

**Class XII SCIENCE**  
**HOLIDAY HOMEWORK 2023-24**

**Warm Greetings!! Its SUMMER TIME again! Use Summer Vacation as an opportunity to spend quality time together. Let take the lead and use your imagination, creativity and knowledge to do the assigned task**

**(SUBJECT ENGLISH 301)**

**READING**

Do unseen Passages 1 to 10 (Solve it on the printout of the passage)

**\*WRITING**

\* Write a letter to the Editor of a national daily highlighting the neglect of our national monuments

and how these are being damaged in the present day world

\* Write an article on the topic-‘How Google controls the life of an average person?’ 150-200 words. In fair notebook

\*As an active member of the Animals Lovers’ Club of your school write an article for your School magazine describing the change in the environment during lockdown, The need for peaceful coexistence with the animals and the effect on pollution level etc .You are Amar/ Amrita of Std. XII.

\*Do practice of notice writing (5 notice writing in English copy)

\* Read an English newspaper daily and cut samples of the following in the fair notebook

**a) 3 Reports**

**b) 3 Articles**

**c) 2 new words and write synonyms and antonyms in notebook.**

**LITERATURE**

1. Do all the reference to context (extracts ) of lesson 1 and 2 of Flamingo and poetry 1 and 2 (FLAMINGO)

Do extracts of lesson 1 of Vistas in English copy

**\*PROJECT\***

Make a project files according to the topics allotted.

**(SUBJECT PHYSICS 042)**

**Chapter 1.( Electric Charges and Fields) and Chater 2.( Electrostatic Potential and Capacitance)Chapter -3 Current Electricity**

**Q1.Two small identical electrical dipoles AB and CD, each of dipole moment ‘p’ are kept at**

an angle of  $120^\circ$  as shown in the figure. What is the resultant dipole moment of this combination? If this system is subjected to electric field ( $E \rightarrow$ ) directed along + X direction, what will be the magnitude and direction of the torque acting on this?

Q2. An electric dipole of length 4 cm, when placed with its axis making an angle of  $60^\circ$  with a uniform electric field, experiences a torque of  $4\sqrt{3}$  Nm. Calculate the potential energy of the dipole, if it has charge  $\pm 8$  nC. .

Q3. Two point charges  $q$  and  $-2q$  are kept 'd' distance apart. Find the location of the point relative to charge 'q' at which potential due to this system of charges is zero

Q4. Derive the expression for the capacitance of a parallel plate capacitor having plate area A and plate separation d.

Q5. (i) Find equivalent capacitance between A and B in the combination given below. Each capacitor is of 2  $\mu\text{F}$  capacitance

(ii) If a dc source of 7 V is connected across AB, how much charge is drawn from the source and what is the energy stored in the network?

Q6. A parallel plate capacitor of capacitance C is charged to a potential V by a battery. Without disconnecting the battery, the distance between the plates is tripled and a dielectric medium of  $k = 10$  is introduced between the plates. Explain giving reasons, how will the following be affected:

(i) capacitance of the capacitor

(ii) charge on the capacitor, and

(iii) energy density of the capacitor

Q7. What is the electric flux due to this configuration through the surface 'S'

Q8. A charge 'q' is placed at the centre of a cube of side l. What is the electric flux passing through each face of the cube?

Q9. Why do the electric field lines never cross each other?

Q10. Derive an expression for the torque experienced by an electric dipole kept in a uniform electric field.

Q11. Define electric Flux. Write its S.I. unit.

A charge  $q$  is enclosed by a spherical surface of radius R. If the radius is reduced to half, how would the electric flux through the surface change?

Q12. Given a uniform electric field  $E \rightarrow = 2 \times 10^3 \hat{i}$  N/C, find the flux of this field through a square of side 20 cm, whose plane is parallel to the y-z plane. What would be the flux through the same square, if the plane makes an angle of  $30^\circ$  with the x-axis?

Q13. State Gauss' law in electrostatics. Using this law derive an expression for the electric field due to a uniformly charged infinite plane sheet.

Q14. Two point charges  $+q$  and  $-2q$  are placed at the vertices 'B' and 'C' of an equilateral triangle ABC of side as given in the figure. Obtain the expression for (i) the magnitude and

(ii) the direction of the resultant electric field at the vertex A due to these two charges.

Q15. (i) Derive the expression for electric field at a point on the equatorial line of an electric dipole.

(ii) Depict the orientation of the dipole in

(a) stable,

(b) unstable equilibrium in a uniform electric field

Q16. a) Define electric flux. Write its SI units.

(b) The electric field components due to a charge inside the cube of side 0.1 m are as shown :

$$E_x = \alpha x, \text{ where } \alpha = 500 \text{ N/C}\cdot\text{m}$$

Q17. A charge is distributed uniformly over a ring of radius 'a'. Obtain an expression for the electric intensity E at a point on the axis of the ring. Hence show that for points at large distances from the ring, it behaves like a point charge

Or

A hollow cylindrical box of length 1m and area of cross-section  $25 \text{ cm}^2$  is placed in a three dimensional coordinate system as shown in the figure. The electric field in the region is given by  $\vec{E} = 50x\hat{i}$  where E is in  $\text{NC}^{-1}$  and x is in metres. Find

- Net flux through the cylinder.
- Charge enclosed by the cylinder.

Q18. Two point charges + 3q and - 4q are placed at the vertices 'B' and 'C' of an equilateral triangle ABC of side 'a' as given in the figure. Obtain the expression for

(i) the magnitude and  
(ii) the direction of the resultant electric field at the vertex A due to these two charges.

Q19. Two charges  $4\mu\text{C}$  and  $-4\mu\text{C}$  are placed at points A and B 3 cm apart. Depict an equipotential surface of the system.

Q20. Derive an expression for the potential energy of an electric dipole of dipole moment  $p$  in the electric field  $\vec{E}$

Q21. Two point charges  $20 \times 10^{-6} \text{ C}$  and  $-4 \times 10^{-6} \text{ C}$  are separated by a distance of 50 cm in air.

(i) Find the point on the line joining the charges, where the electric potential is zero.  
(ii) Also find the electrostatic potential energy of the system.

Q22. Figure shows two identical capacitors  $C_1$  and  $C_2$ , each of  $2 \mu\text{F}$  capacitance, connected to a battery of 5 V. Initially switch 'S' is left open and dielectric slabs of dielectric constant  $K = 5$  are inserted to fill completely the space between the plates of the two capacitors.

How will the charge and

(ii) potential difference between the plates of the capacitors be affected after the slabs

are inserted?

**Q23.** Net capacitance of three identical capacitors in series is 3 pF. What will be their net capacitance if connected in parallel?

Find the ratio of energy stored in the two configurations if they are both connected to the same source.

**Q24.** Draw a plot showing the variation of

(i) electric field (E) and

(ii) electric potential

(iii) with distance  $r$  due to a point charge  $Q$ .

**Q25.** An electric dipole of length 4 cm, when placed with its axis making an angle of  $60^\circ$  with a uniform electric field, experiences a torque of  $4\sqrt{3}$  Nm. Calculate the potential energy of the dipole, if it has charge  $\pm 8$  nC.

**Q26.** A parallel plate capacitor of capacitance  $C$  is charged to a potential  $V$ . It is then connected to another uncharged capacitor having the same capacitance. Find out the ratio of the energy stored in the combined system to that stored initially in the single capacitor.

**Q27.** The equivalent capacitance of the combination between A and B in the given figure is  $4 \mu\text{F}$ .

(i) Calculate capacitance of the capacitor  $C$ .

(ii) Calculate charge on each capacitor if a 12 V battery is connected across terminals A and B.

(iii) What will be the potential drop across each capacitor?

**Q28.** A parallel plate capacitor is charged by a battery. After some time the battery is disconnected and a dielectric slab of dielectric constant  $K$  is inserted between the plates.

How would

(i) the capacitance,

(ii) the electric field between the plates and

(iii) the energy stored in the capacitor, be affected? Justify your answer.

**Q29.** (a) Depict the equipotential surfaces for a system of two identical positive point charges placed a distance 'd' apart.

(b) Deduce the expression for the potential energy of a system of two point charges  $q_1$  and  $q_2$  brought from infinity to the points  $r_1 \rightarrow$  and  $r_2 \rightarrow$  respectively in the presence of external electric field  $E$

**Q30.** Two capacitors of unknown capacitances  $C_1$  and  $C_2$  are connected first in series and then in parallel across a battery of 100 V. If the energy stored in the two combinations is 0.045 J and 0.25 J respectively, determine the value of  $C_1$  and  $C_2$ . Also calculate the charge on each capacitor in parallel combination.

**Q31.** Resistivities of copper, silver and manganin are  $1.7 \times 10^{-8} \Omega\text{m}$ ,  $1.0 \times 10^{-8} \Omega\text{m}$  and  $44 \times 10^{-8} \Omega\text{m}$  respectively which of these is the best conductor?

**Q32.** What is drift velocity? Derive expression for drift velocity of electrons in a good

conductor in terms of relaxation time of electrons?

Q33. Use Kirchhoff's rules to determine the value of the currents flowing in the circuit shown in the figure.

Q34. Calculate the value of the resistance R in the circuit shown in the figure, so that the current in the circuit is 0.2A. What would be the potential difference between points A and B?

Q35. In a meter bridge, the null point is found at a distance of  $l_1$  cm from A. If a resistance of X is connected in parallel with S, then null point occurs at a distance  $l_2$  cm from A. Obtain the formula for X in terms of  $l_1, l_2$  and S.

### Sub:-Mathematics- 041

Q1. If  $x^{16} \cdot y^9 = (x^2 + y)^{17}$ , prove that =

Q2. If  $x^m \cdot y^n = (x + y)^{m+n}$  prove that

Q3. If  $x \sin(a + y) + \sin a \cos(a + y) = 0$ , prove that

Q4. Differentiate the following with respect to x:  $x^{\sin x} + (\sin x)^{\cos x}$

Q5. If  $x = \cos t(3 - 2\cos^2 t)$  and  $y = \sin t(3 - 2\sin^2 t)$ ,

find the value of

Q6. Find the intervals in which the function  $f(x) = 3x^4 - 4x^3 - 12x^2 + 5x$  is

(a) strictly increasing (b) strictly decreasing

Q7. Prove that the height of the cylinder of maximum volume that can be inscribed in a sphere of radius R is  $\frac{4R}{3}$ . Also find the maximum volume.

Q8. Show that a cylinder of a given volume which is open at the top has minimum total surface area, when its height is equal to the radius of its base.

Q9. A window is of the form of a semicircle with a rectangle on its diameter. The total perimeter of the window is 10 m. Find the dimensions of the window to admit maximum light through the whole opening.

Q10. The side of an equilateral triangle is increasing at the rate of 2 cm/s. At what rate is its area increasing when the side of the triangle is 20 cm?

Q11. If  $x^y = y^x$  find

Q12. Using matrices solve the following system of linear equations:

$$x - y + 2z = 7, \quad 3x + 4y - 5z = -5 \quad \text{and} \quad 2x - y + 3z = 12$$

Q13. NCERT New or Old book all questions of chapter Inverse Trigonometric Functions.

Q14. NCERT exemplar new or old book (all Continuity questions)

**Q15. Relations and Functions (one-one and onto function at least 8 questions)**

**Q16. Make Activity File for Math internal Exam for (2023-2024).**

**Q17. Matrices (chapter -3) and determinants (chapter-4) (Miscellaneous NCERT all)**

### **BIOLOGY**

Keep checking your mobile for the work sent or any other information

To Do 

1. Complete the practical file, write down the sent content.

2. Make investigatory project with the following headings

- a. Topic
- b. Certificate
- c. Acknowledgement
- d. Contents
- e. Introduction
- f. Theory
- g. Observation
- h. Conclusion
- i. Bibliography

3. Complete the sent assignment time to time in WhatsApp group (Bio copy.)

4. Revise the PT-1 syllabus

Unit-Reproduction(all 3 chapters)

Unit-Genetics(Principle of inheritance)

### **Chemistry**

1. Flow chart of Preparation and Reaction.

2. Explain all Name Reactions

3. Write 15 Distinction Test

4. 10 reasoning Questions from each organic chapter

5. Write the mechanism of 413K, 443K Hydration Mechanism

**Computer Science(083)**

**Worksheet 1**

- Q1. To use built in function we **have** to **use import** statement  
 a. True                      b. False
- Q2. **Arguments** in function passed in  
 a. square **bracket** [ ]    b. **circular bracket** ()  
 c. **in double** quotes      d. **in single** quotes
- Q3. Which of the **following keyword** is used to define a function  
 a. def                      b. define      c. definition      d. **none of** above
- Q4. Execution **Always Begin** from function  
 a. True      b. **False**
- Q5. **Which** type of functions are supported in python  
 a. **built in**      b. **user defined**    c. **both**    d. **none of** above
- Q6. **Which** of **the** following **is** true  
 a. A function **help** to **divide** program in small **parts**      c. **Both**  
 b. A function can be **called any no.** of times              d. **none of** above
- Q7. **Function header ends with symbol**  
 a ) :      b) ,      c) ;                      d) **None of** these
- Q8. **To** execute a **function**, it **is** necessary to **call** it  
 a. **Yes** b. **No**
- Q9. **Is it** compulsory to declare function **before** its calling  
 a. **Yes**      b. **No**
- Q10. if function name is given without **parenthesis then it is** treated as  
 a. **Error**      b. **reference**
- Q11. **How is** a function declared in **Python?**  
 a) def function function\_name():    b) declare function function\_name():  
 c) **def** function\_name():              d) **declare** function\_name():
- Q12. **Which one of the following is** the correct way of calling a function?  
 A. function\_name()      C. **ret** function\_name()  
 B. **call** function\_name()    D. function function\_name()
- Q13. **Which of the** following is **the** use of id() function in python?  
 a) **Id** returns **the identity of the** object  
 b) **Every object doesn't** have a unique id  
 c) All of the mentioned
- Q14. **What is the** output of the expression `abs(math.sqrt(25))` ?
- Q15. **What is the** output of the expression `len(["hello",,2,, 4,, 6])`  
 a) 4    b) 3    c) **Error**    d) 6
- Q16. **What is the** output of the **expression** `print("abc DEF".capitalize())`  
 a) abc def    b) **ABC DEF**    c) **Abc def**    d) **Abc Def**
- Q17. **What is the** output of the code, (assume **value of a** is 2.13, **b** is 3.7777 and **c** is -3,12)

```
print(int(a), floor(b), ceil(c), fabs(c))
```

a. 2, 3, -4, 3

b. 2,3.0, -3, 3.12

c. 2, 4, -3, 3

d. 2, 3, -4, 3.12

Q20. The predefined function to find length of string is

a. Strlen

b. len

c. stringlen

4. Strlength

Q21. Consider the following function headers. Identify the correct statement:-

1) def correct(a=1,b=2,c):

2) def correct(a=1,b,c=3):

3) def correct(a=1,b=2,c=3):

4) def correct(a=1,b,c):

## WORKSHEET 2

Q1. Observe the following Python code very carefully and rewrite it after removing all syntactical errors with each correction underlined.

```
def execmain():  
    x = input("Enter a number:")  
    if (abs(x)= x):  
        print("You entered a positive number")  
    else:  
        x=-1  
print("Number made positive : ",x)  
execmain()
```

Q2. Write the output of the following Python program code:

```
def show(mystr):  
    newstr = ""  
    for x in mystr:  
        if x.isupper():  
            newstr += x.lower()  
        elif x.islower():  
            newstr += x.upper()  
        else:  
            newstr += x  
    print("The new string is:", newstr)  
show("Pass@2019")
```

Q3. Rewrite the following code after removing all errors

```
def Tot(Number) #Method to find Total  
    Sum=0  
    for C in Range (1, Number+1):  
        Sum+=C  
    RETURN Sum  
print Tot[3] #Function Call
```



Q4. Write **definition** of a method/function **DoubletheOdd(Nums)** to add and **display** twice of odd **values from the list** of **Nums**.

For example: If the **Nums** contains [25,24,35,20,32,41] The function should display Twice of Odd Sum: 202

Q5. What is wrong with the following function definition **even with** correct **code**?

```
def addEm(x,y,z):  
    return x+y+z  
    print("the answer is :", x+y+z)
```

Q6. Write **definition of a method**/function **AddOddEven(VALUEs)** to **display** sum of odd and even **values separately from the list** of **VALUEs**.

For example: If the **VALUEs** contain [15, 26, 37, 10, 22, 13] The function should **display** Even Sum: 58 Odd **Sum**: 65

Q7. Find and write the output of the following python code:

```
def fun(s):  
    k=len(s)  
    m=" "  
    for i in range(0,k):  
        if(s[i].isupper()):  
            m=m+s[i].lower()  
        elif s[i].isalpha():  
            m=m+s[i].upper()  
        else:  
            m=m+'bb'  
    print(m)  
fun('Cbse2023@com')
```

Q8. Show output of following:

```
a)  
def Alter(x,y=20):  
    x=x*y  
    y=x%y  
    print (x,'*',y)  
    return (x)  
a=200  
b=30  
a=Alter(a,b)  
print (a,'$',b)  
b=Alter(b)
```

```
print (a,'$', b)
a=Alter(a)
print (a,'$',b)
```

**Q9. Write** output of following code

```
def Show(STR, KEY):
    x=0
    L=len(STR)
    while X < (L//2):
        if X%2 is not 1:
            print( STR[X] * KEY )
        else:
            print( STR[X] * (KEY+1))
    x+=1
    KEY+=2
show("PYTHON", 1) #calling function show()
```

**Q10. Find and write the** output of the following python code:

```
def Change(p,q=30):
    p=p+q
    q=p-q
    return (p)
```

```
R=150
S=100
R=Change(R, S)
print (R, "#",S)
S=Change (S)
print (R, "#", S)
R=Change (R)
print (R, "#", S)
```

**Q11. Go through the** following python codes carefully **and** write the output **of the code.**

```
a = 10
b = 20
def changer(1st):
    global a
    a+=10
    b = 30
    1st.append(a)
lst = [1,2,3]
```

```
print(a,b)
changer(lst)
print(a,lst,b)
changer(1st)
print(a,lst,b)
```

Q12. Write a python function **showlarge()** that accepts a string as parameter and **prints the words whose length is more** than 4 characters.

Eg: if the given string is "My life is for serving my Country"

The output should be

serving

Country

Q13. Find and write the output of the following python code:

```
a=10
```

```
def call():
```

```
    global a
```

```
    a=15
```

```
    b=20
```

```
    print(a)
```

```
call()
```

Q14. Find error in following code:-

```
def Check(n1=1, n2=2,n3):
```

```
    n1=n1+n2
```

```
    n2+=n3
```

```
    print (n1,n2,n3)
```

```
Check( )
```

```
Check(2, 1)
```

```
Check(3,4,5)
```

Q15. Kritika was asked to accept a list of even numbers but she did not put the relevant condition while accepting the list of numbers. You are required to write a user defined function oddtoeven(L) that accepts the List L as an argument and convert all the odd numbers into even by multiplying them by 2

### Python Revision Tour

Q16. (a) Given is a Python string declaration:

```
S="Cyber World @@ 2022"
```

```
Write the output of: print(S.replace('2','2+1')[::-2])
```

(b) Write the output of the code given below:

```
D={'India':'New Delhi', 'China':'Beijing', 'USA':'Washington DC',
'UK':'London'}
```

```

for i in D:
    if 'U' in i:
        D[i]+='Ok'
for i in D.values():
    print(i,end=' ')

```

( c ) Predict the output of the Python code given below:

```

L='Alexander'
x=""
l1=[]
count=1
for i in L:
    if i in ['a','e','i','o','u']:
        x=x+i.upper()
    else:
        if count%2!=0:
            x=x+str(len(L[:count]))
        else:
            x=x+i
            count+=1
print(x)

```

Q17. Find the datatype of "A" in the following statement.

```
A=100-10,100,10,10+100,10*100
```

(a) list      (b) tuple      (c) integer      (d) Error

Q18. Given the following dictionary:

```
D={'B':'Black','R':'Red','B':'Blue'}
```

Find the value of D1:

```
D1=dict.fromkeys(D)
```

(a) {'B': None, 'R': None, 'B': None}    b) {'Black': None, 'Red': None, 'Blue': None}  
(c) {'B': ' ', 'R': ' '}      (d) {'B': None, 'R': None}

Q19. Consider the given expression:

```
not True and not False or not not False and not True
```

Which of the following will be correct output if the given expression is evaluated?

(a) True      (b) False      (c) None      (d)Error in the code

Q20. Select the correct output of the code:

```

a='AISSCE 2023'
b=len(a.split('S')+list(a.partition(' ')))
print(b)

```

(a) 4      (b) 5      (c) 6      (d) 7

Q21. Which of the following statement(s) would give an error after executing the following code?

```
def prod (int a): #Statement 1
```

```
d=a*a #Statement 2
print(d) #Statement 3
return prod #Statement 4
```

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

Q22. Which unguided transmission media is required to be in line-of-sight distance?

- (a) Radio Wave   (b) Satellite   (c) Micro Wave   (d) All of the above

Q23. What will the following expression be evaluated to in Python?

```
print((15//2*3+4)+10%3)
```

- (a) 8        (b) 7        (c) 2        (d) 26

Q24. Predict the output of the Python code given below:

```
tuple1 = (11, 22, 33, 44, 55 ,66)
```

```
list1 =list(tuple1)
```

```
new_list = []
```

```
for i in list1:
```

```
    if i%2!=0:
```

```
        new_list.append(i)
```

```
new_tuple = tuple(new_list)
```

```
print(new_tuple)
```

Q25. Mr. Asmit is the class teacher of Class- XII-C. He created a table named "Student" to store records like StuID, Name, Gender, Age and AvgMark of his section students.

StuID	Name	Gender	Age	AvgMark
CB01	Abhijeet	Boy	19	87
CB02	Monal	Girl	18	91
CB03	Divya	Girl	17	89
CB04	Sujata	Girl	18	78
CB05	Chirag	Boy	18	77

Based on the data given above answer the following questions:

- (i) Identify the most appropriate column which can become a Primary Key. Justify your answer.  
(ii) Find the degree and cardinality of the above relation if 5 new students record is added to the existing records.  
(iii) Write the statements to:  
a. Insert the following record into the table   CB06, Navneeth, Boy, 18, 80.  
b. Increase the AvgMark of all Girls by 3.  
c. Delete the record of students whose age is 17.  
d. Add a column REMARKS in the table with datatype as varchar with 50 characters.

Q26. Lucky Corporation has set up its new centre at Noida,Uttar Pradesh for its office and web-based activities. It has 4 blocks of buildings as Block A,Block B ,Block C and Block D :-

Distance between the various blocks is as follows

A to B = 40 m      B to C = 120m      C to D = 100m

A to D = 170m      B to D = 150m      A to C = 70m

Computers in various buildings:

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

- a. Suggest and draw the cable layout to efficiently connect various blocks of buildings within the Noida center for connecting the digital devices.
- b. Suggest the placement of the following device with justification
  - i. Repeater
  - ii. Hub/Switch
- c. Which kind of network (PAN/LAN/WAN) will be formed if the Noida office is connected to its head office in Mumbai?
- d. Which fast and very effective wireless transmission medium should preferably be used to connect the head office at Mumbai with the center at Noida?
- e. Suggest the most appropriate block/location to house the SERVER to get the best and effective connectivity. Justify your answer.

### **Informatics Practices**

1. **Write code to create the following series.**

Mukul    Welcome to TCS

Sushila    Welcome to TCS

Khwaish    Welcome to TCS

Sujal      Welcome to TCS

2. **Write code to create the following series. (Using Dictionary and List)**

January      31

February     28

March        31

Apri         30

May          31

3. **Write code to create the following series. (using Numpy)**

10    40

11    44

12    48

13    52

4. **Write code to create the following series.**

Term1      45

Term2      65

Term3      24

Term4      89

- A) Write a Python statement to arrange/Sort the series on Marks. (Ascending Order)
- B) Write Python statement to arrange/Sort the series on Marks. (Descending Order)

5. Write a program in Python Pandas to create the following Series S1 and give the code for the questions that follows:

- A 5
- B 10
- C 15
- D 20

- (i) code to display numbers greater than 15.
- (ii) code to display the series in reverse order of index.
- (iii) code to change the index to 1,2,3,4.
- (iv) code to create a new series object S2 with this order of index 'D','B','C','A'.

6. Given two series S1 and S2, Give the outputs for the following

S1		S2	
A	10	A	5
B	12	B	6
C	14	X	7
D	16	Y	8

- (i) `print( S1 > 12)`
- (ii) `print( S1[S1>12])`
- (iii) `print( S2.head(3))`
- (iv) `print( S1.tail(2))`
- (v) `print( S1+ S2)`
- (vi) `print( S1- S2)`
- (vii) `print( S1* S2)`
- (viii) `print( S1/ S2)`
- (ix) `print( S1 * 2)`
- (x) `print( S2 ** 2)`

7. Given are two objects, a list object namely **Lst1** and a Series object namely **Ser1**, both are having similar values i.e. [2,4,6,8]. Find out the output produced by following statements: (A) `print(Lst1*2)`  
(B) `print(Ser1*2)`

8. What will be the output of the following program?

```
import pandas as pd
Fst=[9,10,11]
Scd=pd.Series((fst)
Obj1=pd.Series (data=Fst*2)
    Obj2=pd.Series(data=Scd*2)
    print("Obj 1:",Obj1)
    print("Obj 2:",Obj2)
```

9. What will be the output of following code?

```
import pandas as pd.
data=[17,14,15,4,5,3,8,9,10] S1=pd.Series(data)
print(S1[:3])
```

```

print(S1[-3:])
print(S1[0:9:2])
print(S1[:,2])
print(S1[:, -1])
print(S1[1:6:3])
print(S1.sort_values().head(3))
print(S1.sort_values(ascending=False).head(3))
print(S1.sort_values().tail(4))
print(S1.sort_values(ascending=False).tail())

```

10. Given a Series object Ser that store the area of some states in km2. Write code to find out 3 smallest and 3 biggest areas from the series.

```

Ser1=pd.Series([34567, 890, 450, 67892, 34677, 78902, 256711, 678291, 637632, 25723,
2367, 117899, 345, 256517])

```

Find from the Series Ser1 created in above Question, which states has the population more than 50000.

11. Write a code to sort a Series **ser1** as per the instruction given below and store it into **Ser2**.

- (i) In ascending order of data values
- (ii) in descending order of data values.
- (iii) In ascending order of index.
- (iv) in descending order of index

**12. Given following Series Object.**

S1	S2
0 3	0 12
1 5	2 10
2 6	3 15
4 10	4 20
5 12	6 27

- (A) What will be the output of S1 + S2 ?
- (B) What will be the output of S1 - S2 ?
- (C) print(S1[S1>=10])
- (D) print(S2[S2<20])

13.Mr. Asmit is the class teacher of Class- XII-C. He created a table named "Student" to store records like StuID, Name, Gender, Age and AvgMark of his section students.

Based on the data given above answer the following questions:

- (i) Identify the most appropriate column which can become a Primary Key. Justify your answer.
- (ii) Find the degree and cardinality of the above relation if 5 new students record is added to the existing records.



StuID	Name	Gender	Age	AvgMark
CB01	Abhijeet	Boy	19	87
CB02	Monal	Girl	18	91
CB03	Divya	Girl	17	89
CB04	Sujata	Girl	18	78
CB05	Chirag	Boy	18	77

(iii) Write the statements to:

- Insert the following record into the table CB06, Navneeth, Boy, 18, 80.
- Increase the AvgMark of all Girls by 3.
- Delete the record of students whose age is 17.
- Add a column REMARKS in the table with datatype as varchar with 50 characters.

14. Lucky Corporation has set up its new centre at Noida, Uttar Pradesh for its office and web-based activities. It has 4 blocks of buildings as Block A, Block B, Block C and Block D :-

Distance between the various blocks is as follows

A to B = 40 m      B to C = 120m      C to D = 100m

A to D = 170m      B to D = 150m      A to C = 70m

Computers in various buildings:

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

- Suggest and draw the cable layout to efficiently connect various blocks of buildings within the Noida center for connecting the digital devices.
- Suggest the placement of the following device with justification
  - Repeater
  - Hub/Switch
- Which kind of network (PAN/LAN/WAN) will be formed if the Noida office is connected to its head office in Mumbai?
- Which fast and very effective wireless transmission medium should preferably be used to connect the head office at Mumbai with the center at Noida?
- Suggest the most appropriate block/location to house the SERVER to get the best and effective connectivity. Justify your answer.

### PHYSICAL EDUCATION (048)

Complete your project file as discussed in the class.

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