following statements: 4**  
 (i) To display the names of all activities with their ACodes in descending order.

(ii) To display sum of PrizeMoney for the Activities played in each of the Stadium separately.

(iii) To display the coach's name and ACodes in ascending order of ACode from the table COACH

(iv) To display the content of the Activity table whose ScheduleDate earlier than 01/01/2004 in ascending order of ParticipantsNum.

**c) Give the output of the following SQL queries:2**

(i) SELECT COUNT(DISTINCT ParticipantsNum) FROM ACTIVITY;

(ii) SELECT MAX(ScheduleDate), MIN(ScheduleDate) FROM ACTIVITY;

(iii) SELECT Name, ActivityName FROM ACTIVITY A, COACH C WHERE A.Acode= C.Acode AND A.ParticipantsNum = 10;

(iv) SELECT DISTINCT Acode FROM COACH;

**24) Consider the following tables GAMES and PLAYER and answer (b) and (c) parts of this question (MP209-10)**

GCode	GameName	Type	Number	Prize Money	Schedule Date
101	Carom Board	Indoor	2	5000	23-Jan-2004
102	Badminton	Outdoor	2	12000	12-Dec-2003
103	Table Tennis	Indoor	4	8000	14-Feb-2004
105	Chess	Indoor	2	9000	01-Jan-2004
108	Lawn Tennis	Outdoor	4	25000	19-Mar-2004

PCode	Name	Gcode
1	Nabi Ahmad	101
2	Ravi Sahai	108
3	Jatin	101
4	Nazneen	103

**b) Write SQL commands for the following statements:4**

(i) To display the name of all GAMES with their GCodes  
 (ii) To display details of those GAMES which are having PrizeMoney more than 7000.

(iii) To display the content of the GAMES table in ascending order of Schedule Date.

(iv) To display sum of PrizeMoney for each Type of GAMES

**c) Give the output of the following SQL queries: 2**

(i) SELECT COUNT(DISTINCT Number) FROM GAMES;

(ii) SELECT MAX(ScheduleDate), MIN(ScheduleDate) FROM GAMES;

(iii) SELECT Name, GameName FROM GAMES G, PLAYER P WHERE G.Gcode=P.Gcode AND G.PrizeMoney>10000;

(iv) SELECT DISTINCT Gcode FROM PLAYER;

**23) Consider the following tables ACTIVITY and COACH and answer (b) and (c) parts of this question: (MP109-10)**

A Code	ActivityName	Stadium	Participants Num	Prize Money	Schedule Date
1001	Relay 100x4	Star Annex	16	10000	23-Jan-2004
1002	High jump	Star Annex	10	12000	12-Dec-2003
1003	Shot Put	Super Power	12	8000	14-Feb-2004
1005	Long Jump	Star Annex	12	9000	01-Jan-2004
1008	Discuss Throw	Super Power	10	15000	19-Mar-2004

25) Consider the following tables **ACTIVITY** and **COACH**. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii)

(MP108-09) 6

Table: ACTIVITY

ACode	ActivityName	ParticipantsNum	PrizeMoney	ScheduleDate
1001	Relay100x4	16	10000	23-Jan-2004
1002	High jump	10	12000	12-Dec-2003
1003	Shot Put	12	8000	14-Feb-2004
1005	Long Jump	12	9000	01-Jan-2004
1008	Discuss Throw	10	15000	19-Mar-2004

Table: COACH

PCode	Name	ACode
1	Ahmad Hussain	1001
2	Ravinder	1008
3	Janila	1001
4	Naaz	1003

(i) To display the name of all activities with their ACodes in descending order.

(ii) To display sum of PrizeMoney for each of the Number of participants groupings (as shown in column ParticipantsNum 10,12,16)

(iii) To display the coach's name and ACodes in ascending order of ACode from the table COACH

(iv) To display the content of the ACTIVITY table whose ScheduleDate earlier than 01/01/2004 in ascending order of ParticipantsNum.

(v) SELECT COUNT(DISTINCT ParticipantsNum) FROM ACTIVITY;

(vi) SELECT MAX(ScheduleDate), MIN(ScheduleDate) FROM ACTIVITY;

(vii) SELECT SUM(PrizeMoney) FROM ACTIVITY;

(viii) SELECT DISTINCT ParticipantsNum FROM ACTIVITY;

26) Consider the following tables **SCHOOL** and **ADMIN**. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii).

TABLE: SCHOOL

COD E	TEACHE RNAME	SUBJECT	DOJ	PERI ODS	EXP ERI ENCE
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	GAMAM	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) To decrease period by 10% of the teachers of English subject.

(ii) To display TEACHERNAME, CODE and DESIGNATION from tables SCHOOL and ADMIN whose gender is male.

(iii) To display number of teachers in each subject.

(iv) To display details of all teachers who have joined the school after 01/01/1999 in descending order of experience.

(v) SELECT SUM(PERIODS), SUBJECT FROM SCHOOL GROUP BY SUBJECT;

(vi) SELECT TEACHERNAME, GENDER FROM SCHOOL, ADMIN WHERE DESIGNATION = 'COORDINATOR' AND SCHOOL.CODE=ADMIN.CODE;

(vii) SELECT DESIGNATION, COUNT(\*) FROM ADMIN GROUP BY DESIGNATION HAVING COUNT(\*)>1;

(viii) SELECT COUNT(DISTINCT SUBJECT) FROM SCHOOL;

**MODEL 1 : TWO TABLES ANSWERS FROM 6 TO 26 QUESTIONS**

6. Write a SQL query (1 to 4)

1A) Select Name, Price from ACCESSORIES order by Price.

2A) Select Id, Sname from SHOPPE where Area = 'Nehru Place';

3A) Select Min(Price), Max(Price) from ACCESSORIES group by Name;

4A) Select Name, Price, SName from SHOPPE, ACCESSORIES where SHOPPE.Id= ACCESSORIES.ID;

Write the output of the following SQL command

1

INAME
Mother Board
Hard Disk
LCD

2.

AREA	Count(*)
CP	2
GK II	1
Nehru Place	2

3.

COUNT(DISTINCT AREA)
3

4.

INAME	DISCOUNT
Keyboard	25
Motherboard	650
Keyboard	20
Hard Disk	225

7. b) SELECT \* FROM PRODUCTS ORDER BY PNAME;

(c) SELECT PNAME, PRICE FROM PRODUCTS WHERE PRICE >=10000 AND PRICE >=15000;

(d) SELECT SUPCODE, COUNT(SUPCODE) FROM PRODUCTS GROUP BY SUPCODE;

(E) SELECT PRICE,PNAME, QTY FROM PRODUCTS WHERE QTY>100;

- (f) SELECT SNAME FROM SUPPLIERS WHERE CITY="DELHI" OR CITY="KOLKATA";  
 (g) SELECT COMPANY, PNAME FROM PRODUCTS ORDER BY COMPANY DESC.  
 (h) Obtain the outputs of the following SQL queries based on the data given in tables PRODUCTS and SUPPLIERS above.

(h1)

SUPCODE
S01
S02
S03

(h2)

MAX (PRICE)	MIN(PRICE)
28000	1100

(h3)

AMOUNT
55000

(h4)

PNAME	SNAME
DIGITAL CAMERA 14X	GET ALL INC
PEN DRIVE 16GB	GET ALL INC

- 8) (i) SELECT CarName FROM CARDEN WHERE Color = 'SILVER';  
 (ii) SELECT CarName, Make, Capacity FROM CARDEN ORDER BY Capacity DESC;  
 (iii) SELECT MAX(Charges) FROM CARDEN ;

OR

SELECT CarName, MAX(Charges) FROM CARDEN GROUP BY CarName;

(iv) SELECT CName, CarName FROM CUSTOMER, CARDEN WHERE CUSTOMER.Ccode = CARDEN.Ccode;

OR

SELECT CUSTOMER. CName, CARDEN. CarName FROM CUSTOMER, CARDEN WHERE CUSTOMER.Ccode = CARDEN.Ccode;

OR

SELECT CName, CarName FROM CUSTOMER A, CARDEN B WHERE A.Ccode = B.Ccode;

OR

SELECT A. CName, B. CarName FROM CUSTOMER A, CARDEN B WHERE A.Ccode = B.Ccode;

(c) Give the output of the following SOL queries:

(i) COUNT (DISTINCT Make)

4

(ii) MAX (Charges), MIN (Charges)

35

12

(iii) COUNT (\*)

5

OR

(assuming the presence of GROUP By Make)

COUNT(\*)

2 SUZUKJ:

1 TATA

1 TOYOTA

1 MERCEDES

(iv) CarName

Sx4

C Class

9) b) (i) SELECT \* FROM EMPLOYEE ORDER BY DOJ DESC;

(ii) SELECT NAME, DESIG FROM EMPLOYEE WHERE SGRADE = 'S02' OR SGRADE= 'S03';

OR

SELECT NAME, DESIG FROM EMPLOYEE WHERE SALGRADE ='S02' OR SALGRADE='S03';

(iii) SELECT \* FROM EMPLOYEE

WHERE DOJ BETWEEN '09-Feb-2006'and '08-Aug-2009';

OR

SELECT \* FROM EMPLOYEE WHERE DOJ >= '09-Feb-2006' and DOJ <='08-Aug-2009';

OR

SELECT \* FROM EMPLOYEE

WHERE DOJ > '09-Feb-2006' and DOJ <' 08-Aug-2009" ;

(iv) INSERT INTO EMPLOYEE

VALUES(109,'Harish Roy', 'HEAD-IT', 'S02', '09-Sep-2007', '21-Apr-1983' ) ;

(c) Give :the output of the following SQL queries: 2

(i) COUNT (SGRADE) SGRADE

1 S01

2 S02

2 S03

(ii) MIN (DOB) MAX (DOJ)

13-Jan-1980 12-Feb-2010

(iii) Name Salary

Abdul Ahmad 24000

Ravi Chander 32000

(iv) SGRADE SALARY+HRA

S02 44000

10) (i) SELECT \* FROM STORE ORDER BY LastBuy;

(ii) SELECT ItemNo, Item..In FROM STORE WHERE Rate >15;

(iii) SELECT \* FROM STORE WHERE Scode = 22 OR Qty >110;

(iv) SELECT Scode, MIN(Rate) FROM STORE GROUP BY Scode;

Give the output of the following SQL queries:

(i).COUNT(DISTINCT Scode)

3

(ii) . RATE\*QTY

880

(iii) ITEM SNAME

Gel Pen Classic Premium Stationers

(iv) . MAX (LASTBUY)

24-Feb-10

11) i) SELECT GeODE, DESCRIPTION FROM GARMENT ORDER BY GCODE DESC;

(ii) SELECT \* FROM GARMENT WHERE READYDATE BETWEEN' 08-DEC-07'AND , 16-JUN-08' ; (OR)

SELECT \* FROM DRESS WHERE LAUNCHDATE >= '08-DEC-07' AND LAUNCHDATE<='16-JUN-08';

(iii) SELECT AVG (PRICE) FROM GARMENT WHERE FCODE = 'F03';

(iv) SELECT FCODE, MAX (PRICE), MIN(PRICE) FROM GARMENT GROUP BY FCODE;

(v) SUM (PRICE)

2600

(vi) DESCRIPTION

TYPE

INFORMAL SHIRT COTTON

INFORMAL PANT COTTON

FORMAL PANT TERELENE

(vii) MAX (FCODE)

F04

(viii) COUNT(DISTINCT PRICE)  
7

(12) (i) SELECT DCODE, DESCRIPTION FROM DRESS ORDER BY DCODE ;

(ii) SELECT \* FROM DRESS WHERE LAUNCHDATE BETWEEN '05-DEC-07' AND '20-JUN-08'

OR

SELECT \* FROM DRESS WHERE LAUNCHDATE >= '05-DEC-07' AND LAUNCHDATE <= '20-JUN-08'

(iii) SELECT AVG(PRICE) FROM GARMENT WHERE MCODE = 'M003'

(iv) SELECT MCODE, MAX(PRICE), MIN (PRICE) FROM DRESS GROUP BY MCODE

(v) SUM(PRICE)  
2700

(vi) DESCRIPTION TYPE  
(NO OUTPUT)

(vii) MAX (MCODE)  
MOO4

(viii) COUNT(DISTINCT PRICE)  
6

13)(i) Select all from Client where City="Delhi"

(ii) Select all from product where Price between 50 and 100

(iii) Select ClientName, City, ProductName, Price from Product, Client where Product.P\_ID= Client.P\_ID.

(iv) Update Product Set Price=Price +10

(v) ( The above question may consist DISTINCT City. If it is DISTINCT City, the following is the answer)

City  
-----  
Delhi  
Mumbai  
Bangalore

(vi)

Manufacturer	Max(Price)	Min(Price)	Count(*)
LAK	40	40	1
ABC	55	45	2
XYZ	120	95	2

(vii) **ClientName**      **ManufacturerName**

Cosmetic Shop	ABC
Total Health	ABC
Live Life	XYZ
Pretty Woman	XYZ
Dreams	LAK

(viii) **ProductName**      **Price\*4**

Talcom Powder	160
Face Wash	180
Bath Soap	220
Shampoo	480
Face Wash	380

14) (i) SELECT ALL FROM CUSTOMER WHERE CITY="DELHI"

(ii) SELECT ALL FROM ITEM WHERE PRICE >= 35000 AND PRICE <= 55000

(iii) SELECT CUSTOMERNAME, CITY, ITEMNAME, PRICE FROM ITEM, CUSTOMER WHERE ITEM.I\_ID=CUSTOMER.I\_ID.

(iv) UPDATE ITEM SET PRICE=PRICE+1000

(v) **City**  
Delhi  
Mumbai  
Bangalore

(vi) **ItemName**      **Max(Price)**      **Count(\*)**

Personal Computer	37000	3
Laptop	57000	2

(vii) **CustomerName**      **ManufacturerName**

N.Roy	PQR
H.Singh	XYZ
R.Pandey	COMP
C.Sharma	PQR
K.Agarwal	ABC

(viii) **ItemName**      **Price\*100**

Personal Computer	3500000
Laptop	5500000

15) (i) SELECT CNORNAME FROM CONSIGNOR WHERE CITY="MUMBAI";

(ii) SELECT CNEEID, CNORNAME, CNORADDRESS, CNEENAME, CNEEADDRESS FROM CONSIGNOR, CONSIGNEE WHERE CONSIGNOR.CNORID=CONSIGNEE.CNORID;

(iii) SELECT \* FROM CONSIGNEE ORDER BY CNEENAME ASC;

(iv) SELECT CITY, COUNT(\*) FROM CONSIGNORS GROUP BY CITY;

(v)

Ans: CneeCity
Mumbai
New Delhi
Kolkata

(vi)

CnorName	CneeName
R singhal	Rahul Kishore
Amit Kumar	S mittal

Ans)

(vii)

**CneeName**      **CneeAddress**  
P Dhingra      16/J, Moore Enclave  
B P Jain      13, Block D, A Vihar

(viii) **CneeID**      **CneeName**  
MU05      Rahul Kishore  
KO19      A P Roy

16) Consider the following tables. Write SQL command for the statements (i) to (iv) and give outputs for the SQL queries (v) to (viii). (D2006) 6

(i) SELECT \* FROM SENDER WHERE SENDERCITY='MUMBAI';

(ii) SELECT RECID, SENDERNAME, SENDERADDRESS, RECNAME, RECADDRESS FROM SENDER, RECIPIENT WHERE SENDER.SENDERID=RECIPIENT.RECID;

(iii) SELECT \* FROM SENDER ORDER BY SENDERNAME;

(iv) SELECT RECCITY, COUNT(\*) FROM RECIPIENT GROUP BY RECCITY;

(v) DISTINCT(SENDERCITY)

NewDelhi  
Mumbai

(vi) **SenderName**      **RecName**  
R.Jain      H.Singh  
S.Jha      P.K.Swamy

(vii) **RecName**      **RecAddress**  
S Mahajan      116, A Vihar  
S Tripathi      13, B1 D, Mayur Vihar

(viii) **RecID**      **RecName**  
ND08      S Mahajan  
ND48      S Tripathi

17) (i) **SELECT FL\_NO, NO\_FLIGHTS FROM FLIGHTS WHERE STARTING="KANPUR" AND ENDING="BANGALORE"**

(ii) **SELECT \* FROM FLIGHTS ORDER BY FL\_NO;**

(iii) **SELECT FL\_NO, FARE+FARE+(TAX%/100) FROM FLIGHTS, FARES WHERE**

**STARTING="DELHI" AND ENDING="MUMBAI"**

(iv) **SELECT MIN(FARE) FROM FARES WHERE AIRLINES="INDIAN AIRLINES"**

v)

FL_NO	NO_FLIGHTS	AIRLINES
IC302	8	Indian Airlines
AM501	1	Jet Airways
IC701	4	Indian Airlines

(vi) 7

18)

(i) **SELECT NAME FROM DOCTOR WHERE DEPT="MEDICINE" AND EXPERIENCE>10**

(ii) **SELECT AVG(BASIC+ALLOWANCE) FROM DOCTOR,SALARY WHERE DEPT="ENT" AND DOCTOR.ID=SALARY.ID**

(iii) **SELECT MIN(ALLOWANCE) FROM DOCTRO,SALARY WHERE SEX="F" AND DOCTOR.ID=SALARY.ID**

(iv) **SELECT MAX(CONSULTATION) FROM DOCTOR,SALARY WHERE SEX="M" AND DOCTOR.ID=SALARY.ID**

(v) 4

Name	Dept	Basic
Jonah	Ent	12000

19)

(i) **SELECT FIRSTNAME, LASTNAME, ADDRESS,CITY FROM EMPLOYEES WHERE CITY="PARIS"**

(ii) **SELECT \* FROM EMPLOYEES ORDER BY FIRSTNAME DESC**

(iii) **SELECT FIRSTNAME, LASTNAME, SALARY+BENEFITS FROM EMPLOYEES, EMPSALARY WHERE DESIGNATION = "MANAGER" AND EMPLOYEES.EMPID =EMPSALARY.EMPID**

(iv) **SELECT DESIGNATION,MAX(SALARY) FROM EMPSALARY WHERE DESIGNATION="MANAGER" OR DESIGNATION="CLERK"**

Firstname	Salary
Rachel	32000
Peter	28000

(vi) 4

Designation	Sum(Salary)
Manager	215000
Clerk	135000

(viii) 32000

20) (i) **SELECT W\_ID , FIRSTNAME,ADDRESS, CITY FROM WORKERS WHERE CITY="NEW YORK"**

(ii) **SELECT \* FROM WORKER ORDER BY LASTNAME ASC**

(iii) **SELECT FIRSTNAME, LASTNAME, SALARY+BENEFITS WHERE WORKER.W\_ID= DESG.W\_ID AND DESIGNATION="CLERK"**

(iv) **SELECT MIN(SALARY), DESIGNATION FROM DESIG WHERE DESIGNATION IN ('MANAGER','CLERK')**

GROUP BY DESIGNATION;

OR

**SELECT MIN(SALARY), DESIGNATION FROM DESIG WHERE DESIGNATION= 'MANAGER' OR DESIGNATION='CLERK' GROUP BY DESIGNATION;**

OR

**SELECT MIN(SALARY) FROM DESIG WHERE DESIGNATION='MANAGER' OR DESIGNATION='CLERK';**

OR

**SELECT MIN(SALARY) FROM DESIG WHERE DESIGNATION IN ('MANAGER','CLERK');**

Firstname	Salary
Sam	75000
Manila	70000
George	75000

(vi) 4

Designation	Sum(Salary)
Director	85000
Salesman	60000

(viii) 15000

21. Write SQL queries from b to g.

(b) **SELECT BOOK\_NAME,AUTHOR\_NAME, PRICE FROM BOOKS WHERE PUBLISHER ="EPB"**

(c) **SELECT BOOK\_NAME FROM BOOKS WHERE TYPE="FICTION"**

(d): **SELECT BOOK\_NAME, PRICE FROM BOOKS ORDER BY PRICE DESC;**

(e) **UPDATE BOOKS SET PRICE= PRICE+50 WHERE PUBLISHERS = "FIRST PUBL"**

(f) **SELECT BOOK\_ID, BOOK\_NAME, QUANTITY\_ISSUED FROM BOOKS,ISSUED WHERE BOOKS.BOOKID= ISSUED.BOOKID;**

(g) **INSERT INTO ISSUED VALUES("F0002",4)**

(h) Give the output of the following queries on the above tables

(i) 3

(ii) 1350

Book Name	Author Name
My First C++	Brian & Brooks
C++ Brainworks	A.W.Rossaine
Fast Cook	Lata Kapoor

(iv) 5

22. (b) **SELECT \* FROM INTERIORS WHERE TYPE= "SOFA"**

(d) **SELECT ITEMNAME,TYPE FROM INTERIORS WHERE DATEOFSTOCK<'22/01/02' ORDER BY ITEMNAME**

(e) **SELECT ITEMNAME,DATEOFSTOCK FROM INTERIORS WHERE DISCOUNT>15**

(f) **SELECT COUNT(\*) FROM INTERIORS WHERE TYPE="DOUBLE BED"**

(g) **INSERT INTO NEWONES VALUES (14,"TRUE INDIAN","OFFICE TABLE",'28/03/03',15000,20)**

(h) Give the outputs for the following SQL statements.

(i) 5

(ii) 13

(iii) 53000

23)b)(i) **SELECT Acodes, ActivityName FROM ACTIVITY ORDER BY Acode DESC;**

(ii) **SELECT SUM(PrizeMoney), Stadium FROM ACTIVITY GROUP BY Stadium;**

(iii) **SELECT Name, Acode FROM COACH ORDER BY Acode;**

(iv) SELECT \* FROM ACTIVITY WHERE  
ScheduleDate<'01-Jan-2004' ORDER BY ParticipantsNum;

c) Give the output of the following SQL queries:2

(i) 3

(ii) 19-Mar-2004 12-Dec-2003

(iii) Ravinder Discuss Throw

(iv) 1001

1003

1008

24)

b)(i) SELECT GameName,Gcode FROM GAMES;  
(ii) SELECT \* FROM Games WHERE Prizemoney>7000;  
(iii) SELECT \* FROM Games ORDER BY ScheduleDate;  
(iv) SELECT SUM(Prizemoney),Type FROM Games  
GROUP BY Type;

c) Give the output of the following SQL queries:

(i) 2

(ii) 19-Mar-2004 12-Dec-2003

(iii) Ravi Sahai Lawn Tennis

(iv) 3

25) i) SELECT ActivityName, ACode FROM ACTIVITY  
ORDER BY Acode DESC;

(ii) SELECT SUM(PrizeMoney), ParticipantsNum FROM  
ACTIVITY GROUP BY ParticipantsNum;

(iii) SELECT Name, ACode FROM COACH ORDER BY  
ACode;

(iv) SELECT \* FROM ACTIVITY WHERE  
ScheduleDate<'01-Jan-2004' ORDER BY  
ParticipantsNum;

v) 3

(vi)

19-Mar-2004	12-Dec-2003
-------------	-------------

(vii) 54000

(viii) 16

10

12

26) (i) UPDATE SCHOOL SET PERIOD =  
PERIOD\*0.90;

(ii)SELECT S.TEACHERNAME,S.CODE,  
A.DESIGNATION FROM SCHOOL, ADMIN A  
WHERE GENDER='MALE' AND  
S.CODE=A.CODE;

(iii)SELECT SUBJECT, COUNT(\*) FROM  
SCHOOL GROUP BY SUBJECT;

(iv) SELECT S.CODE,S.TEACHERNAME,  
S.SUBJECT, S.DOJ,S.PERIODS,  
S.EXPERIENCE,A.GENDER,A.DESIGNATION  
FROM SCHOOL S, ADMIN A WHERE  
DOB>'01/01/1999' AND S.CODE=A.CODE  
ORDER BY EXPERIENCE DESC;

(v)

SUM(PERIODS)	SUBJECT
51	ENGLISH
76	PHYSICS
24	MATHS
27	CHEMISTRY

(vi)

TEACHERNAME	GENDER
PRIYA RAI	FEMALE
LISA ANAND	FEMALE

(vii)

DESIGNATION	COUNT(*)
COORDINATOR	2
HOD	2
SENIOR TEACHER	2

(viii) COUNT(\*)

4

## MODEL 2 : SINGLE TABLE

27. Given the following Teacher Relation. (2002)

Write SQL Commands fro (b) to (g)

No	Name	Department	DateofJoining	Salary	Sex
1	Raja	Computer	21/5/98	8000	M
2	Sangita	History	21/5/97	9000	F
3	Ritu	Sociology	29/8/98	8000	F
4	Kumar	Linguistics	13/6/96	10000	M
5	Venkatraman	History	31/10/99	8000	M
6	Sindhu	Computer	21/5/86	14000	M
7	Aishwarya	Sociology	11/1/1998	12000	F

(b) To select all the information of teacher in computer department

**Ans: Select \* from Teacher where  
Department="Computer"**

(c) To list the name of female teachers in History Department.

**Ans: Select Name from Teacher Where Sex="F" And  
Department="History"**

(d) To list all names of teachers with date of admission in ascending order.

**Ans: Select Name from Teacher Order By Dateofjoining  
Asc**

(e) To display Teacher's Name, Department, and Salary of female teachers

**Ans: Select Name,Department,Salary from Teacher  
Where Sex="F"**

(f)To count the number of items whose salary is less than 10000

**Ans: Select Count(\*) from Teacher Where  
Salary<10000**

(g) To insert a new record in the Teacher table with the following data:

8,"Mersha","Computer",{1/1/2000},12000,"M".

**Ans: Insert into Teacher values ,"Mersha",  
"Computer",{1/1/2000},12000,"M");**

28) Write the SQL commands for (i) to (vii) on the basis of the table SPORTS (2001)

## TABLE: SPORTS

Stud no	Class	Name	Game1	Grade1	Game2	Grade2
10	7	Smeer	Criket	B	Swimming	A
11	8	Sujit	Tennis	A	Skating	C
12	7	Kamala	Swimming	B	Football	B
13	7	Veena	Tennis	C	Tennis	A
14	9	Archana	Basket ball	A	Cricket	A
15	10	Arpit	Cricket	A	Athletics	C

(i) Display the names of the students who have grade 'C' in either Game1 or Game2 or both.

**Ans: Select Name From Sports Where Grade1="C" OR Grade2="C"**

(ii) Display the number of students getting grade 'A' in Cricket.

**Ans: Select Count(\*) from Sports Where (Game1="Cricket" and Grade1="A") or (Game2="Cricket" and Grade2="A")**

(iii) Display the names of the students who have same game for both game1 and game2

**Ans: Select Name From Sports Where Game1=Game2**

(iv) Display the games taken up by the students, whose name starts with 'A'.

**Ans: Select Game1,Game2 From Sports Where Name Like "A%"**

(v) Add a new column named 'marks'.

**Ans: Alter Table Sports Add Marks Number(5);**

(vi) Assign a value 200 for marks for all those who are getting grade 'B' or 'A' in both Game1 and Game2.

**Ans: (Children, Try This Answer as an assignment)**

(vii) Arrange the whole table in the alphabetical order of name.

**Ans: Select \* from Sports Order By Name**

**29. Write SQL commands for the (b) to (e) and write the outputs for (g) on thse basis of table CLUB. (2000)**

**TABLE: CLUB**

COACH H-ID	COACH NAME	AGE	SPORTS	DATEOF APP	PAY	SEX
1	KUKREJA	35	KARATE	27/03/96	1000	M
2	RAVINA	34	KARATE	20/01/98	1200	F
3	KARAN	34	SQUASH	19/01/98	2000	M
4	TARUN	33	BASKET BAL	01/01/98	1500	M
5	ZUBIN	36	SWIMMING	12/01/98	750	M
6	KETAKI	36	SWIMMING	24/02/98	800	F
7	ANKITA	39	SQUASH	20/02/98	2200	F
8	ZAREEN	37	KARATE	22/02/98	1100	F
9	KUSH	41	SWIMMING	13/01/98	900	M
10	SHAILYA	37	BASKETBALL	19/02/98	1700	M

(b) To show all information about the swimming coaches in the club.

**Ans: Select \* from Club where SPORTS= "SWIMMING"**

(c) To list names of all coaches with their date of appointment (DATEOFAPP) in descending order.

**Ans: Select COACHNAME,DATEOFAPP from Club order by DATEOFAPP desc;**

(d) To display a report, showing coachname, pay, age and bonus(15% of pay) for all coaches.

**Ans:**

**Select Coachname,Pay,Age,Pay\*0.15 from Club**

(e) To insert a new row in the CLUB table with following data: 11,"PRAKASH",37,"SQUASH", {25/02/98}, 2500,"M"

**Ans: Insert into Club Values**

**(11,"PRAKASH",37,"SQUASH",{25/02/98}, 2500,"M")**

(f) Give the output of the following SQL statements:

(i) select COUNT (distinct SPORTS)from CLUB;

**Ans: 4**

(ii) select MIN(AGE) from CLUB where SEX ="F";

**Ans: 34**

(iii) select AVG(PAY) from CLUB where SPORTS = "KARATE";

**Ans: 1100**

(iv) select SUM(PAY) from CLUB where DATAOFAPP>{31/01/98};

**Ans: 7800**

(G) Assuming that there is one more table COACHES in the database as shown below:

**TABLE:COACHES**

SPORTS PERSON	SEX	COACH_NO
AJAY	M	1
SEEMA	F	2
VINOD	M	1
TANEJA	F	3

**What will be the output of the following query:**

**SELECT SPORTS PERSON, COACHNAME FROM CLUB,COACHES WHERE COACH\_ID=COACH\_NO**

SPORTS PERSON	COACHNAME
AJAY	KUKREJA
SEEMA	RAVINA
VINOD	KUKREJA
TANEJA	KARAN

**Ans)**

**30) Given the following Teacher relation: Write SQL commands for questions (b) to (g). (1999)**

**TEACHER**

N O	NAME	Age	DEPARTMENT	DATEOF JOINING	SALARY	SEX
1	RAJA	45	COMPUTER	21/5/98	8000	M
2	SANGITA	32	History	21/5/97	9000	F
3	RITU	22	MATHS	29/8/98	8000	F
4	KUMAR	41	HISTORY	13/6/96	10000	M
5	VENKAT	44	MATHS	31/10/99	8000	M
6	SINDU	51	HISTORY	21/5/86	14000	F
7	ASHWARYA	37	MATHS	11/1/98	12000	F

(b)To show all information about the teachers of history department.

**Ans:select \* from teacher where department='history';**

(c) To list names of female teacher who are in math department.

**Ans: select name from teacher where sex='female' and department='maths';**

d) To list names of all teacher with their date of joining in ascending order.

**Ans:Select Name From Teacher order by dateofjoining;**

(f) To count the number of teachers with age >23.

**Ans: Select count(name) from teacher where age>23;**

(g) To insert a new row in the teacher table with the following data:

9, "raja", 26, "computer", {13/5/95 }, 2300, "M".

**Ans: Insert into Teacher values(9,"raja",26, "computer", {13/05/95},2300,"M");**