

KENDRIYA VIDYALAYA SANGATHAN REGIONAL OFFICE, JABALPUR REGION



QUESTION BANK FOR CLASS XII – INFORMATICS PRACTICES 2020-21

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Unit-I: Data Handling

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Chapter 1: Working with Numpy

TYPE A: OBJECTIVE TYPE QUESTIONS: [1 MARK]

Multiple Choice Questions

1. A Python package which stands for 'Numerical Python ' is named and used as in Python programs:
a) SciPy b) Pandas c) NumPy d) pyplot
2. A NumPy array's dimensions are known as
a) ndimension b) dimensions c) axes d) array
3. To create an ndarray from a Python List, which of the following functions would you use?
a) NumPy.reshape() b) numPy.reshape() c) NumPy.array() d) numpy.array()
4. Which of the following can store different types of element in them?
a) List b) ndarray c) tuple d) dataframe
5. Which of the given types support vectorized operations?
a) list b) ndarray c) string d) tuple
6. To generate a NumPy array from given limits and number of elements required, method.
a) numpy.array() b) numpy.linspace() c) numpy.arange() d) numpy.ndarray()
7. is a process of extracting a subset of elements from an existing ndarray and returning the result as another ndarray
a) Array cutting b) Array slicing c) Subset extraction d) None of these

Note: Given an ndarray Ar as array([2,4,6,8,10,12,14,16]), questions 8 to 10 are based on :

8. array ([8,10,12,14]) is the result of array slice
a) Ar[3:7] b) Ar[:5] c) Ar[:7] d) Ar[:-3]
9. array([10,12,14,16]) is the result of array slice
a) Ar[: 5] b) Ar[4:7] c) Ar[4 :] d) Ar[4:8]
10. Ar[: -3] will produce the result as.....
a) array([2,4,6,8]) b) array([2,4,6,8,10])
c) array([2,4,6,8,10,12]) d) array([2,6,10,14])

NOTE : Given a 2D ndarray Ary as
array([2,4,6,8,10],
[12,14,16,18,20],
[22,24,26,28,30]
[32,34,36,38,40])

Questions 11 and 12 are based on this array .

11. Ary[1:3, 3:5] will produce the result as
a) array([[18,20], [28,30]]) b)array([[18,10], [18,20]])
c) array([[18,20], [38,40]]) d) array([[28,30], [38,40]])
12. array ([8,18,28,38]) is the result of array slice
a) Ary[3,] b) Ary[:, 3] c) Ary[2,] d) Ary[: , -2]
13. To vertically combine multiple ndarrays , which of the following functions may be used ?
a) hstack() b)vstack() c)concatenate() d)combine()
14. To get non-contiguous subsets from an ndarray based on a condition, which function(s) may be used ?
a) hsplit() b)vsplit() c)split() d)extract()
15. From an ndarray numpy.arange(9.0), how many different shaped arrays can be created using reshape()?
a)1 b)2 c)3 d)4
16. To obtain correlation coefficient, which of the following functions may be used?
a)corrcoef b)cov() c) covariance()d) All of these
17. To extract row/column from a DataFrame,..... function may be used .
a) row () b)column() c) ndim d)shape
18. Which of the below given Pandas functions can be used for pivoting?
a) pivot() b)pivoting() c)pivot_table()d)pivot_report()
19. Which of the following plotting functions does not plot multiple data series?
a)plot() b)bar() c)pie() d)barh()
20. A..... is a summarisation tool for discrete or continuous data.
a) quartile b)histogram c)mean d)median
21. A visual representation of the statistical five number summary of a given dataset is known as
a) histogram b)frequency distribution c)boxplot d)frequency polygon
22. Which of the following returns an array of ones with the same shape and type as a given array?
(a) all_like (b) ones_like (c) one_alike (d) all of the mentioned
23. If data is an ndarray , index must be the same length as data
(a) True (b) False

Fill in the blanks

22. When a 2D array's elements are stored row-wise linearly, it is called order.
23. The range () function returns an iterator/sequence, while arrange() function returns a(n).....
24. A is a Pandas data structure that represents a 1D array like object.
25. To calculate statistical values for each row, the axis argument should be
26. Python interface is a collection of methods within library of Python.
27. Pyplot's function is used to create scatter charts.
28. Pyplot's function is used to create histogram.

True /False Questions

29. Two dimensional arrays are internally stored in linearized fashion in memory
30. Functions range() and arrange() are essentially the same
31. A Dataframe object is value mutable
32. The pivot() function can perform pivoting even with duplicate entries
33. PyPlot is a sub-library of matplotlib library
34. A line chart can be plotted using pyplot library's plot() function
35. A standard marker of representing a non number data in Python libraries is NaN.

VERY SHORT ANSWER QUESTIONS

36. What will be the resultant array as per the statement given below?
`>>>np.arange(2,29,5)`
37. What is the relationship between the rank of an array and the shape of the array?
38. What functions can you use for joining two or more ndarrays?
39. Create a 4x4 ndarray having values ranging from 0 to 15 (both inclusive)
40. What will be the output produced by the following statement?
`>>>np.array([2,7,12,17,22,27]).shape`
41. Find the output of the following program.

```
import numpy as np
d=np.array([10,20,30,40,50,60,70])
print( d[ -4: ] )
```
42. Predict the output of the following code fragment:

```
x= [ 1, 2, 3,99,99,3,2,1)
x1,x2,x3=np.split(x ,[3,5])
print(x1,x2,x3)
```

43. What will be the output of the following code:

```
Cars = { 'Brand ' : ['Kia Seltos', 'MG Hector', ' Toyota fortuner', 'Mahindra XUV500' ], 'Price ':
[1000000,1200000,2700000,1400000] }
df1.=pd.DataFrame(Cars,columns = [ ' Brand', ' Price' ]}
print(df1)
```
44. Write a small python code to drop a row from dataframe labeled as 0
45. Create a histogram using dataframe ndf
46. What is the use of boxplot?
47. Define: i) axis ii) rank iii) shape iv) itemsize
48. What are array slices ?
49. Create an ndarray with values ranging from 10 to 49 each spaced with a difference of 3.
50. Consider the following ndarray Ary1:

```
array ([ [ 1,2,3],
         [4,5,6]
         [7,8,9]])
```

Write code to extract the subset from the ndarray Ary1, containing elements whose square is fully divisible by 4
51. Write a Numpy program to computer sum of all elements, sum of each column and sum of each row of a given array
52. Write a NumPy program to create a 5x5 zero matrix with elements on the main diagonal equal to 1,2,3,4,5
53. Write a NumPy program to find common values between two arrays. Expected Output:

```
Array1: [0 10 20 40 60 ]
Array2: [ 10 , 30 , 40 ]
Common values between two arrays
[10,40]
```
54. Write a NumPy program to test if any of the elements of a given array is non-zero.
55. Write a NumPy program to extract all odd numbers from an array.
56. Write the difference between Covariance & Correlation.
57. Predict the output of the following code fragment:

```
x=[1, 2, 3, 99, 99, 3, 2, 1]
x1,x2,x3=np.split(x,[3,5])
print(x1, x2, x3)
```
58. Write code to create a 1D ndarray of size 10 with all elements as zero, but the fifth element is 10

59. Given a list $L = [3,4,5]$ and an ndarray N having elements 3,4,5. What will be the result produced by:
- a) $L*3$? b) $N*3$ c) $L+L$ d) $N+N$

SHORT ANSWER QUESTIONS

[2,3 Marks]

60. What will be the output of the following code:
- ```
import numpy as np
A=np.array([[11,12,13],[21,22,23],[31,32,33]])
B=np.ones((3,3))
print(" Adding to arrays:")
print (A+B)
print ("\nmultiplying two arrays:")
print(A*(B+1))
```
61. What will be the output of the following code:
- ```
grid =np.arange(16).reshape((4,4))
upper,lower =np.vsplit(grid,[2])
print (1:")
print (upper)
print("2")
print(lower)
```
62. Consider the following ndarray Ary1:
- ```
Array ([1,2,3],
 [4, 5, 6],
 [7, 8, 9])
```
- Write code to extract the subset from the ndarray Ary1, containing elements whose square is fully divisible by 4
63. Predict the output of the following code fragments. Note library Numpy has been imported as np.
- |                                                                                                                                                               |                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>a) <math>x = np.array([1, 2, 3])</math><br/> <math>y = np.array([3,2,1])</math><br/> <math>z = np.concatenate([x,y])</math><br/> <math>print(z)</math></p> | <p>b) <math>x = np.array([1,2,3])</math><br/> <math>g = np.array([[9,8,7],</math><br/> <math>[6,5,4]])</math><br/> <math>R = np.vstack([x,g])</math><br/> <math>print(R)</math></p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
64. Write a Numpy program to create a 3x3 identity matrix, i.e., diagonal elements are 1, the rest are 0. Replace all 0 to random number from 10 to 20.
65. Write a small python code to create dataframe with headings (a and b) from the list given below:
- ```
[ [1,2], [3,4],[5,6],[7,8] ]
```
66. What is the difference between `pivot()` and `pivot_table()` functions ?
67. What is the significance of data visualization?
68. What is the use of matplotlib and pyplot?

69. Given a dataframe df1 as shown below:

	1990	2000	2010
a	52	340	890
b	64	480	560
c	78	688	1102
d	94	766	889

Write the code to create:

- A scatter chart from the 1990 and 2010 columns of dataframe df1
- A line chart from the 1990 and 2000 columns of dataframe df1
- Create a bar chart plotting the three columns of dataframe df1

70. Consider the data given below:

Using the Above data, plot the following:

- A line chart depicting the prices of the apps
- A bar chart depicting the download of the apps
- Converting the Est downloads sequence that has each download value divided by 1000. Now

App Name	App Price in Rs	Total Downloads
Angry Bird	75	197000
Teen Titan	120	209000
Marvel Comics	190	414000
ColorMe	245	196000
Fun Run	550	272000
Crazy Taxi	55	311000
Igram Pro	175	213000
Wapp Pro	75	455000
Maths Formulas	140	278000

create a bar chart that plots multiple bars for prices as well as downloads.

Note: The chart should have proper titles for the charts, axes, legends etc.

Chapter 2 : Python Pandas

Multiple Choice Questions

1. Which of the following input can be accepted by DataFrame?
(a) Structured ndarray (b) Series (c) Data Frame
2. What attribute is used to obtain the rows and columns count of a pandas dataframe?
(a) Shape (b) Dimension (c) Size (d) Count

Short Answer Questions

3. Write command to applymap() function np.sqrt on the dataframe wdf.
4. Write down the output of the following code:

```
import pandas as pd
data = { 'Name':['Tom','Jack','Steve','Ricky'], 'Age' :[28,34,29,42]}
df=pd.DataFrame(data)
print df
```
5. How is series data structure different from a dataframe datastructure?
6. How is reindexing and relabelling useful in dataframes?
7. Write Python code to create a dataframe for employee data (empno,ename,salary) and sort the dataframe first by salary in descending order then by empno.
8. Write a python code to count the number of rows and columns of a dataframe for student data (Stno,Sname,Age,class)
9. How does dataframe object specify indexes to its data rows?
10. What is quartile? How is it related to quantile? How do you generate it in the pandas?
11. How useful is sorting and grouping?
12. Devanshi wants to display the first 3 rows of the dataframe KVS. Which function she has to use?
13. How are reindex() and reindex-like() similar and different?
14. What is the difference between pivot() and pivot_table() functions?
15. What are various types of histograms that can be created through hist() function?
16. Write a python code to create a dataframe with appropriate heading from the list given below:
['S101', 'Army',70], ['S102', 'Bandhi', 69], ['S104', 'Cathy', 75],
['S105', 'Gundaho', 82]
17. How are apply() and applymap() functions similar and different?
18. How are agg() and transform() similar and different?
19. How do we write Dataframe to CSV files in Pandas?
20. Write command to pipe functions sqrt(),power(,3), multiply(....., 10) on dataframe wdf
21. Hitesh wants to display the last four rows of the dataframe df and has written the following code :

```
df.tail()
```

but last 5 rows are being displayed . Identify the error and rewrite the correct code so that last 4 rows get displayed.
22. When should pipe() be preferred over sandwiching of function call ?

23. Given a data frame df1 as shown below:

City	Maxtemp	Mintemp	Rainfall
Delhi	40	32	24.1
Bengaluru	31	25	36.2
Chennai	35	27	40.8
Mumbai	29	21	35.2
Kolkata	39	23	41.8

- i) Write command to compute sum of every column of the dataframe.
- ii) Write command to compute mean of column Rainfall.
- iii) Write command to compute average maxTemp, Rainfall for first 5 rows.

24. Find the output of the following code:

```
import pandas as pd
V= {'a': 10, 'b': 20},{'a': 6, 'b': 32, 'c': 22}
#with two column indices, values same as dictionary keys
df1 = pd.DataFrame(V, index=['first', 'second'], columns=['a', 'b'])
#With two column indices with one index with other name
df2 = pd.DataFrame(V, index=['first', 'second'], columns=['a', 'b1'])
print(df1)
print(df2)
```

25. Write a small python code to create a dataframe with headings ('EmpNo.' and 'ENAME') using the list given below :

```
[[5,'Isha'],[8,'Kartik'],[30,'Ria'],[40,'Nagesh']]
```

26. Correct and find the output :

```
import pandas as pd
R=pd.Series([2,4,6,8,10])
P=pd.Series(K)
print(D)
```

27. Write the command using Insert() function to add a new column in the last place(3rd place) named "Salary" from the list Pay=[5000,7000,4000] in an existing dataframe named EMP already having 2 columns.

28. Write a program to display first 5 row of a dataframe df.

29. Consider the following dictionary of series , create a dataframe dtf and calculate mean age

```
d= { 'Name':['AJAY','NEERAJ','SURESH','DEEPAK'],
      'Age': [25,26,22,28],
      'Percentage': [98,88,78,89] }
```

30. Write the output of following program segment:

```
import pandas as pd
data1 = [ {'x':1,'y':9},{'x':5,'y':6,'z':8}]
df1 = pd1.DataFrame(data1)
print(df1)
```

Chapter : 3 Plotting with Pyplot I & II

(Bar Graph ,Scatter Plots, Histograms, Frequency Distribution & Boxplots)

Multiple Choice Questions

1. Which of the following plots are used to check if a data set or time series is random ?
(a) Lag (b) Random (c) Lead (d) None of the above
2. Andrews curves allow one to plot multi variate data
(a) True (b) False

Short Answer Questions

3. How does Python support data visualization?
4. What is the use of matplotlib and pyplot ?
5. What is the role of legends in a graph/chart ?
6. Write a python program to display a bar chart of the popularity of programming languages.
Sample Data:
Programming Languages : Java, Python, PHP , JavaScript , C# , C++
Popularity : 22.2 , 17.6, 8.8, 8 , 7.7 , 6.7
7. Write a Python program to draw a scatter plot using random distributions to generate balls of different sizes.
8. What is the use of loc argument in a legend() function
9. Compare bar() and barh() functions
10. What is marker ? How can you change the marker type and color in a plot
11. Write the code to draw the boxplot from the following data :
25, 42, 63, 45, 59, 56, 87, 68, 95
12. Name the functions you will use to create a i)line chart , ii) bar chart , iii) scatter chart
13. How are apply () and applymap() functions similar and different ?
14. What is scatter chart ? How is it different from line chart ?
15. What is frequency polygon ? How do you create it ?
16. Questions given below are based on the following data.
Weight measurements for 16 small orders of French fries (in grams)
78 72 69 81 63 67 65 75
79 74 71 83 71 79 80 69
Given the following set of data :
 - a) Create a simple histogram from above data
 - b) Create a horizontal histogram from the above data
 - c) Create a step type of histogram from above data
 - d) Create a cumulative histogram from above data
17. From the following ordered set of data :
63, 65, 67, 69, 69, 71, 71, 72, 74, 75, 78, 79, 79, 80, 81, 83
 - a) Create a horizontal boxplot
 - b) Create a vertical boxplot
 - c) Show means in the boxplot
 - d) Create boxplot without the box

18. What is cumulative histogram ? How do you create it using pyplot ?
19. What is Boxplot? How do you create it in Pyplot ?
20. Create a histogram that plots two ndarrays x and y with 48 bins , in stacked horizontal histogram.
21. Name the various types of histograms plots that you can create using pyplot.
22. Ms Sangeeta wants to plot a Line Chart for the given set of values of months on x and number of participants who attended workshop in particular month on y-axis. Complete the code to perform the following :
 - (i) To plot the Line Chart in statement 1
 - (ii) To add Title as “Workshop Status” in graph in statement 2

```
import matplotlib.pyplot as plt
x=['JAN', 'MAR', 'MAY', 'JUL', 'SEP', 'NOV']
y=[15, 12, 20, 40, 60, 80]
_____ Statement 1
_____ Statement 2
```

23. What are the ticks in a chart? Explain how we can define ticks in a chart with example.
24. Write a python program to plot a line chart for three students scoring in 5 subjects. The maximum marks in each subject is 100. Chart should display 3 lines in 3 colors with x and y axis labels and chart title.
26. Write a Python program to display a bar chart of the temperature in city, data given below
City: Rewa, Ooty, Prayag, Leh, Kullu, Bhuj
Temp: 20.2, 28.6, 30.8, 8.5, 23.6, 26.7 (respectively)
27. What file formats are allowed to save a chart? Explain how can we save a chart in a file? Explain with suitable example

UNIT-2 : DBMS

Sh. Mitra Bhushan, PGT-CS, KV Sidhi

Chapater 4 : Database Query Using SQL

Multiple Choice Questions

1. What is the full form of SQL ?
(a) Structured Query List (b) Structured Query Language
(c) Simple Query Language (d) None of these
2. In inner join, result is produced by matching rows in one table with rows in another table.
(a) True (b) False
3. The join where all possible row combinations are produced is called _____
(a) Inner Join (b) Outer (c) Natural (d) Cartesian
4. The clause that filters JOIN results is called _____
(a) Where (b) Sort (c) Group (d) Group by
5. The left and right joins are also known as _____
(a) Inner Join (b) Natural Join (c) Outer Join (d) Cartesian Join
6. In which join all the rows from the left table appear in the output irrespective of the content of the other table?
(a) Right Join (b) Left Join (c) Inner Join (d) Outer Join
7. What is the meaning of "GROUP BY" clause in Mysql?
(a) Group data by column values (b) Group data by row values
(c) Group data by column and row values (d) None of the mentioned
8. Which clause is similar to "HAVING" clause in Mysql?
(a) Select (b) Where (c) From (d) None of the mentioned
9. "COUNT" keyword belongs to which categories in Mysql?
(a) Aggregate functions (b) Operators (c) Clauses (d) All of the mentioned
10. Which of the following belongs to an "aggregate function"?
(a) Count (b) SUM/AVG (c) MIN/MAX (d) All of the mentioned
11. Which clause is used with an "aggregate functions"?
(a) Group by (b) Select (c) Where (d) Both GROUP BY and WHERE
12. What is the meaning of "ORDER BY" clause in Mysql?
(a) Sorting your result set using column data (b) Aggregation of fields
(c) Sorting your result set using row data (d) None of the mentioned

13. If emp_id contain the following set {9, 7, 6, 4, 3, 1, 2}, what will be the output on execution of the following MySQL statement?
- ```
SELECT emp_id
FROM person
ORDER BY emp_id;
```
- (a) {1, 2, 3, 4, 6, 7, 9}                      (b) {2, 1, 4, 3, 7, 9, 6}  
(c) {9, 7, 6, 4, 3, 1, 2}                      (d) None of the mentioned
14. Keyword "ASC" and "DESC" cannot be used without which clause in Mysql?  
(a) Order by      (b) Group by      (c) Select      (d) Having
15. The string function that returns the index of the first occurrence of substring is \_\_\_\_\_  
(a) insert()      (b) instr()      (c) instring()      (d) infstr()
16. Which of the following is not the aggregate function?  
(a) Avg      (b) Sum      (c) With      (d) Min
17. Which operator tests column for the absence of data (i.e., NULL value)?  
(a) EXISTS operator                      (b) NOT operator  
(c) IS operator                              (d) None of these
18. Which of the following queries contain an error?  
(a) Select \* from emp where empid = 1003;  
(b) Select empid from emp where empid = 1006;  
(c) Select empid from emp;  
(d) Select empid where empdid = 1009 and lastname='GUPTA';
19. An attribute in a relation is a foreign key if it is the \_\_\_\_\_ key in any other relation.  
(a) Candidate      (b) Primary      (c) Super      (d) Sub
20. The operation whose result contains all pairs of tuples from the two relations, regardless of whether their attribute values match.  
(a) Join      (b) Cartesian Product      (c) Intersection      (d) Set difference

### Short Answer Type Questions

- How many command categories are there in SQL?
- Explain difference between DML & DDL?
- What is the purpose of TCL commands?
- What is the difference between CHAR and VARCHAR data type?
- Which command is used in SQL to discard the changes done in the database recently?
- What are scalar functions?
- What is the significance of Group by Clause in SQL?
- What is Equi Join?
- While creating the table Book, Ms. Manasvi forgot to include two fields author and publisher help her to write the suitable command(s) to do so.
- Explain referential integrity?

11. What do you mean by constraints?
12. What is the difference between Column constraints and Table constraints?
13. How is PRIMARY KEY constraint different from UNIQUE constraint?
14. What is DEFAULT and NOT NULL constraint?
15. Explain the Primary Key, Candidate Key and Alternate key through an Example.
16. Explain the Concept of Primary key and Foreign Key using suitable example
17. What is the difference between DISTINCT and ALL?
18. Write a SQL statement to display the current date and time.
19. What is the use of CURDATE() and SYSDATE()?
20. What is the difference between
  - DROP and DELETE command?
  - UPDATE and ALTER commands
  - COUNT (<column name>) and COUNT (\* )
  - GROUP BY and ORDER BY
21. Differentiate the following
  - EQUI and NATURAL JOIN
  - EQUI and NON EQUI join
  - CARTESIAN PRODUCT and CROSS JOIN
22. What is the Difference between WHERE and HAVING clause?
23. What are the types of SQL functions?
24. Define the following functions with examples:  
POWER(), ROUND(), MOD(), MAX(), MIN(), SUM(), COUNT(), COUNT(\*)
25. Differentiate between CHAR and VARCHAR data types.

### Questions based on Application:

1. Consider the table FLIGHT given below. Write commands in SQL for (i) to (iv) and output for (v) to (vi).

| Table : <b>FLIGHT</b> |              |                    |                 |                   |
|-----------------------|--------------|--------------------|-----------------|-------------------|
| <b>FLCODE</b>         | <b>START</b> | <b>DESTINATION</b> | <b>NO_STOPS</b> | <b>NO_FLIGHTS</b> |
| IC101                 | DELHI        | AGARTALA           | 1               | 5                 |
| IC102                 | MUMBAI       | SIMMIM             | 1               | 3                 |
| IC103                 | DELHI        | JAIPUR             | 0               | 7                 |
| IC105                 | KANPUR       | CHENNAI            | 2               | 2                 |
| IC107                 | MUMBAI       | KANPUR             | 0               | 4                 |
| IC431                 | INDORE       | CHENNAI            | 3               | 2                 |
| IC121                 | DELHI        | AHMEDABAD          | 2               | 6                 |

- (i) Display details of all flights starting from Delhi.
- (ii) Display details of flights that have more than 4 number of flights operating.
- (iii) Display flight codes, starting place, destination, number of flights in descending order of number of flights.
- (iv) Add on column "Remarks" in given table FLIGHT .
- (v) SELECT MAX(NO\_FLIGHTS) FROM FLIGHT;
- (vi) SELECT START, COUNT(\*) FROM FLIGHT GROUP BY Start;

2. Write SQL commands and output for the following queries:

| StudentNo | Class | Name    | Game1      | Grade1 | Game2     | Grade |
|-----------|-------|---------|------------|--------|-----------|-------|
| 10        | 7     | Sameer  | Cricket    | B      | Swimming  | A     |
| 11        | 8     | Sujit   | Tennis     | A      | Skating   | C     |
| 12        | 7     | Kamal   | Swimming   | B      | Football  | B     |
| 13        | 7     | Veena   | Tennis     | C      | Tennis    | A     |
| 14        | 9     | Archana | Basketball | A      | Cricket   | A     |
| 15        | 10    | Arpit   | Cricket    | A      | Athletics | C     |

- (i) Display the names of the students who have grade 'A' in either Game1 or Game2 or both.  
(ii) Display the games taken by the students whose name starts with 'A'.

Give the output of the following SQL Statements

- (a) SELECT COUNT(\*) FROM SPORTS;  
(b) SELECT DISTINCT Class FROM SPORTS;  
(c) SELECT MAX(Class) FROM STUDENT;  
(d) SELECT COUNT(\*) FROM SPORTS GROUP BY Game1;

3. Consider the table TEACHER given below. Write commands in SQL for (i) to (iii) and output for (iv) to (v) . Note: Hiredate is in mm/dd/yyyy format

| ID | Name       | Department     | Hiredate   | Category | Gender | Salary |
|----|------------|----------------|------------|----------|--------|--------|
| 1  | Taniya     | Social Studies | 03/17/1994 | TGT      | F      | 25000  |
| 2  | Abhishek   | Art            | 02/12/1990 | PRT      | M      | 20000  |
| 3  | Sanjana    | English        | 05/16/1980 | PGT      | F      | 30000  |
| 4  | Vishwajeet | English        | 10/16/1989 | TGT      | M      | 25000  |
| 5  | Aman       | Hindi          | 08/1/1990  | PRT      | F      | 22000  |
| 6  | Pritam     | Math           | 03/17/1980 | PRT      | F      | 21000  |
| 7  | RajKumar   | Science        | 09/2/1994  | TGT      | M      | 27000  |
| 8  | Sital      | Math           | 11/17/1980 | TGT      | F      | 24500  |

- (i). To display all information about teachers of Female PGT Teachers.  
(ii). To list names, departments and date of hiring of all the teachers in descending order of date of joining.  
(iii). To count the number of teachers and sum of their salary department wise.  
(iv). SELECT MAX(Hiredate) ,Gender FROM Teacher group by Gender;  
(v). SELECT COUNT(DISTINCT(Department)) FROM Teacher;

4. Write output of the following queries on the given table "HOTEL".

| Table : Hotel |           |        |
|---------------|-----------|--------|
| EMPID         | CATEGORY  | SALARY |
| E101          | Manager   | 60000  |
| E102          | Executive | 65000  |
| E103          | Clerk     | 40000  |
| E104          | Manager   | 62000  |
| E105          | Executive | 50000  |
| E106          | Clerk     | 35000  |

- (i) SELECT \* FROM HOTEL ORDER BY SALARY DESC;
- (II) SELECT CATEGORY.AVG(SALARY) FROM HOTEL GROUP BY CATEGORY;
- (III) SELECT SUM(SALARY) FROM HOTEL GROUP BY CATEGORY;

5. Consider the table given below and answer the following questions:

| Table : Event |               |            |           |
|---------------|---------------|------------|-----------|
| EventId       | EventName     | Date       | Organizer |
| 101           | Wedding       | 26/10/2019 | 1004      |
| 102           | Birthday Bash | 05/11/2019 | 1002      |
| 103           | Engagement    | 13/11/2019 | 1004      |
| 104           | Wedding       | 01/12/2019 | 1003      |
| 105           | Farewell      | 25/11/2019 | 1001      |

| Table : Organizer |       |            |
|-------------------|-------|------------|
| Organizerid       | Name  | Phone      |
| 1001              | Peter | 9745684122 |
| 1002              | Henry | 9468731216 |
| 1003              | Smith | 9357861542 |
| 1004              | Fred  | 9168734567 |

- (i) What will be the cardinality of Cartesian Product of the above two tables?
- (ii) Write SQL query to display Even and its date.
- (iii) Write SQL Query to change the Phone number to 9229229229 for the organizer 'Fred'
- (iv) Write a query to display Event name and Phone for all the events organized by Fred before 01/11/2019

6(a). Write output for SQL queries from i to iii based on the following table:

| Table: SPORTS |       |         |            |        |           |        |
|---------------|-------|---------|------------|--------|-----------|--------|
| Rno           | Class | Name    | Game1      | Grade1 | Game2     | Grade2 |
| 10            | 7     | Sammer  | Cricket    | B      | Swimming  | A      |
| 11            | 8     | Sujit   | Tennis     | A      | Skating   | C      |
| 12            | 7     | Kamal   | Swimming   | B      | Football  | B      |
| 13            | 7     | Venna   | Tennis     | C      | Tennis    | A      |
| 14            | 9     | Archana | Basketball | A      | Cricket   | A      |
| 15            | 10    | Arpit   | Cricket    | A      | Athletics | C      |

- i. SELECT COUNT(\*) FROM SPORTS WHERE NAME LIKE '%a%';
- ii. SELECT MAX(Class) FROM SPORTS WHERE Grade1=Grade2;
- iii. SELECT COUNT(\*) FROM SPORTS GROUP BY Game1;

- 6(b). Write SQL queries for (i) to (iv), which are based on the table SPORTS given in the question.
- (i) Display the names of the students who have grade 'A' in either Game1 or Game2 or both.
  - (ii) Display the number of students opted for the game 'Cricket'
  - (iii) Display the names of students who have same game for both Game1 and Game2.
  - (v) Display the games taken by the students whose name starts with 'A'.

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

**Table: ACTIVITY**

| ACode | ActivityName  | ParticipantsNum | PrizeMoney | ScheduleDate |
|-------|---------------|-----------------|------------|--------------|
| 1001  | Relay 100x4   | 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  |

- (i) select count(distinct participantsnum) from activity;
- (ii) select max(scheduledate),min(scheduledate) from activity;
- (iii) select sum(prizemoney) from activity;

7(b). Write SQL queries for (i) to (iv), which are based on the table : ACTIVITY given in the question.

- (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 Schedule Date and Participants Number for the activity Relay 100x4
- (iv) To increase PrizeMoney by 500 for High jump activity.

8(a). Write the SQL command for the following on the basis of given table.

**Table : SPORTS**

| StudentNo | Class | Name    | Game1      | Grade1 | Game2     | Grade2 |
|-----------|-------|---------|------------|--------|-----------|--------|
| 10        | 7     | Sammer  | Cricket    | B      | Swimming  | A      |
| 11        | 8     | Sujit   | Tennis     | A      | Skating   | C      |
| 12        | 7     | Kamal   | Swimming   | B      | Football  | B      |
| 13        | 7     | Venna   | Tennis     | C      | Tennis    | A      |
| 14        | 9     | Archana | Basketball | A      | Cricket   | A      |
| 15        | 10    | Arpit   | Cricket    | A      | Athletics | C      |

- (i) Display the names of the students who have grade 'A' in either Game 1 or Game 2 or both.
- (iii) Display the number of students having the GRADE1 as 'A' in Game1.
- (iv) Display the names of students who have same game for both Game1 and Game2.
- (v) Display the games taken by the students whose name starts with 'A'.

8(b) Give the output of the following SQL statements as per table given above.

- (i) SELECT COUNT(\*) FROM SPORTS.
- (ii) SELECT DISTINCT Class FROM SPORTS.
- (iii) SELECT MAX(Class) FROM STUDENT;
- (iv) SELECT COUNT(\*) FROM SPORTS GROUP BY Game1;

## Unit 3: Networking Concepts

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### Chapter 5: Networking Concepts

Expand the following abbreviations:

|        |   |                                                  |
|--------|---|--------------------------------------------------|
| LAN    | : | Local Area Network                               |
| MAN    | : | Metropolitan Area Network                        |
| WAN    | : | Wide Area Network                                |
| PAN    | : | Personal Area Network                            |
| MODEM  | : | Modulation Demodulation                          |
| bps    | : | bits per second                                  |
| Mbps   | : | Megabits per Second                              |
| GPRS   | : | General Packets Radio Service                    |
| SMS    | : | Short Message Services                           |
| SIM    | : | Subscribers Identification Module                |
| GSM    | : | Global System for Mobile Communications          |
| WLL    | : | Wireless in Local Loop                           |
| LTE    | : | Long Term Evolution                              |
| SMTP   | : | Simple Mail Transfer Protocol                    |
| FTP    | : | File Transfer Protocol                           |
| TCP/IP | : | Transmission Control Protocol/ Internet Protocol |
| PPP    | : | Point to Point Protocol                          |
| POP    | : | Post Office Protocol                             |
| VoIP   | : | Voice over Internet Protocol                     |
| http   | : | Hypertext Transfer Protocol                      |
| WWW    | : | World Wide Web                                   |
| URL    | : | Uniform Resource Locator                         |
| VPN    | : | Virtual Private Network                          |
| DNS    | : | Domain Name System                               |
| IMAP   | : | Internet Message Access Protocol                 |
| WiFi   | : | Wireless Fidelity                                |
| MAC    | : | Media Access Control                             |
| CDMA   | : | Code Division Multiple Access                    |
| NIC    | : | Network Interface Cards                          |
| HTML   | : | Hypertext Mark-up Language                       |

FILL IN THE BLANKS:

1. PPP stands for -----.
2. ....is an intelligent device that connects several nodes to form a network and redirects the received information only to intended node(s).
3. In data communication, the interface between the source and the medium is called -----.
4. A device which is used to boost the signal between two cable segments or wireless access points is called.....
5. The connection between the modem and terminal/computer is a-----.
6. A computer network that spans a relatively large geographical area is called -----.
7. WAN stands for -----.
8. ISP denotes -----.
9. A modem is a ----- device.
10. ----- is used to access and operate a remote computer on a network.
11. The language used to develop web pages is called -----.
12. A network of networks is known as -----.
13. In a network, a machine is identified by unique address called \_\_\_\_\_
14. The site which stores web pages is called -----.
15. The unique address of web page on the web is called -----.
16. ----- was the predecessor to the internet.
17. The ----- is the method used to make hypertext document readable on the WWW.
18. The collection of information for communication is known as -----.
19. ....is a device that converts data from digital bit stream into an analog signal and vice-versa.
20. The software which helps to view the websites is called -----.
21. The port number of E mail is -----.
22. ----- is a high level protocol that manages the data.
23. A ..... is a set of data or information which is designed to be viewed as part of a website.
24. The -----describes the machines location in a name space from right to left.
25. A ----- is a computer that performs actions for another computer.
26. ----- is the most common technology for searching and browsing files developed in past five years.
27. A ----- is the computer that asks for the action.
28. VPN stands for -----.
29. ----- is a very popular LAN.
30. All computers connected to the internet and wanting to use it for sending/receiving data must follow a common set of rules for communication called -----.

31. E mail denotes -----.
32. ----- Protocol tells each system how to form mail messages and transfer them between computers.
33. Internet began in year -----
34. Network speed is measured as -----.
35. The domain name for educational institutions is -----.
36. DNS denotes -----.
37. The DNS for commercial businesses is -----.
38. The domain name for miscellaneous organizations is -----.
39. A device used to connect dissimilar networks is called.....
40. ....is responsible for handling the address of the destination computer so that each packet is delivered to its proper destination.

### Very Short Answer Question

1. What is a bridge?
2. What is a repeater?
3. Define router.
4. What is a switch?
5. What do you mean by Ethernet?
6. Define Bluetooth.
7. What are the basic functions of email?
8. Define WWW.
9. What is the web browser?
10. What is a URL? What are its components?
11. What do you mean by TELNET?
12. Differentiate between a router, a hub, and a switch.
13. What is a link?
14. What do you mean by a Node?
15. What does a backbone network mean?
16. What do you mean by network topology?
17. What is the difference between LAN and WAN?
18. Define the following terms:  
(a) RJ-45 (b) Ethernet. (c) Ethernet card. (d) Hub (e) Switch
19. What is HTML? Where is it used?
20. Define GSM, CDMA and WLL.
21. How do computer networks reduce hardware cost of an organization? Explain with the help of an example.
22. How are Trojan horses different from Worms? Mention any one difference.
23. What is a communication channel? Name the basic types of communication channels available.
24. What is a worm? How is it removed?

25. What is TCP/IP?
26. How is FTP different from HTTP?
27. Define Mobile Communication and Wireless Communication.
28. What is Mobile Processor?
29. Name any four popular mobile processors in the market.
30. What are the advantages of e-commerce applications?
31. Define web browser and webserver.
32. Differentiate between XML and HTML.
33. What is web hosting?
34. What is hacking?
35. What are cookies?
36. Differentiate between cracking and hacking.
37. What is web scripting?
38. Name some web scripting languages.
39. What is Cyber Crime?
40. Give one advantage of bus topology of network. Also state how four computers can be connected with each other using star topology of network?
41. What is the difference between star topology and bus topology of network?
42. What is a protocol? Which protocol is used to search information from Internet using an Internet browser?
43. What is Firewall?
44. What is the difference between static and dynamic web pages?
45. Why is a Switch called an intelligent hub?

# UNIT 4 -SOCIETAL IMPACTS

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## Chapter 6: Societal Impacts

### Very Short Answer (VSA) (1 mark)

- 1 What is Plagiarism?
- 2 How can we manage E-waste? (Two points)
- 3 Explain phishing.
- 4 What is Identity Theft?
- 5 What is computer forensics?
- 6 What do you understand by 'Intellectual Property Rights'?
- 7 What is Spam?
- 8 What is spoofing?
- 9 Alex has stolen a credit card. He used that credit card to purchase a laptop. What type of offence has he committed?
- 10 Name the primary law in India dealing with cybercrime and electronic commerce.
- 11 What is cyberbullying?
- 12 What is Cyber trolling?
- 13 Explain Cyber stalking.
- 14 What do you understand by Digital Footprint?
- 15 What do you mean by Eavesdropping?
- 16 Leaking your company data to the outside network without prior permission of senior authority is a crime. State true or false. (i) True (ii) False
- 17 What types of data are stolen by cyber-criminals in most of the cases?
  - (i) Data that will pay once sold
  - (ii) Data that has no value
  - (iii) Data like username and passwords only
  - (iv) Data that is old
- 18 Mr. Alex is confused between Shareware and Open Source. Mention at least one point of differences to help him understand the same.
- 19 What is the meaning of free and open source software?
- 20 Are all free software open source?

## Short Answer-I (SA-I) (2 marks)

- 1 Give two examples of online fraud. What measures can you take to curb online frauds?
- 2 Alex has recently shifted to new city and new College. He does not know many people in his new city and school. But all of a sudden, someone is posting negative, demeaning comments on his social networking profile, college site's forum etc.  
He is also getting repeated mails from unknown people. Every time he goes online, he finds someone chasing him online.
  - (a) What is this happening to Alex?
  - (b) What action should be taken to stop them?
- 3 Write two advantages of Online Campaigning?
- 4 What is digital property? Give some examples?
- 5 How can you avoid plagiarism while referring to someone else's creation?
- 6 What is the role of computer forensics?
- 7 What do you understand by e-waste management? Explain
- 8 Explain Digital Rights Management. How can we protect our content?
- 9 Alex received an email from his bank stating that there is a problem with his account. The email provides instructions and a link, by clicking on which he can login to his account and fix the problem. Help Alex by telling him the precautions he should take when he receives these type of emails.
- 10 Explain any two ways in which technology can help students with disabilities.
- 11 What is meant by ethical hacking?
- 12 What are intellectual property rights? Why should intellectual property rights be protected?
- 13 Is licensing the same as copyright?
- 14 How technology is affecting our health?
- 15 What are the types of hackers?
- 16 What is the purpose of a software Licence?
17. What are the benefits of e-Waste recycling?
18. What is Proprietary Software? Give Example.