

SAMPLE QUESTION PAPER 1
CLASS XII
INFORMATICS PRACTICES (065)
TERM 2

Maximum Marks: 35

Time Allowed: 90 Minutes

General Instructions:

1. The question paper is divided into 3 sections – A, B and C.
2. Section A consists of 7 questions (1–7). Each question carries 2 marks.
3. Section B consists of 3 questions (8–10). Each question carries 3 marks.
4. Section C consists of 3 questions (11–13). Each question carries 4 marks.
5. Internal choices have been given for question numbers – 1, 3, 8 and 12.

Section A

1. Shashank has just started learning website development. But he is confused about the terms web server and web hosting. Help him in understanding these terms. 2

OR

Shalini is a database administrator. She is assigned a task to join two LANs of two different departments in the same building. She is confused about which device to use between Bridge and Router to accomplish her task. Help her in understanding these two devices.

Ans. Web Server: A web server is a server that stores web pages and responds to the requests sent by the web clients and displays the requested web pages. *For example*, Apache, Netscape, Internet Information Services, etc.

Web Hosting: Web hosting is a service that is provided by companies to its clients to allow them to construct their own websites which are accessible to internet users via the world wide web.

OR

Ans. She should use Bridge to connect two LANs.

Bridge: A bridge is a device that works on the physical layer as well as on data link layer. A network bridge connects multiple network segments (LANs) at the data link layer (layer 2) of the OSI model. It can filter network traffic on the basis of MAC addresses.

Router: The router operates in the physical, data link and network layers of the OSI model. A router is a networking device whose software and hardware are usually tailored to the tasks of routing and forwarding data packets across the network.

2. (i) I: 1
- allow you to make voice calls
 - convert voice into a digital signal that travels over the internet
 - allow you to make a call directly from a computer.
- Who am I?

Ans. VoIP (Voice over Internet Protocol)

- (ii) Write the name of a protocol that is used to 1
- send an email
 - receive an e-mail

Ans. To send an e-mail: SMTP (Simple Mail Transfer Protocol)

To receive an e-mail: IMAP (Internet Mail Access Protocol)

3. Write the output of the following SQL queries: 2
- (i) `Select Truncate(456.89, -2);`
- (ii) `Select Round(5868.766, -2);`

OR

Explain the difference between Round() and Truncate() functions.

- Ans.** (i) 400
(ii) 5900

OR

Truncate() function truncates or deletes the argument to a specified number of decimal places. *For example,*

Select Truncate(765.678,-1);

will return 760.

Round() function rounds the argument to the nearest value. *For example,*

Select Round(478.876,-2)

will return 500.

4. Pulkit is surfing a website named www.trendzonline.co.in. He is confused about the different parts of a domain name. Help him understand. 2

Ans. A domain name is the name of a website associated with the physical IP (Internet Protocol) address on the internet. It consists of a top-level and second-level domain. *For example,* in the domain name trendzonline.co.in:

in is the primary domain name

co is the sub-domain of *in*

trendzonline is the domain name.

5. Anushka is learning SQL functions. Help her to use the correct functions with their number of parameters and types in the following situations: 2

- (i) To obtain the square root of a number
(ii) To obtain the remainder after dividing two numbers

Ans. (i) SQRT(number): This function accepts a positive integer as its arguments.
(ii) MOD(dividend, divisor): It accepts two integer numbers as its arguments.

6. Ms. Preksha has created a table in MySQL to store the records of students. Now, she wants to see the names of students in ascending order and marks in descending order. Suggest her a suitable clause with its usage and example. 2

Ans. She should use Order By clause. It is used to sort data in ascending or descending order based on one or more columns. This clause sorts the records in ascending order (ASC) by default. Therefore, in order to sort the records in descending order, DESC keyword is to be used. Sorting using ORDER BY clause is done on multiple columns, separated by a comma. *For example,* to display Names in ascending order and Marks in descending order, the SQL command is:

Select Name, Marks From Student Order By Name, Marks Desc;

7. Consider the given table Faculty and predict the output: 2

Table: Faculty

F_ID	F_Name	L_Name	Designation	Hire_date	Salary
102	Amit	Mishra	PGT	2008-10-12	70000
103	Nitin	Vyas	PGT	2012-12-24	60000
104	Rakshit	Soni	TGT	2015-05-18	54000
105	Rashmi	Malhotra	PRT	2004-09-11	25000
106	Sulekha	Srivastava	TGT	2017-06-05	38000

- (i) Select F_Name, L_Name, Designation From Faculty Where Year(Hire_date) >2010;
- (ii) Select F_Name, Max(Hire_date), Salary From Faculty group by Designation;

OR

Based on the table given above, write SQL queries for the following tasks:

- (i) To display the first and last name of the employee with maximum salary designation wise.
- (ii) To display the first and last names of employees who were hired in the months from May to October.

Ans. (i)

F_Name	L_Name	Designation
Nitin	Vyas	PGT
Rakshit	Soni	TGT
Sulekha	Srivastava	TGT

(ii)

F_Name	Max(Hire_date)	Salary
Nitin	2012-12-24	60000
Sulekha	2017-06-05	38000
Rashmi	2004-09-11	25000

OR

- (i) Select First_Name, L_Name, Designation, Max (Salary) From Faculty Group by Designation;
- (ii) Select F_Name, L_Name From Faculty Where Month(Hire_date) between 5 and 10;

SECTION – B

Each question carries 3 marks

8. Predict the output of the following queries: 3

- (i) Select Concat(Left('Computer Devices', 8), Right('Information Technology', 10));
- (ii) Select Mid('Artificial Intelligence', 12,5);
- (iii) Select Replace('Hot Coffee', 'Hot', 'Cold');

OR

Krishna is working on a MySQL table named 'Student' having the following columns:

Field Name	Data type
Roll_No	Integer
Name	Varchar(30)
Address	Varchar(26)
Contact_No	Char(11)
Sibling_Name	Varchar(40)

Help him write SQL queries to perform the following tasks:

- (i) To display 10 characters from 5th character in Address field.
- (ii) To display Name in Upper case and Sibling_Name in Lower case.
- (iii) To count the total number of characters in Contact_no field.

Ans. (i) ComputerTechnology

(ii) Intel

(iii) Cold Coffee

OR

- Ans.** (i) `Select Substr(Address, 5,10) from Student;`
 (ii) `Select Upper(Name), Lower(Sibling_Name) from Student;`
 (iii) `Select Length(Contact_No) from Student;`

9. Varun is learning SQL functions and he is confused between `now()` and `sysdate()` functions. Help him understand the similarities and differences. 3

Ans. Similarities:

- (i) The `now()` and `sysdate()` functions return the current date and time.
 (ii) Both functions do not accept any parameter.

Differences:

- (i) `sysdate()` function returns the time at which it is executed while the `now()` function returns a constant time that indicates the time at which the statement began to execute.

10. While working in SQL queries, sometimes we need to extract a part of the string with the specified number of characters. Give examples of three such functions that can be used to extract a substring. 3

- Ans.** (i) `Left()`: This function is used to extract the leftmost characters from a string. *For example,* `Select Left('Informatics Practices', 11);` will return Informatics.
 (ii) `Right()`: This function is used to extract the rightmost characters from the string. *For example,* `Select Right('Informatics Practices',9);` will return Practices.
 (iii) `Mid()/SubStr()/Substring()`: This function is used to extract a portion of the given string starting at the specified character to the number of characters specified. *For example,* `Select Substr('Informatics Practices',6,3);` will return 'mat'.

Section C

Each question carries 4 marks

11. Consider a database loans with the following table: 4

Table: Loans

AccNo	Cust_Name	Loan_Amount	Instalments	Int_Rate	Start_Date	Interest
1.	R.K. Gupta	300000	36	12.00	2009-07-19	1200
2.	S.P. Sharma	500000	48	10.00	2008-03-22	1800
3.	K.P. Jain	300000	36	NULL	2007-03-08	1600
4.	M.P. Yadav	800000	60	10.00	2008-12-06	2250
5.	S.P. Sinha	200000	36	12.50	2010-01-03	4500
6.	P. Sharma	700000	60	12.50	2008-06-05	3500
7.	K.S. Dhall	500000	48	NULL	2008-03-05	3800

Answer the following questions.

- (a) Display the count of all loan holders whose interest is Null.
 (b) Display the interest rate-wise details of loan account holders in ascending order of their names.
 (c) Display the interest-wise details of loan account holders with at least 10 instalments remaining.
 (d) Display the interest-wise count of all loan holders whose instalments due are more than 5 in each group.

- Ans.** (i) `Select COUNT(*) From Loans Where Interest IS NULL;`
 (ii) `Select * From Loans GROUP BY Int_Rate Order by `Cust_Name`;`
 (iii) `Select * From Loans GROUP BY Interest HAVING Instalments>=10;`
 (iv) `Select COUNT(*) From Loans GROUP BY Interest HAVING Instalments>5;`

Table: Store

StoreId	Name	Location	City	NoofEmp	DateOpen	SalesAmt
S101	Planet Fashion	Bandra	Mumbai	7	2015-10-16	40000
S102	Vogue	Karol Bagh	Delhi	8	2015-07-14	120000
S103	Trends	Powai	Mumbai	10	2015-06-24	30000
S104	Super Fashion	Thane	Mumbai	11	2015-02-06	45000
S105	Annabelle	South Extn.	Delhi	8	2015-04-09	60000
S106	Rage	Defence Colony	Delhi	5	2015-03-01	20000

Help him to write SQL queries for the following tasks.

- To display names of stores along with the average of Sales Amount of those stores that have 'fashion' anywhere in their store names.
- To display names of the stores and the total amount of sales in city 'Delhi'.
- To display the date of opening of the oldest store.
- To display the City and the number of stores.

OR

Based on the table named 'Store' given above, Pulkit has executed the following queries:

```
Select Location, Sum(SalesAmt) From Store Group By City;
```

```
Select Name, Location, Sum(SalesAmt) From Store Group By City
Having SalesAmt > 40000;
```

Predict the output of the above two queries. Also, give the justification of the output generated through each query.

- Ans.** (a) `Select Name, AVG(SalesAmt) From Store Where Name LIKE '%fashion%';`
 (b) `Select Name, SUM(SalesAmt) From Store Where City='Delhi';`
 (c) `Select MIN(DateOpen) From Store;`
 (d) `Select City COUNT(*), From Store;`

OR

The output of the first query will be:

Location	Sum(SalesAmt)
Mumbai	115000
Delhi	200000

Here, Group By clause is used to collect data across multiple records and group the results by one or more columns. The output is obtained after grouping the rows on the basis of city and then the aggregate function Sum is applied to SalesAmt column.

The output of the second query will be:

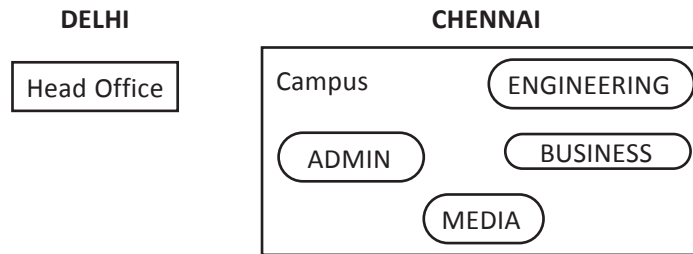
Location	Sum(SalesAmt)
Mumbai	45000
Delhi	180000

Here, Group By and Having clause are used in the query. Having clause will filter the records by specifying a condition on the rows which Group By returns.

13. Perfect Edu. Services Ltd. is an educational organization. It is planning to set up its India campus at Chennai with its head office in Delhi. The Chennai campus has four main buildings—ADMIN, ENGINEERING, BUSINESS and MEDIA.

4

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

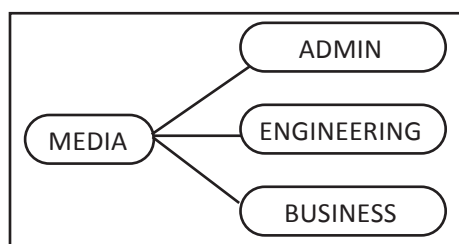


Shortest distance between various buildings:

ADMIN to ENGINEERING	55 m
ADMIN to BUSINESS	90 m
ADMIN to MEDIA	50 m
ENGINEERING to BUSINESS	55 m
ENGINEERING to MEDIA	50 m
BUSINESS to MEDIA	45 m
DELHI HEAD OFFICE to CHENNAI CAMPUS	2175 m

Number of Computers installed at various buildings is as follows:	
ADMIN	110
ENGINEERING	75
BUSINESS	40
MEDIA	12
DELHI HEAD OFFICE	20

- (a) Suggest the most appropriate location for the server inside the Chennai campus (out of the 4 buildings) to get the best connectivity for maximum number of computers. Justify your answer.
- (b) Suggest and draw the cable layout to efficiently connect various buildings within the Chennai campus for connecting the computers.
- (c) Which hardware device will you suggest to be procured by the company to be installed to protect and control the internet use within the campus?
- (d) Which of the following will you suggest to establish online face-to-face communication between the people in the Admin Office of the Chennai campus and Delhi Head Office?
(i) Cable TV (ii) Email (iii) Video conferencing (iv) Text Chat
- Ans.** (a) ADMIN (due to maximum number of computers) or MEDIA (due to shorter distance from other buildings)
- (b) The suitable cable layout is:



- (c) Firewall or Router
(d) (iii) Video conferencing

SAMPLE QUESTION PAPER 2
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TERM 2

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Section A

1. Parul has created a video and uploaded it on her website but she is facing a problem in opening it on some browsers. She has heard of add-ons and plug-ins but doesn't know the difference between them. Help her in understanding these terms. 2

OR

Sonakshi has just started learning computer networking. She is confused about the difference between IP address and MAC address. Help her understand the difference.

Ans. Add-ons and plug-ins are the tools that help to extend and modify the functionality of the browser.

Add-ons: Add-ons are tools that get integrated into our browsers. They are similar to regular apps or programs, but only run when the browser runs. Add-ons can allow the viewing of certain types of web content.

Plug-in: A plug-in is a piece of software that acts as an add-on to a web browser and gives the browser additional functionality. Plug-ins can allow a web browser to display additional content it was not originally designed to display.

OR

Ans.

IP Address		MAC Address	
1.	It stands for Internet Protocol address.	1.	It stands for Media Access Control address.
2.	It is a logical address of a computer that consists of 4-digit hexadecimal numbers which uniquely identify a computer connected to a network.	2.	It is a physical address of a computer that consists of 12-digit hexadecimal numbers assigned to the Network Interface Card for use as a network address in communications within a network segment.
3.	It is assigned by Internet Service Provider.	3.	It is assigned by the manufacturer.
4.	Example of IP address: 198.20.2.18	4.	Example of MAC address: 12:CD:3E:56:5F:C3

2. (i) I: 1
 - am a software that helps in accessing web pages.
 - also help users in navigating websites through www.

Who am I?

- Ans.** Web browser
 (ii) Name any two chat software. 1
- Ans.** MSN Messenger, Yahoo Messenger
- 3.** Write the output of the following SQL queries: 2
 (i) `Select Pow(Round(2.4,0),4);`
 (ii) `Select Mod(Truncate(4578.98,-3),3);`

OR

Explain the parameters required in Sqrt() and Mod() functions.

- Ans.** (i) 16
 (ii) 1

OR

Sqrt(): The Sqrt() function returns the square root value of the specified numeric argument. The parameter required in this function is:

Select Sqrt(value); where the value must be a positive number. *For example,*

Select Sqrt(64); results in 8.

Mod(): The Mod() function returns the modulus(remainder) of one number divided by another. The parameters required by this function are:

Select Mod(dividend, divisor); where a dividend is a number to divide and the divisor is a number by which dividend is to be divided. *For example,*

Select Mod(81,3); results in 0.

- 4.** Tilak wants to set up a network in his office that deals with different products and services. He wants to connect all the computers using bus topology. But he is confused about the advantages and disadvantages of this topology. Help him understand this topology. 2
- Ans.** Bus topology is a type of network topology in which all devices in the network are connected by one central network cable or coaxial cable.

Advantage: Since there is a single common data path connecting all the nodes, the bus topology uses a very short cable length which considerably reduces the installation cost.

Disadvantage: Fault detection and isolation are difficult. This is because control of the network is not centralized in any particular node. If a node is faulty on the bus, detection of fault may have to be performed at many points on the network. The faulty node has then to be rectified at that connection point.

- 5.** Help Pradeep in predicting the output of the following SQL commands: 2
 (i) `Select Abs(Instr('Informatics Practices', 'for') - length('Informatics'));`
 (ii) `Select Day('2022-05-02');`
- Ans.** (i) 8
 (ii) 2
- 6.** Shantanu is working on MySQL databases. He wants to access records of a table in ascending order after grouping the certain column, but he is confused which clause of SQL will help in accomplishing the task? Help him to differentiate between them. 2

- Ans.** ORDER BY clause is used to display the result of a query in a specific order, i.e., it can be done in ascending or descending order. However, the actual data in the database is not sorted; only the results of the query are displayed in sorted order. If an order is not specified, then, by default, the sorting will be performed in ascending order.

For example,

```
SELECT Name, City FROM STUDENT  
ORDER BY Name;
```

The above query returns the name and city columns of the table Student sorted by name in ascending order.

GROUP BY clause

The GROUP BY clause can be used in a SELECT statement to collect data across multiple records and group the results by one or more columns.

For example,

```
SELECT Name, COUNT(*) AS "NUMBER OF STUDENTS" FROM STUDENT  
WHERE Marks>350 GROUP BY City;
```

7. Consider the given table Student and predict the output:

2

Table: Student

Rollno	Name	Gender	Marks	DOB	Mobile_no	Stream
1	Raj Kumar	M	93	2000-11-17	9586774748	Science
2	Deepika Singh	F	98	1996-08-22	8988886577	Commerce
3	Ankita Sharma	F	60	2000-02-02	NULL	Science
8	Akshay Dureja	M	54	1997-05-05	9560567890	Commerce
10	Prateek Mittal	M	59	2000-12-25	9999967543	Science

- (i) Select Name, Max(Marks) From Student Where Year(DOB)>1997;
(ii) Select Name, Min(Marks) From Student Where Stream='Commerce' ;

OR

Based on the table 'Student' given above, write SQL queries for the following tasks:

- (i) To display the name of the youngest student from the science stream.
(ii) To display the name, gender and marks of students in ascending order of the month of the year 2000.

Ans. (i)

Name	Max(Marks)
Raj Kumar	93

(ii)

Name	Min(Marks)
Akshay Dureja	54

OR

- (i) Select Name Max(DOB) From Student where stream='Science' ;
(ii) Select Name, Gender, Marks From Student Where Year(DOB)=2000
order by Month(DOB) ;

SECTION – B

Each question carries 3 marks

8. Predict the output of the following queries:

3

- (i) SELECT INSTR('Informatics Practices', 'tic');
(ii) SELECT REPEAT('FUNCTION', 3);
(iii) SELECT REVERSE('LIBRARY FUNCTION');

OR

Dipika has created a MySQL table named 'Employee' having the following columns:

Field Name	Data Type
E_No	Integer
EName	Varchar(30)
E_Address	Varchar(26)
E_Contact_No	Char(11)
Designation	Varchar(40)
City	Varchar(20)

Help her to write SQL queries to perform the following tasks:

- (i) To display E_No, EName and Designation whose first two characters of City are 'AG'.
- (ii) To display E_No, Name and Designation of employees whose Address contains 20 characters.
- (iii) To display the values of the Ename column in capital letters.

- Ans.** (i) 6
(ii) FUNCTIONFUNCTIONFUNCTION
(iii) NOITCNUF YRARBIL

OR

- Ans.** (i) `Select E_No, EName, Designation From Employee Where left(City, 2) = 'AG';`
(ii) `Select E_No, EName, Designation From Employee Where Length(E_Address)=20;`
(iii) `Select Upper(EName) From Employee;`

9. Chetan is learning SQL functions; explain the use of the following functions with examples: 3

- (i) DayofMonth()
- (ii) Dayofweek()
- (iii) DayofYear()

- Ans.** (i) DayofMonth(): It returns the day of the month (0-31).

For example,

`SELECT DAYOFMONTH('2021-02-03');` Result: 3

- (ii) Dayofweek(): It returns the weekday index of the argument.

For example,

`SELECT DAYOFWEEK('2021-02-03');` Result: 4(Sunday is counted as 1)

- (iii) Dayofyear(): It returns the day of the year (1-366).

For example,

`SELECT DAYOFYEAR('2021-02-02');` Result: 34

10. Consider the following statements and give the SQL command to accomplish the tasks: 3

- (i) If Str="INFORMATICS PRACTICES" and Str1=" FOR CLASS XI", then give SQL command to display the output string as "INFORMATICS PRACTICES FOR CLASS XI".
- (ii) If the value of the field Name is 'Koyal Tripathi', then give SQL command to display the output as 'path'.
- (iii) If the value of the field Address is 'Bengaluru', then display output as 'BENGALURU'.

- Ans.** (i) `Select Concat(Str,Str1);`
(ii) `Select Substr(Name,10,13);`

Or

`Select Mid(Name,10,13);`

Or

`Select Substring(Name,10,13);`

- (iii) `Select UCase(Address);`

Or

`Select Upper(Address);`

SECTION – C
Each question carries 4 marks

11. Mr. Pushkar is an IT-Executive in Sports Academy Club. He has created the following table to store the records of coaches. 4

Table: CLUB

COACH_ID	COACH NAME	AGE	SPORTS	Fees	Gender
1	KUKREJA	35	KARATE	1000	M
2	RAVINA	34	KARATE	1200	F
3	KARAN	34	SQUASH	2000	M
4	TARUN	33	BASKETBALL	1500	M
5	ZUBIN	36	SWIMMING	750	M
6	KETAKI	36	SWIMMING	800	F
7	ANKITA	36	SQUASH	2200	F
8	ZAREEN	37	KARATE	1100	F
9	KUSH	41	SWIMMING	900	M
10	SHAILYA	37	BASKETBALL	1700	M

Write SQL commands for the following on the basis of the given table CLUB.

- (i) To list names of all coaches with their fees in descending order.
- (ii) Display the sports and total fees sports-wise.
- (iii) Display the maximum and minimum fees charged by the female coaches.
- (iv) Display the number of coaches whose sports is Swimming.

- Ans.**
- (i) `SELECT Coach_Name From Club Order By Fees;`
 - (ii) `SELECT Sum(Fees) From Club GROUP BY Sports;`
 - (iii) `SELECT Max(Fees), Min(Fees) From Club Where Gender = 'Female';`
 - (iv) `SELECT Count(*) From Club where Sports='Swimming';`

12. Smita has created the table named 'Student' to record information about the online exam. 4

Table: Student

RollNo	Name	Class	DOB	Gender	City	Marks
1	Anand	XI	1997-06-06	M	Agra	431
2	Chetan	XII	1994-05-07	M	Mumbai	460
3	Geet	XI	1997-05-06	F	Agra	477
4	Preeti	XII	1995-08-08	F	Mumbai	492
5	Saniyal	XII	1995-10-08	M	Delhi	360
6	Meena	XI	1994-12-12	F	Dubai	253
7	Neha	X	1995-12-08	F	Moscow	324
8	Nishant	X	1995-06-12	M	Moscow	429

Help her in predicting the output for the following queries:

- (i) `Select Max(Marks) From student Where City = 'Agra';`
- (ii) `Select Class, Avg(Marks) From Student Group By Class;`
- (iii) `Select Concat (Len(Name), Substr(Name, 2, 4), '@@', Left(City, 2)) As Password from Student Where Name Like '%t';`
- (iv) `Select Gender, Max(Marks) From Student Group by Gender;`

OR

Based on the table named 'Student' given above, Priya intends to group the result set based on some column's value. Also, it is required that the grouped result should appear in sorted order. In which order should Priya write the two clauses (for sorting and grouping)? Give an example to support your answer.

Ans. (i)

Max(Marks)
477

(ii)

Class	Avg(Marks)
XI	387.0
XII	656.0
X	376.5

(iii)

Password
4eet@@Ag
7isha@@Mo

(iv)

Gender	Max(Marks)
M	460
F	492

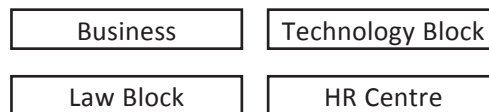
OR

When we use GROUP BY clause (for grouping of data) and ORDER BY clause (for sorting data) together, the ORDER BY clause always follows other clauses. That is, the GROUP BY clause will come before ORDER BY clause.

For example,

```
SELECT NAME,AVG(MARKS) AS "TOTAL MARKS" FROM STUDENT
GROUP BY Class
ORDER BY Marks;
```

13. Quick Learn University is setting up its academic blocks at Prayag Nagar and planning to set up a network. The university has 3 academic blocks and one human resource centre as shown in the diagram given below:



Centre-to-centre distance between various blocks is as follows:

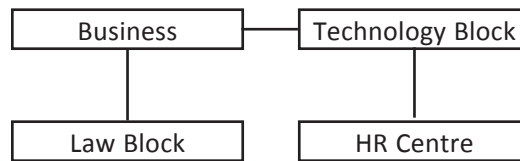
Law Block to Business block	40 m
Law Block to Technology Block	80 m
Law Block to HR Centre	105 m
Business Block to Technology Block	30 m
Business Block to HR Centre	35 m
Technology Block to HR Centre	15 m

Number of computers in each of the buildings is as follows:

Law block	15
Technology block	40
HR centre	115
Business block	25

- Suggest a cable layout of connection between the blocks.
- Suggest the most suitable place to house the server of the organization with suitable reason.
- Which device should be placed/installed in each of these blocks to efficiently connect all the computers within these blocks?
- The university is planning to link its Sales counters situated in various parts of the same city. Which type of network out of LAN, MAN or WAN will be formed?

Ans. (a) The cable layout of connection between the blocks is:



- HR Centre because it consists of the maximum number of computers to house the server.
- Switch should be placed in each of these blocks.
- MAN will be formed as Sales counters are in the same city.