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तत् त्वं पूषन् अपावृणु  
केन्द्रीय विद्यालय संगठन

**STUDENT SUPPORT MATERIAL ON COMPETENCY BASED QUESTIONS 2023-24**  
**CLASS XII SUBJECT INFORMATICS PRACTICES**

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# DATA HANDLING USING PANDAS AND DATA VISUALIZATION

## MUTIPLE CHOICE QUESTIONS

- Which are the data structures in Pandas Library?
  - Series and DataFrame
  - Series and Panel
  - Series, Dataframe and Panel
  - DataFrame and Panel
- Which of the following commands is used for installing Pandas?
  - Install
  - pip
  - pipe
  - pip-install
- What is the data type of `S[0:5:2]` where S is the following series:

| Index | Value    |
|-------|----------|
| 0     | Arnab    |
| 1     | Samridhi |
| 2     | Ramit    |
| 3     | Divyam   |
| 4     | Kritika  |

  - Series
  - List
  - Dictionary
  - Tuple
- Assertion (A):- To use the Pandas library in a Python program, one must import it.  
Reasoning (R): - The only alias name that can be used with the Pandas library is pd.
  - Both A and R are true and R is the correct explanation for A
  - Both A and R are true and R is not the correct explanation for A
  - A is True but R is False
  - A is false but R is True
- In Python Pandas, while performing mathematical operations on series, index matching is implemented and all missing values are filled in with \_\_\_\_\_ by default.
  - Null
  - Blank
  - NaN
  - Zero
- Which method is used to save a chart?
  - savefigure()
  - savefig()
  - save()
  - All of the above
- Which of the following creates an empty dataframe (assume that Pandas is imported as pd)?
  - df=pd.DataFrame()
  - df=pd.dataframe()
  - df=pd.DataFrame(data)
  - df=pd.DataFrame()
- Which of the following functions will fetch the last 3 rows of a dataframe named df?
  - df.Head()
  - df.head()

- c. df.Tail()
  - d. df.tail()
9. Omkar wants to delete a row from a dataframe. Help him with the correct function from the following:
- a. delete()
  - b. drop()
  - c. Delete()
  - d. None of the above

10. Which of the following statement will import dataframe from pandas library?
- a. import DataFrame from pandas
  - b. from pandas import DataFrame
  - c. import DataFrame from Pandas
  - d. from Pandas import DataFrame

11. ASSERTION: Data can easily be interpreted/visualised in python in form of line graph, bar graph and histograms.

REASON: To visualise data matplotlib.pyplot needs to be imported in python program

- a. Both A and R are true and R is the correct explanation for A
  - b. Both A and R are true and R is not the correct explanation for A
  - c. A is True but R is False
  - d. A is false but R is True
12. For the given series S, identify the correct statement the gives the following output:

```
0 15
1 25
2 35
3 20
dtype: int64
```

**Output:**

```
1 25
2 35
dtype: int64
```

- a. Marks[Marks>20]
  - b. Marks(Marks>20)
  - c. Marks>20
  - d. All the above
13. Assertion (A):-DataFrame has both a row and column index.  
(R): - A DataFrame is a two-dimensional labelled data structure like a table of MySQL.
- a. Both A and R are true and R is the correct explanation for A
  - b. Both A and R are true and R is not the correct explanation for A
  - c. A is True but R is False
  - d. A is false but R is True
14. Rahul wants to print the row labels of the dataframe. He should use the \_\_\_\_\_ attribute of a dataframe.
- a. column
  - b. columns
  - c. index
  - d. rowname
  - e.

15. Assertion (A):- Series store data row wise.

Reasoning (R): - A Series is a one-dimensional labelled data structure.

- a. Both A and R are true and R is the correct explanation for A
- b. Both A and R are true and R is not the correct explanation for A
- c. A is True but R is False
- d. A is false but R is True

16. What will be the output of following code:

```
import pandas as pd  
s=pd.Series({1:1,2:4,3:9,4:16})  
print(s[s%2==0])
```

- a. 2 4  
4 16
- b. 1 1  
2 4
- c. 1 1  
3 9
- d. 3 9  
4 16

17. For the given dataframe find the output of the statement df.shape:

(4,4)

|       | Accountancy | Economics | IP |
|-------|-------------|-----------|----|
| Ayush | 92          | 82        | 72 |
| Karan | 87          | 89        | 87 |
| Tarun | 95          | 88        | 97 |

- a. (3,3)
- b. (4,3)
- c. (3,4)

18. This is the type of chart for numeric data that group the data into bins.

- a. Histogram
- b. Scatter chart
- c. Box plot
- d. Bar chart

19. Consider the following series object Named 'Ser':

```
0    578  
1    235  
2    560  
3    897  
4    118
```

What will be the output of following statements?:

```
print(ser.index)
```

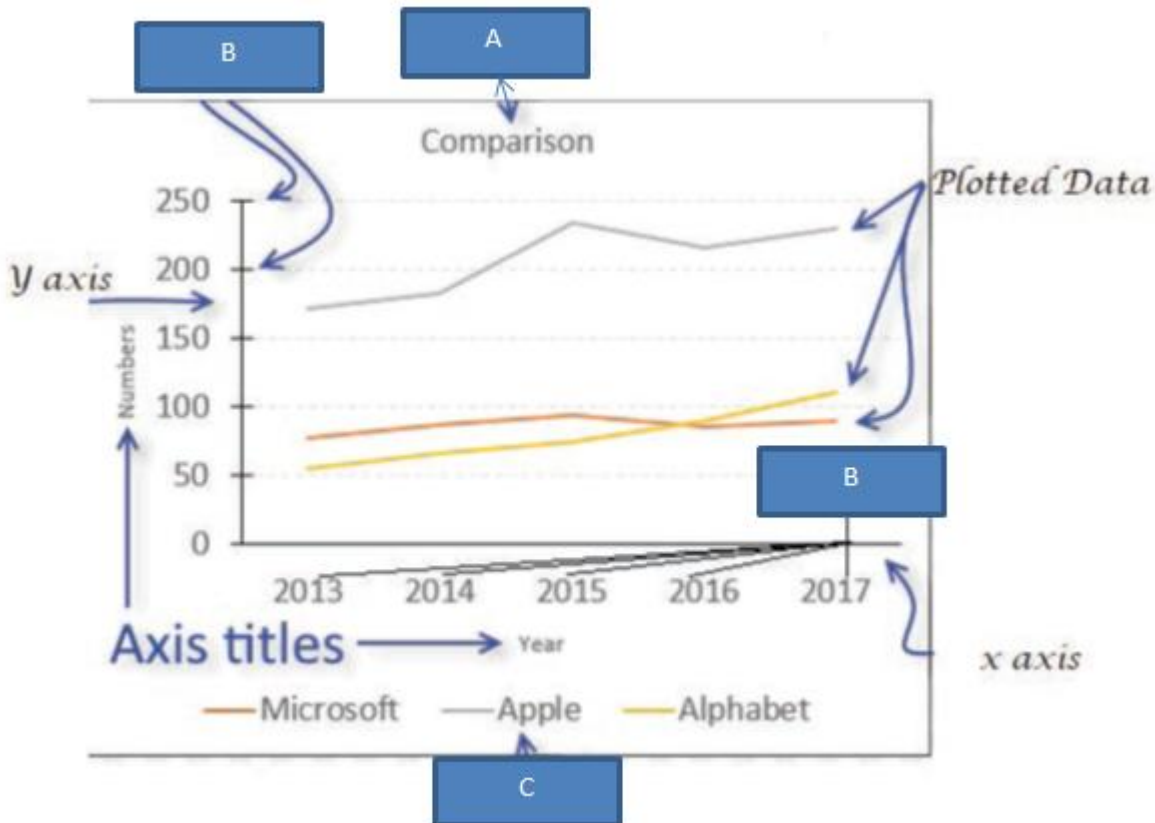
- a. [578 235 560 897 118]
- b. 0,1,2,3,4
- c. RangeIndex(start=0, stop=5, step=1)
- d. iv. None of Above

20. Which of the following can be accepted by DataFrame?

- a. ndarray
- b. Series
- c. DataFrame
- d. All the above

## CASE BASED QUESTIONS

1. In the given graph identify the terms for the components A, B and C:



2. Write the output produced by the following graph:

```
import matplotlib.pyplot as plt
date=["25/12","26/12","27/12"]
temp=[8.5,10.5,6.8]
plt.plot(date, temp)
plt.title('Datewise Temperature')
plt.xlabel('Date')
plt.ylabel('Temperature')
plt.show()
```

3. In the following code, fill the blanks:

```
import pandas as pd
import _____ as plt
df=pd._____("MelaSales.csv") # Statement 1
df._____(kind='line', _____=['red','blue','brown'])#Statement 2
plt.title('Mela Sales Report')
plt.xlabel('Days')
plt.ylabel('Sales in Rs')
plt._____( ) #Statement 3
```

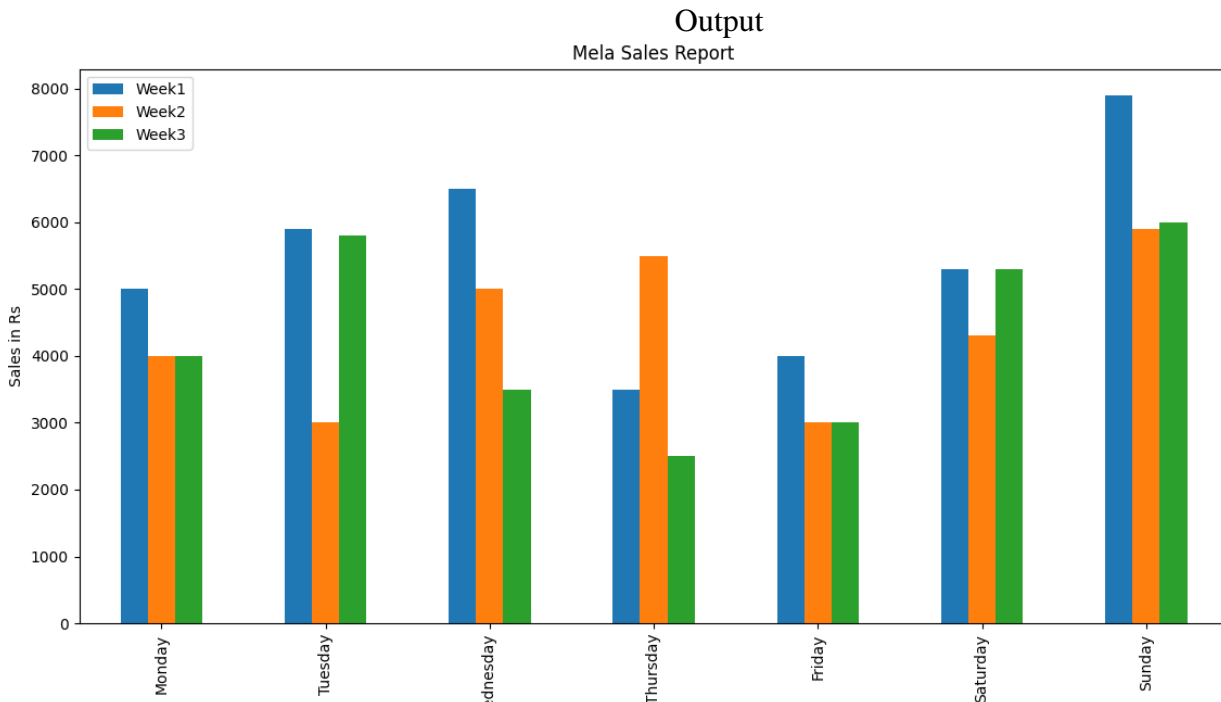
Statement 1-reads "MelaSales.csv" to df by giving path to the file

Statement 2- creates a line plot of different color for each week

Statement 3- Displays the figure

4. With the given data, write a python program to produce the following output:

| Week1 | Week2 | Week3 | Day       |
|-------|-------|-------|-----------|
| 5000  | 4000  | 4000  | Monday    |
| 5900  | 3000  | 5800  | Tuesday   |
| 6500  | 5000  | 3500  | Wednesday |
| 3500  | 5500  | 2500  | Thursday  |
| 4000  | 3000  | 3000  | Friday    |
| 5300  | 4300  | 5300  | Saturday  |
| 7900  | 5900  | 6000  | Sunday    |



5. The temperatures of 10 places are given below:  
temp=[35.3, 41.4, 42.2, 43.7, 45.1, 40.1, 43.8, 34.9]

Write suitable Python code to generate a histogram based on the given data, along with an appropriate chart title and both axis labels. Also give suitable python statement to save this chart.

6. Nikita, a Data Analyst has designed the DataFrame novel\_df that contains the number of people who like the various types of novels of different authors as shown below:

|   |    | Fiction Comedy |     | Action Adventure |     |
|---|----|----------------|-----|------------------|-----|
| 0 | A1 | 300            | 240 | 450              | 230 |
| 1 | A2 | 350            | 340 | 403              | 210 |
| 2 | A3 | 250            | 180 | 145              | 160 |

Answer the following questions:

- Predict the output of the following python statement:  
a. print(novel\_df.size) b. print(novel\_df[1:3])
- Write Python statement to Delete the second row from the DataFrame.
- Write Python statement to add a new column Total\_Books which is the addition of all the 4 types of books written by an author.
- Write Python statement to display the Comedy, Action and Adventure books written by the author A2.

**ANSWER KEY**  
**MULTIPLE CHOICE QUESTIONS**

|        |    |    |    |    |    |    |    |    |    |    |
|--------|----|----|----|----|----|----|----|----|----|----|
| Q.NO   | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| ANSWER | C  | B  | A  | C  | C  | B  | D  | D  | B  | B  |
| QNO    | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| ANSWER | B  | A  | A  | C  | A  | A  | B  | A  | C  | D  |

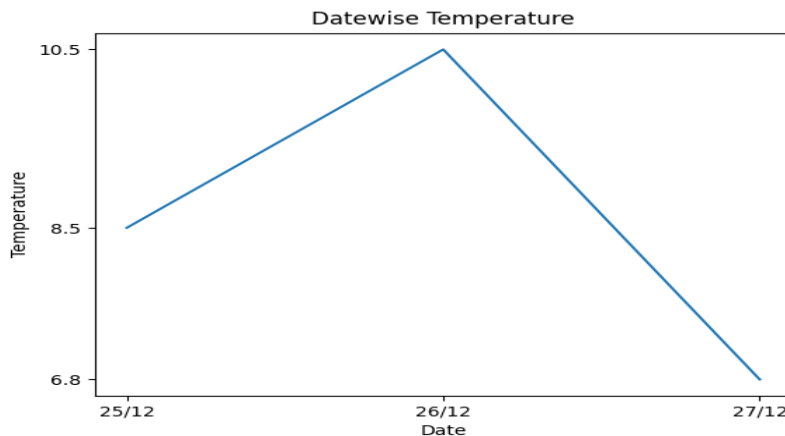
**CASE BASED QUESTIONS**

1. A-title

B-xticks, yticks

C-legend

2.



3. Statement 1-read\_csv()

Statement 2 -plot(), color

Statement 3- show()

4. import pandas as pd

```
df= pd.read_csv('C:/Users/tens/Downloads/MelaSales.csv')
```

```
import matplotlib.pyplot as plt
```

```
# plots a bar chart with the column "Days" as x axis
```

```
df.plot(kind='bar',x='Day',title='Mela Sales Report')
```

```
#set title and set ylabel
```

```
plt.ylabel('Sales in Rs')
```

```
plt.show()
```

5. import matplotlib.pyplot as plt

```
temp= [35.3,41.4,42,42.2,43.7,34.5,41,40.1,43.8,34.9]
```

```
plt.hist(Height_cms)
```

```
plt.title("Height Chart")
```

```
plt.xlabel("Height in cms")
```

```
plt.ylabel("Number of people
```

```
plt.show()
```

6. i. 12

```
ii. df=df.drop(1)
```

```
iii. df["Total_Books"]=df["Fiction"]+df["Comedy"]+df["Action"]+df["Adventure"]
```

```
iv. novel_df.loc['A2',1:]
```

## CHAPTER: DATABASE QUERY USING SQL

### MULTIPLE CHOICE QUESTIONS:

1. Which one of the following is not an aggregate function? (1)
  - A. Min
  - B. Sum
  - C. With
  - D. Avg
  
2. In SQL, this function returns the time at which the function executes: (1)
  - A. SYSDATE
  - B. NOW
  - C. CURRENT
  - D. TIME
  
3. Which type of values will not be considered by SQL while executing the following statement?  
SELECT COUNT(column name) FROM INVENTORY; (1)
  - A. Numeric value
  - B. Text value
  - C. Null value
  - D. Date value
  
4. In column "Margin" contains the data set(2.00,2.00,NULL,4.00,NULL,3.00,3.00). What will be the output of after the execution of the given query? (1)  
SELECT AVG(Margin) FROM SHOP;
  - A. 2.9
  - B. 2.8
  - C. 2.00
  - D. All of these
  
5. Raj, a Database Administrator, needs to display the average pay of workers from those departments which have more than five employees. He is experiencing a problem while running the following query: (1)  
SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(\*) > 5 GROUP BY DEPT;  
Which of the following is a correct query to perform the given task?
  - A. SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(\*) > 5 GROUP BY DEPT;
  - B. SELECT DEPT, AVG(SAL) FROM EMP HAVING COUNT(\*) > 5 GROUP BY DEPT;
  - C. SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT WHERE COUNT(\*) > 5;
  - D. SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT HAVING COUNT(\*) > 5;
  
6. The correct SQL from below to find the temperature in increasing order of all cities. (1)
  - A. SELECT city FROM weather order by temperature;
  - B. SELECT city, temperature FROM weather;
  - C. SELECT city, temperature FROM weather ORDER BY temperature;
  - D. SELECT city, temperature FROM weather ORDER BY city;



7. Which of the following is not a category of MySQL functions? (1)
- A. Text Functions
  - B. Mathematical Functions
  - C. Statistical Functions
  - D. Arithmetic Functions
8. Where and Having clauses can be used interchangeably in SELECT queries? (1)
- A. True
  - B. False
  - C. Only in views
  - D. With order by
9. What is the output of the following SQL command: (1)
- SELECT ROUND(458.45,-1)
- A. 460
  - B. 450
  - C. 458
  - D. 500
10. Which of the following function is the correct syntax of LCASE() function? (1)
- A. LCASE(row\_name)
  - B. LCE(column\_name)
  - C. LCASE(str/column\_name)
  - D. None of the above
11. Which function is used to display the total number of records from table in a database? (1)
- A. sum(\*)
  - B. total(\*)
  - C. count(\*)
  - D. return(\*)
12. If column “salary” of table “EMP” contains the dataset {10000, 15000, 25000,10000, 25000}, what will be the output of following SQL statement? (1)
- SELECT SUM(DISTINCT SALARY) FROM EMP;
- A. 75000
  - B. 25000
  - C. 10000
  - D. 50000
13. Which SQL statement is used to display all the data from product table in the decreasing order of price? (1)
- A. SELECT \* FROM PRODUCT;
  - B. SELECT \* FROM PRODUCT ORDER BY PRICE;
  - C. SELECT \* FROM PRODUCT ORDER BY PRICE DESC;
  - D. SELECT \* FROM PRODUCT ORDER BY DESC;

14. If column “City” contains the data set (DELHI, HYDERABAD, KOLKATA, CHENNAI, KOLKATA), what will be the output after the execution of the given query? (1)  
SELECT COUNT(DISTINCT City) FROM Customer;  
A. 4  
B. 5  
C. 3  
D. 2
15. Write the output of the following SQL command: select truncate(15.88,1); (1)  
A. 15.88  
B. 15.8  
C. 15.9  
D. 16
16. In SQL, which function returns the weekday name for a given date. (1)  
A. DAY  
B. DAYNAME  
C. NAME  
D. DNAME
17. Which clause is used with “aggregate functions”? (1)  
A. GROUP BY  
B. SELECT  
C. WHERE  
D. Both A and B
18. Write output of the following MySQL command: (1)  
SELECT SUBSTRING("Informatics Practices",6,9);  
A. maticsPr  
B. aticsPra  
C. maticsPra  
D. None
19. Select the proper output for the following query from the options: (1)  
select right(substr('Innovative ideas',2,7),3);  
A.vati  
B. ati  
C.itav  
D.ita
20. Identify the SQL function which returns output as a group of characters. (1)  
A.NOW()  
B.MONTHNAME()  
C.MONTH()  
D.WEEKNAME()

## CASE-BASED QUESTIONS

1. Write outputs for SQL queries (A) to (C) which are based on the given table GAME (3)

| GID | NAME      | DATEOFGAME | UNDER | WINNER  |
|-----|-----------|------------|-------|---------|
| 1   | JUDO      | 2022-10-17 | 17    | RAMESH  |
| 2   | BADMINTON | 2022-5-18  | 14    | KIRTI   |
| 3   | JUDO      | 2022-8-18  | 19    | KAMAL   |
| 4   | TAEKWONDO | 2021-7-20  | 14    | SADIQ   |
| 5   | CHESS     | 2021-5-6   | 17    | ALANKAR |

- A. Select name, under, winner from GAME where month(dateofgame)>7;  
B. Select lcase(mid(winner,2,3)) from GAME where NAME like "%O";  
C. Select mod(under, month(dateofgame)) from GAME where NAME="JUDO";

2. Based on table STOCK given here, write suitable SQL queries for the following: (3)

3.

| STOCKID | NAME         | COMPANY   | TYPE | DOPURCHASE  | QUANTITY |
|---------|--------------|-----------|------|-------------|----------|
| 1       | Photoshop    | Adobe     | SW   | 5-Oct-2022  | 1        |
| 2       | Windows 10   | Microsoft | SW   | 15-Apr-2021 | 5        |
| 3       | Mother Board | ASUS      | HW   | 8-Sep-2022  | 5        |
| 4       | Office 2007  | Microsoft | SW   | 8-Jul-2022  | 2        |
| 5       | Hard Disk    | Seagate   | HW   | 6-Feb-2021  | 10       |
| 6       | Azure        | Microsoft | SW   | 17-Jul-2022 | 6        |
| 7       | CD ROM       | Seagate   | HW   | 31-Jul-2021 | 5        |
| 8       | Reader       | Adobe     | SW   | 28-Aug-2022 | 2        |

- A. Display company wise highest Quantity available.  
B. Display year wise lowest Quantity available.  
C. Display total number of Software and Hardware type stock.

4. Write the output of the queries (a) to (d) based on the table, TECH\_COURSE given below: (2)

**Table: TECH\_COURSE**

| CID  | CNAME                          | FEES  | STARTDATE   | TID  |
|------|--------------------------------|-------|-------------|------|
| C201 | Animation and VFX              | 12000 | 2022-07-02  | 101  |
| C202 | CADD                           | 15000 | 2021-11-15  | NULL |
| C203 | DCA                            | 10000 | 20220-10-01 | 102  |
| C204 | DDTP                           | 9000  | 2021-09-15  | 104  |
| C205 | Mobile Application Development | 18000 | 2022-11-01  | 101  |
| C206 | Digital Marketing              | 16000 | 2022-07-25  | 103  |

- A. SELECT DISTINCT TID FROM TECH\_COURSE;  
 B. SELECT TID, COUNT(\*), MIN(FEES) FROM TECH\_COURSE GROUP BY TID HAVING COUNT(TID)>1;  
 C. SELECT CNAME FROM TECH\_COURSE WHERE FEES>15000 ORDER BY CNAME;  
 D. SELECT AVG(FEES) FROM TECH\_COURSE WHERE FEES BETWEEN 15000 AND 17000;

5. Write suitable SQL query for the following: (5)

- A. Display 4 characters extracted from 3rd character onwards from string 'IMPOSSIBLE'.  
 B. Display the position of occurrence of string 'GO' in the string "LET's GO to GOA".  
 C. Round off the value 257.75 to nearest ten rupees.  
 D. Display the remainder of 18 divided by 5.  
 E. Remove all the leading and trailing spaces from a column passwd of the table 'USER'.

6. Harsh, a movie information collector has designed a database for Indian movies. Help him by writing answers of the following questions based on the given table MOVIE: (1+1+2)

| MOVIEID | NAME                | RATING | PRODUCTION   | COLLECTION | DORELEASE   |
|---------|---------------------|--------|--------------|------------|-------------|
| 201     | NadiyaKe Par        | A+     | Rajshree     | 400        | 15-Aug-1989 |
| 202     | Hum Aapke Hain Kaun | A+     | Dharma       | 1500       | 4-May-1992  |
| 203     | Veer Zaara          | A      | Yashraj      | 1100       | 25-Oct-2004 |
| 204     | Chandni             | A+     | Yashraj      | 2000       | 8-Nov-1989  |
| 205     | Om Shanti Om        | A      | Red Chillies | 2007       | 14-Nov-2007 |

- A. Write a query to display movie name and production – both in upper case.  
 B. Write a query to display all details of movies released in year 1989.  
 C. Write a query to count production wise total number of movies.

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

Write a query to count rating wise total number of movies

7. Write SQL commands for the statements (A) to (C) which are based on the given table **PERSON**.

(3)

| PID | SNAME  | FNAME    | GEN | CITY        | PINCODE | SALARY |
|-----|--------|----------|-----|-------------|---------|--------|
| 1   | SHARMA | GEET     | F   | UDHAMWARA   | 182141  | 50000  |
| 2   | SINGH  | SURINDER | M   | KUPWARA     | 193222  | 75000  |
| 3   | JACOB  | PETER    | M   | BHAWANI     | 185155  | 45000  |
| 4   | ALVIS  | THOMAS   | M   | AHMED NAGAR | 380025  | 50000  |
| 5   | MOHAN  | GAURAV   | M   | COOLANGATA  | 390026  | 33000  |
| 6   | AZMI   | SIMI     | F   | NEW DELHI   | 110021  | 40000  |
| 7   | KAUR   | MANPREET | F   | UDHAMWARA   | 182141  | 42000  |

A. SELECT SUM(SALARY) FROM PERSON WHERE GEN='F';

B. SELECT GEN, COUNT(\*) FROM PERSON GROUP BY GENDER;

C. SELECT MOD(SALARY,4000) FROM PERSON WHERE CITY='UDHAMWARA';

8. Write the outputs of the SQL queries (A) to (D) based on the relations Teacher and Placement given below:

(2)

**Table: Teacher**

| T_ID | Name     | Age | Department  | Date_of_join | Salary | Gender |
|------|----------|-----|-------------|--------------|--------|--------|
| 1    | Arunan   | 34  | Computer Sc | 2019-01-10   | 12000  | M      |
| 2    | Saman    | 31  | History     | 2017-03-24   | 20000  | F      |
| 3    | Randeep  | 32  | Mathematics | 2020-12-12   | 30000  | M      |
| 4    | Samira   | 35  | History     | 2018-07-01   | 40000  | F      |
| 5    | Raman    | 42  | Mathematics | 2021-09-05   | 25000  | M      |
| 6    | Shyam    | 50  | History     | 2019-06-27   | 30000  | M      |
| 7    | Shiv     | 44  | Computer Sc | 2019-02-25   | 21000  | M      |
| 8    | Shalakra | 33  | Mathematics | 2018-07-31   | 20000  | F      |

**Table : Placement**

| P_ID | Department  | Place     |
|------|-------------|-----------|
| 1    | History     | Ahmedabad |
| 2    | Mathematics | Jaipur    |
| 3    | Computer Sc | Nagpur    |

A. SELECT Department, avg(salary) FROM Teacher GROUP BY Department;

B. SELECT MAX(Date\_of\_Join), MIN(Date\_of\_Join) FROM Teacher;

C. SELECT Name, Salary, T.Department, Place FROM Teacher T, Placement P WHERE T.Department = P.Department AND Salary > 20000;

D. SELECT Name, Place FROM Teacher T, Placement P WHERE Gender = 'F' AND T.Department = P.Department;

9. Consider a table “Salesman” with the following data: (3)

**Table: Salesman**

| SNO | SNAME         | SALARY | BONUS | DOJ        |
|-----|---------------|--------|-------|------------|
| A01 | Beena Mehta   | 30000  | 45.23 | 29-10-2019 |
| A02 | K L Sahay     | 50000  | 25.34 | 13-03-2018 |
| B03 | Nisha Thakkar | 30000  | 35.00 | 18-03-2017 |
| B04 | Leela Yadav   | 80000  | NULL  | 31-12-2018 |
| C05 | Gautam Gola   | 20000  | NULL  | 23-01-1989 |

Write SQL queries using SQL functions to perform the following operations.

- A. Display salesman name and bonus after rounding off to zero decimal places.
- B. Display the month name for the date of join of salesman.
- C. Display the minimum salary of the Salesman.

10. Write suitable SQL query for the following: (5)

- A. Display 7 characters extracted from 7th left character onwards from the string ‘INDIA SHINING’.
- B. Display the position of occurrence of string ‘COME’ in the string ‘WELCOME WORLD’.
- C. Round off the value 78.779 to 2nd decimal place.
- D. Display the remainder of 149 divided by 6.
- E. Remove all the expected leading and trailing spaces from a column userid of the table ‘USERS’.

11. Naveen, a database administrator has designed a database for a Computer Stock. (1+1+2)  
Help her by writing answers of the following questions based on the given table:

**TABLE: Stock**

| PID | PNAME        | CATEGORY | QTY | PRICE |
|-----|--------------|----------|-----|-------|
| 1   | KEYBOARD     | IQ       | 15  | 450   |
| 2   | MOUSE        | IQ       | 10  | 350   |
| 3   | WI-FI ROUTER | NW       | 5   | 2600  |
| 4   | SWITCH       | NW       | 3   | 3000  |
| 5   | PRINTER      | O        | 4   | 17000 |

- A. Write a query to display product name in upper case.
- B. To display the records in descending order of the price.
- C. To display category and category wise highest price of product.

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

To display category and category wise total quantities of product.

## ANSWER KEY

### MULTIPLE CHOICE QUESTIONS

| Q.NO   | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
|--------|----|----|----|----|----|----|----|----|----|----|
| ANSWER | C  | A  | C  | B  | D  | D  | D  | B  | A  | C  |
| QNO    | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| ANSWER | C  | D  | C  | A  | B  | B  | A  | A  | B  | B  |

### CASE-BASED QUESTIONS

1.

|         |       |        |
|---------|-------|--------|
| A. Name | Under | Winner |
| Judo    | 17    | RAMESH |
| Judo    | 19    | KAMAL  |

B. lcase(mid(winner,2,3))

ame

ama

adi

C. mod(under, month(dateofgame))

7

3

2.

A. select COMPANY, MAX(Quantity) from STOCK group by COMPANY;

B. select YEAR(DOPURCHASE), MIN(Quantity) from STOCK group by year(DOPURCHASE);

C. select TYPE, count(TYPE) from STOCK group by TYPE

3.

A. Distinct TID

101

102

103

104

B. TID            COUNT(\*)            MIN(FEES)

|     |   |       |
|-----|---|-------|
| 101 | 2 | 12000 |
|-----|---|-------|

C. CNAME

Digital Marketing

Mobile Application Development

D. AVG(FEES)

15500

4.

- A. select mid('IMPOSSIBLE', 3, 4);
- B. select INSTR("LET's GO to GOA", "GO");
- C. select round(257.75, -1);
- D. select mod(18, 5);
- E. select trim(passwd) from USER;

5.

- A. Select upper(name), upper(production) from movie;
- B. Select \* from movie where year(DORelease)=1989;
- C. Select production, count(name) from movie group by production;

**OR**

Select Rating, count(name) from movie group by rating;

6.

A. SUM(SALARY)

132000

B. GEN            COUNT(\*)

F                3

M                4

C. MOD(SALARY, 4000)

2000

2000

7.

A. DEPARTMENT            AVG(SALARY)

Computer Sc            16500

History                    30000

Mathematics            25000

B. MAX(Date\_of\_Join)    MIN(Date\_of\_Join)

2021-09-05

2017-03-24

| C. NAME | SALARY | DEPARTMENT  | PLACE     |
|---------|--------|-------------|-----------|
| Randeep | 30000  | Mathematics | Jaipur    |
| Samaira | 40000  | History     | Ahmedabad |
| Raman   | 25000  | Mathematics | Jaipur    |
| Shyam   | 30000  | History     | Ahmedabad |
| Shiv    | 21000  | Computer Sc | Nagpur    |

D. NAME            PLACE

Saman            Ahmedabad

Samaira            Ahmedabad

Shalakra            Jaipur

8.

- A. SELECT Sname, ROUND(Bonus,0)FROM Salesman;
- B. SELECT MONTHNAME(DOJ) FROM Salesman;
- C. SELECT MIN(SALARY) FROM Salesman;



9.

- A. select mid('INDIA SHINING',7,7);
- B. select INSTR('WELCOME WORLD','COME');
- C. select round(78.779,2);
- D. select mod(149,6);
- E. select trim(userid) from users;

10.

- A. SELECT UPPER(PNAME) FROM STOCK;
  - B. SELECT\* FEOM STOCK ORDER BY PRICE DESC;
  - C. SELECT CATEGORY,MAX(PRICE) FROM STOCK GROUP BY CATEGORY;
- OR**
- SELECT CATEGORY,SUM(QTY) FROM STOCK GROUP BY CATEGORY;

## NETWORKING FUNDAMENTALS

### **MULTIPLE CHOICE QUESTIONS:**

1. Which device is used to regenerate the signals over long distance data transmission?
  - i. Switch
  - ii. Modem
  - iii. Repeater
  - iv. None of the above
  
2. Which one is False about MAC address?
  - i. It is Physical Address of any device connected to the internet.
  - ii. We can change MAC address of a device.
  - iii. It is the address of NIC card install in network device.
  - iv. It is used for track the user's over internet.
  
3. A computer network created by connecting the computers of your school's computer lab is an example of
  - i. LAN
  - ii. MAN
  - iii. WAN
  - iv. PAN
  
4. Which topology are all the nodes connected through a single coaxial cable?
  - i. Star
  - ii. Tree
  - iii. Bus
  - iv. Ring
  
5. URL stands for
  - i. Universal Resource Locator
  - ii. Uniform Resource Locator
  - iii. Universal Range Limit
  - iv. None of the above
  
6. An online activity that enables us to publish website or web application on the internet
  - i. Web server
  - ii. Web Browser
  - iii. Web Hosting
  - iv. None

7. **Assertion(A)** : Incognito browsing opens up a version of the browser that will track your activity

**Reasoning(R)** : Incognito browsing is useful when entering sensitive data

- i. Both A and R are true and R is the correct explanation for A
- ii. Both A and R are true and R is not the correct explanation for A
- iii. A is True but R is False
- iv. A is false but R is True

8. Website stores the browsing activity through:

- i. web page
- ii. Cookies
- iii. passwords
- iv. server

9. The device used to connect two networks using different protocols is:

- i. Router
- ii. Repeater
- iii. Gateway
- iv. Hub

10. Which protocol allows you to make voice calls using a broadband Internet connection?

- i. Chat
- ii. ftp
- iii. email
- iv. VoIP

11. A fashion company with design unit and market unit 120m away from each other. The company recently connected their LANs using Ethernet cable to share the stock related information. But after joining their LANs, they are not able to share the information due to loss of signal in between. Which of the following device you suggest to be installed for a smooth communication?

- i. Gateway
- ii. Repeater
- iii. Hub
- iv. Switch

12. Microsoft edge is an example of \_\_\_\_\_.

- i. Web Page
- ii. Web server
- iii. Website
- iv. Web Browser

13. A program that serves requested HTML files and pages.

- i. Web Address
- ii. Web Page
- iii. Web Server
- iv. None of these

14. Alisha says, “ In this network topology, cable length required is less but if the main cable encounters some problem, whole network breaks down.”

Name the topology Alisha talking about.

- i. Bus
- ii. Star
- iii. Tree
- iv. Hybrid

15. \_\_\_\_\_ protocol is responsible for transferring data over the Internet.

- i. FTP
- ii. SMTP
- iii. TCP/IP
- iv. POP

16. I am a text file sent by the web server to the web browser. Who am I ?

- i. Cookies
- ii. Website
- iii. Webpage
- iv. Web address

17. Central Computer which is powerful than other computers in the network is called as \_\_\_\_\_.

- i. Hub
- ii. Client
- iii. Server
- iv. Switch

18. Which network device is known as an intelligent hub?

- i. Hub
- ii. Switch
- iii. Bridge
- iv. Client

19. Gaurav wants a device that connects a local area network (LAN) to another LAN that uses the same protocol. Which of the following devices you would like to suggest him.

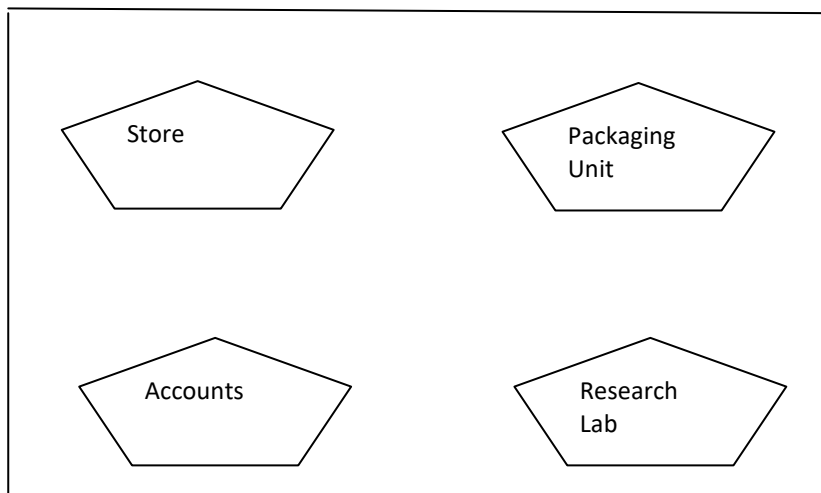
- i. Repeater
- ii. Hub
- iii. Bridge
- iv. Switch

20. Which of the following is a broadcast device?

- i. Bridge
- ii. Gateway
- iii. Hub
- iv. Switch

### CASE STUDY BASED QUESTIONS

1. SHARMA Medicos Center has set up its new center in Delhi. It has four buildings as shown in the diagram given below:



**Distance between various buildings is as follows**

|                                |      |
|--------------------------------|------|
| Accounts to research lab       | 55m  |
| Accounts to store              | 150m |
| Store to packaging unit        | 160m |
| Packaging unit to research lab | 60m  |
| Accounts to packaging unit     | 125m |
| Store to research lab          | 180m |

:

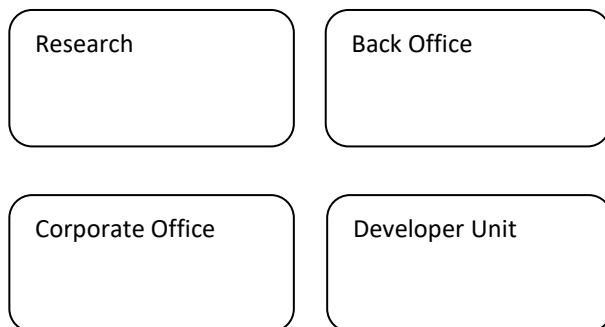
**Number of computers**

|                |     |
|----------------|-----|
| Accounts       | 25  |
| Research Lab   | 100 |
| Store          | 15  |
| Packaging Unit | 60  |

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

- i. Suggest a cable layout of connections between the buildings.
- ii. Suggest the most suitable place (i.e. buildings) to house the server of this organization.
- iii. Suggest the placement of the following device with justification:  
a) Repeater b) Hub/Switch
- iv. Suggest a system (hardware/software) to prevent unauthorized access to or from the network.
- v. The company is planning to link its head office situated in Delhi with the offices in hilly areas. Suggest a way to connect it economically.

2. A company has 4 departments of buildings as shown in the diagram :



**Distances between various Buildings:**

- Research to Back Office - 50m
- Back Office to Developer Unit - 60m
- Developer Unit to Corporate Office - 25m
- Corporate Office to Research - 170m
- Research to Developer Unit - 125m
- Back Office to Corporate office - 90m

**Number of computers in each of the department:**

- Back Office - 150
- Developer Unit - 15
- Research - 15
- Corporate Office – 25

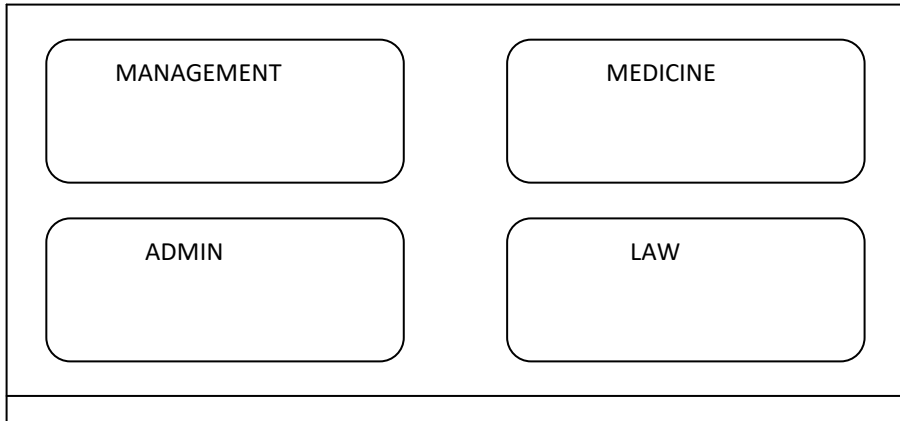
As a network expert, provide the best possible answer for the following queries:

- i. Suggest a most suitable cable layout for the above connections.
- ii. Suggest the most appropriate topology of the connection between the departments.
- iii. Suggest the most suitable place (.e. buildings) to house the server of this organization.
- iv. Suggest the placement of the following devices with justification if the company wants minimized network traffic

- a) Repeater
- b) Hub /switch

- v. The company is planning to link its head office situated in New Delhi with the offices in hilly areas. Suggest a way to connect it economically.
3. A Training Institute is planning to set up its center in Shimla with four specialized blocks for Medicine, Management, Law courses along with 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.

As a network expert answer the queries raised by their board of directors as given in (i) to (v).



**Distances between various locations in meters:**

- Admin Block to Management Block- 60
- 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:**

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

- i. Suggest the most suitable location with reason to install the main server of this institution to get efficient connectivity.
- ii. Suggest by drawing the best cable layout for effective network connectivity of the blocks having server with all the other blocks.
- iii. Suggest the devices to be installed in each of these buildings for connecting computers installed within the building out of the following:
  - Modem
  - Switch
  - Repeater
- iv. Suggest the most suitable wired medium for efficiently connecting each computer installed in every building out of the following network cables:
  - Coaxial Cable
  - Ethernet Cable

- Single Pair
- Telephone Cable

v. The Institute is planning to link its head office situated in New Delhi. Suggest a way to connect it economically.

4. An online corporate training provider company is setting up their new campus in Kolkata. The physical distances between these blocks and the number of computers to be installed in these blocks are given below.

**Distances between various locations in meters:**

|                                 |     |
|---------------------------------|-----|
| Administrative to Finance Block | 60  |
| Administrative to Faculty Block | 120 |
| Finance to Faculty Block        | 70  |

**Number of Computers in each block:**

|                      |     |
|----------------------|-----|
| Administrative Block | 30  |
| Finance Block        | 20  |
| Faculty Block        | 100 |

As a network expert answer the queries raised by their board of directors as given in i to v.

- Suggest the most appropriate block to install the main server
- Suggest the most appropriate block to block cable 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 to connect to students from all over the world?
  - Infrared
  - Microwave
  - Satellite
- Suggest the devices to be installed in each of these buildings for connecting computers installed within the building out of the following:  
Switch  
Repeater

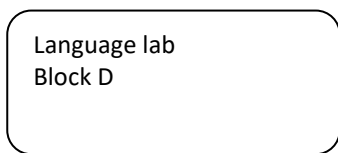
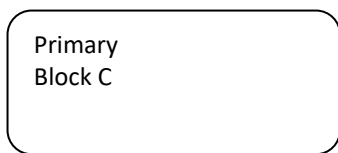
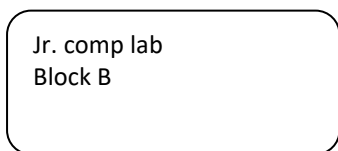
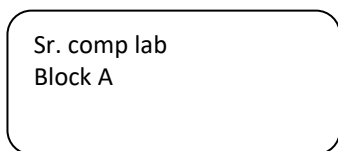
5. You have given to create a network in your school building. It has 4 blocks of buildings.

**Distance between the various blocks is as follows:**

- A to B - 50 m
- A to C - 60 m
- A to D - 110m
- D to B - 60m
- D to C - 100m
- C to A - 70m

**Numbers of computers in each block**

- Block A - 20
- Block D - 50
- Block B - 15
- Block C - 30



Based on the above specifications, answer the following questions:

- i. Out of LAN, WAN and MAN, what type of network will be formed if we interconnect different computers of the campus?
- ii. Suggest the topology which should be used to efficiently connect the various blocks of school building.
- iii. Suggest a network device to connect all computers in each building.
- iv. The School wants internet accessibility in all the blocks. Suggest a suitable technology.

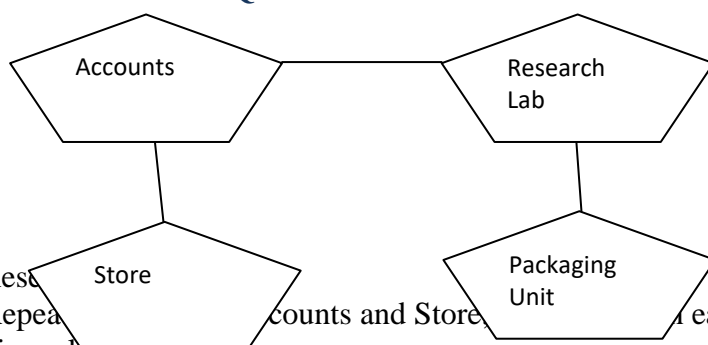
### ANSWER KEY

#### MULTIPLE CHOICE QUESTIONS

1. iii. REPEATER
2. ii. We can change MAC address of a device.
3. i. LAN
4. iii. Bus
5. ii. Uniform Resource Locator
6. iii. Web Hosting
7. iv. A is false but R is True
8. ii. cookies
9. iii. Gateway
10. iv. VoIP
11. ii. Repeater
12. iv. Web browser
13. iii. Web server
14. i. Bus
15. iii. TCP/IP
16. i. Cookies
17. iii. Server
18. ii. Switch
19. iii. Bridge
20. iii. Hub

#### CASE STUDY BASED QUESTIONS

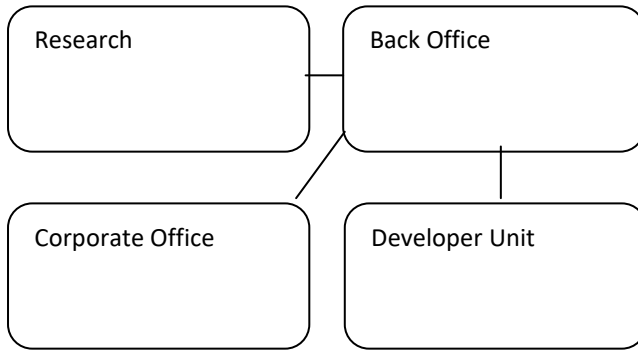
1. i.



- ii. Rese
- iii. Repea
- iv. Firewall

v. Radio Wave

2. i.



ii. Star Topology

iii. Back office

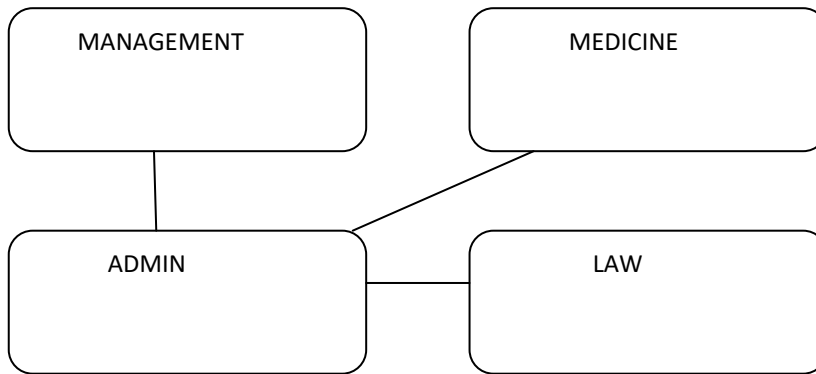
iv. a. Not required. Repeaters may be skipped as per above layout (because distance is less than 100 m)

b. In every wing

v. Radio Waves

3. i. Admin Block as it contains maximum number of computers (80-20 Rule).

ii. Most suitable layout according to distance is:



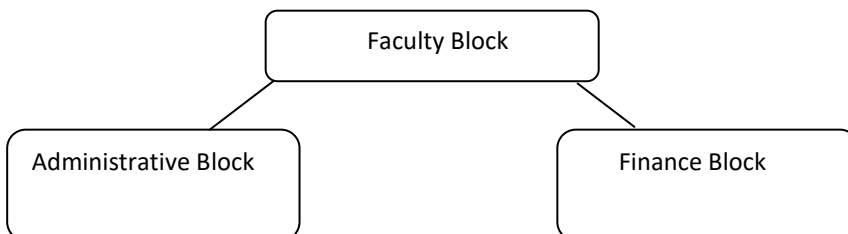
iii. Switch

iv. Ethernet Cable

v. Radio Wave or Satellite or other appropriate economical Way

4. i. Faculty Block

ii.



iii. LAN

iv. Satellite

v. Switch

5. i. LAN

ii. Star

iii. switch is used to connect multiple computers.

iv. Broadband connection



## SOCIAL IMPACTS - MCQs

|    |  |
|----|--|
| 1. | <p>Which of the following statement is invalid about Intellectual Property rights.</p> <p>A. Information must not be exchanged without the consent of owner.</p> <p>B. Owner of information can decide how much information can be shared.</p> <p>C. IPR does not promote investment in national economy.</p> <p>D. Owner of information can decide at what price information can be shared.</p> |
| 2. | Expand i. GNU ii. FLOSS  |
| 3. | <p>Credit Card fraud may include:</p> <p>A. Stealing of Credit Card</p> <p>B. Unauthorized and Illegal use of Credit Card</p> <p>C. Both of the above</p> <p>D. None of the above</p>  |
| 4. | <p>Identify the type of Digital Footprint.</p> <p>The Digital data generated in online unintentionally like when we visit a website, browsing internet, web browsing history, etc.</p>   |
| 5. | <p>Any fraudulent business practice that extracts money from an unsuspecting, ignorant person is called_____.</p> <p>A. Stealing</p> <p>B. Scam</p> <p>C. Violation of copyright</p> <p>D. Digital footprint</p>   |
| 6. | Removal of dangerous substances and valuable substances from an electronic equipment is called as _____.   |
| 7. | <p>What is the name of IT Lawhaving in our Indian Legislature?</p> <p>A. Information Technology Act, 2000</p> <p>B. Digital Information Act, 2000</p> <p>C. Information Security Act, 2009</p> <p>D. Digital Security Act, 2009</p>  |
| 8. | What is the Intellectual property right which protects misusing of names, visual symbols, slogan, labels etc that distinguishes brand or enterprise.   |
| 9. | <p>Identify the specific term for the following actions</p> <p>i. An imposter uses authentic looking E-mail for sending to users.</p> <p>ii. Builds fake website to obtain sensitive information.</p> <p>A. Bullying</p>   |

|     |  |
|-----|--|
|     | <p>B. Stealing</p> <p>C. Scam</p> <p>D. Phishing</p>   |
| 10. | <p>State whether True or False:</p> <p>i. A copyright is automatically granted to authors or creators of content. _____</p> <p>ii. In FOSS source code is usually hidden from the users. _____</p>   |
| 11. | <p>According to Information Technology Bill, Section 67 which of the following is an offence.</p> <p>A. Creating and forwarding Proprietary Software's, Sharewares and etc.</p> <p>B. Limit the sharing of Software code.</p> <p>C. Creating and transmitting obscene material in electronic form.</p> <p>D. Identity theft.</p> |
| 12. | <p>Write the term which suits to the below description.</p> <p>It is a type of harassment which includes insulting, degrading, posting rumours, threatening online and etc using electronic form.</p>  |
| 13. | <p>Which of the following is not covered under IPR.</p> <p>A. Trademark Logo Design</p> <p>B. Music composition</p> <p>C. Insurance</p> <p>D. Invention</p>  |
| 14. | <p>The practice of obtaining the contribution from crowd in form of needed services, ideas or content, mainly from the online community is known as _____.</p>   |
| 15. | <p>When a person can't find a balance between their time online and their time offline is a condition called as _____</p> <p>A. Net Neutrality.</p> <p>B. Internet Addiction Disorder</p> <p>C. Hacking</p> <p>D. Echo Chamber</p>   |
| 16. | <p>_____ refers to any information about you or created by you that exists in digital form.</p>  |
| 17. | <p>Which of the following act is not termed as Plagiarism.</p> <p>A. Using some authors work without giving credit to author.</p> <p>B. Wrongful citation.</p> <p>C. Modifying someone's music composition.</p> <p>D. Using some authors work with giving credit to author.</p>  |

|     |  |
|-----|--|
| 18. | _____ hackers use their skills to find out the vulnerability in a system and suggest improvements to the system.<br>A. Black Hat<br>B. White Hat<br>C. Grey Hat<br>D. None of the above  |
| 19. | Tracking and monitoring a person's online activity, and using the internet to stalk or harass an individual is called _____.<br>A. Impersonation<br>B. Identity theft<br>C. Harassment<br>D. Cyberstalking   |
| 20. | Which of the following is not a health concern in usage of technology.<br>A. Internet can be addictive<br>B. Improper posture while using computer can cause backache.<br>C. Social bonds can become strong.<br>D. Children tend to play online instead playing games outdoor.   |
| 21  | Which of the following not a part of digital technologies?<br>a) Smartphones<br>b) Computers<br>c) Internet<br>d) FM Radio   |
| 22  | Which of the following activity does not create any digital footprint?<br>a) Search online information<br>b) Online Ticket Booking<br>c) Saving a word document<br>d) Responding an email  |
| 23  | Any information created on the web is known as<br>a) Soft Copy<br>b) Digital Footprint<br>c) Cyber Print<br>d) Online Print  |
| 24  | Which of the following is/are ethical issues associated with Information Technology?<br>i) Personal Privacy                      ii) Access Rights                      iii) Harmful actions<br>a) Only i<br>b) Only i and ii<br>c) All of them i, ii and iii<br>d) None of them |
| 25  | The digital footprint data could be used for<br>i) Targeted Advertisement<br>ii) Can be misused<br>iii) Can be exploited   |

|    |   |
|----|---|
|    | <ul style="list-style-type: none"> <li>a) ii and iii</li> <li>b) i and iii</li> <li>c) i and ii</li> <li>d) i, ii and iii</li> </ul>  |
| 26 | <p>There are _____ types of digital footprints.</p> <ul style="list-style-type: none"> <li>a) 1</li> <li>b) 2</li> <li>c) 3</li> <li>d) 4</li> </ul>  |
| 27 | <p>Archana has filled a form online for a survey. Which types of digital footprint she has generated while filling up the form?</p> <ul style="list-style-type: none"> <li>a) Active</li> <li>b) Passive</li> <li>c) Valid</li> <li>d) Invalid</li> </ul>   |
| 28 | <p>The active digital footprint includes</p> <ul style="list-style-type: none"> <li>i) emails and their replies</li> <li>ii) Social media status and posts</li> <li>iii) data generated by a website or app</li> </ul> <ul style="list-style-type: none"> <li>a) i and ii</li> <li>b) ii and iii</li> <li>c) i and iii</li> <li>d) all of them</li> </ul>   |
| 29 | <p>Which of the following is not correct about digital footprint?</p> <ul style="list-style-type: none"> <li>a) User doesn't have any control on how the that data will be used once stored on server</li> <li>b) User can delete data anytime including digital footprint</li> <li>c) These is no guarantee that digital footprints will fully eliminated from the internet</li> <li>d) Digital footprint can be used to trace location of the device and other usage details</li> </ul> |
| 30 | <p>Anyone who is uses digital technology with internet is known as _____</p> <ul style="list-style-type: none"> <li>a) Digital Individual</li> <li>b) Digital User</li> <li>c) Digital Friend</li> <li>d) Digital Citizen</li> </ul>  |
| 31 | <p>If someone uses a part of a novel written by someone else, It would be violation of the writer's _____ if someone use any part of this book without the written permission of the author.</p> <ul style="list-style-type: none"> <li>a) license</li> <li>b) copyright</li> <li>c) patent</li> <li>d) trademark</li> </ul>  |

|    |   |
|----|---|
| 32 | <p>The intellectual property is legally protected through</p> <ul style="list-style-type: none"> <li>a) copyright</li> <li>b) patents</li> <li>c) trademarks</li> <li>d) all of the above</li> </ul>  |
| 33 | <p>A patent protects an invention for how many years?</p> <ul style="list-style-type: none"> <li>a) 10 Years</li> <li>b) 15 Years</li> <li>c) 20 Years</li> <li>d) 25 Years</li> </ul>  |
| 34 | <p>Which of the following is one of the best practices under be ethical net etiquette?</p> <ul style="list-style-type: none"> <li>i) No Copyright Violation</li> <li>ii) Share the expertise</li> <li>iii) Respect Privacy</li> <li>iv) Avoid Cyber bullying</li> </ul> <ul style="list-style-type: none"> <li>a) i and ii</li> <li>b) ii and iii</li> <li>c) ii and iv</li> <li>d) i and iv</li> </ul>                               |
| 35 | <p>The apps and websites that use geo-location to detect a user's location is which type of digital footprint?</p> <ul style="list-style-type: none"> <li>a) Active digital footprint</li> <li>b) Passive digital footprint</li> <li>c) Valid digital footprint</li> <li>d) On digital footprint</li> </ul>   |
| 36 | <p>Sending a large number of unsolicited emails are known as</p> <ul style="list-style-type: none"> <li>a) Draft</li> <li>b) Spam</li> <li>c) Inbox</li> <li>d) Sent</li> </ul>   |
| 37 | <p>Online protection refers to</p> <ul style="list-style-type: none"> <li>i) The trails left online by users</li> <li>ii) rules put in place to protect personal information</li> <li>iii) ensure data remains in control while working online</li> <li>iv) Secures sensitive data</li> </ul> <ul style="list-style-type: none"> <li>a) i and ii</li> <li>b) i, ii and iv</li> <li>c) ii, iii and iv</li> <li>d) ii and iv</li> </ul> |
| 38 | <p>The fraudulent process that extract money from an individual by using credit card,</p>   |

|    |  |
|----|--|
|    | debit card or any other online medium is known as _____.<br><br>a) digital footprint<br>b) Cyber Crime<br>c) Phishing<br>d) Hacking  |
| 39 | What is NOT an example of cyberbullying?<br><br>a) Creating an embarrassing picture of your classmate and forwarding it to your friend's email addresses<br>b) Sending someone a mean text<br>c) Bullying someone in the hallway<br>d) Threatening someone in an instant message |
| 40 | A set of strategies and processes that can be used to secure the privacy, availability, and integrity of your data is called _____.<br><br>a) Data transfer<br>b) Data hiding<br>c) Data Protection<br>d) Data stealing  |

ANSWER KEY

|        |    |    |    |    |    |    |    |    |    |    |
|--------|----|----|----|----|----|----|----|----|----|----|
| Q.NO   | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| ANSWER | C  | A  | C  |    | B  |    | A  |    | D  |    |
| Q.NO   | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| ANSWER | C  |    | C  |    | D  |    | D  | B  | B  | C  |
| Q.NO   | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| ANSWER | D  | C  | B  | C  | D  | B  | A  | A  | B  | D  |

**Case Based Questions:**

1. Vishal is a graduate who posts deliberately inflammatory messages in internet by upsetting people starting quarrels. He is called as \_\_\_\_\_.

- A. Active Footprint
- B. Troller.
- C. Digital Citizen.
- D. None of the above.

2. Hair loss, also called as alopecia, A Scientist Dr. Abhigna Kapoor works on inventing a cure/medicine for hair loss. She invented a medicine for hair fall control. She filled the patent application and patent is granted for \_\_\_\_\_ years.

- A. 10
- B. 15
- C. 20
- D. 25

3. If anyone uses the research work done by Dr. Abhigna Kapoor without taking consent from her. It is called as \_\_\_\_\_.

- A. Plagiarism
- B. Copyright violation
- C. Trademark violation
- D. Stealing Licence

4. ABC Corporation hires a security expert Mr Lokesh Pandey. What are the safety measures he needs to take to reduce the risk of cybercrime in the organization.

- i. install antivirus software's and update periodically.
- ii. allow free wi-fi zones.
- iii. install firewalls.
- iv. allow public and private network to use common internet infrastructure.
- v. use Strong passwords for web login and change periodically.

- A. Option i and iii.
- B. Option i, ii and iv.
- C. Option i, iii and v
- D. Option i, ii and iii

5. Ajay works in a corporate office, to communicate with other colleagues please suggest the etiquettes needed.

- A. Be Ethical
- B. Be Responsible
- C. Be Respectful
- D. All the above.

## **ANSWER KEY**

1. Option B. Troller
2. Option C. 20
3. Option A. Plagiarism
4. Option C. Option i, iii and v
5. Option D. All the above