K.C. INTERNATIONAL SCHOOL

JALPURA, SECTOR-01, GREATER NOIDA WEST, G.B. NAGAR, 201306

SUMMER HOLIDAY ASSIGNMENT

CLASS: - 12TH - SCIENCE

PHYSICS	Q1-A liquid drop has 20 access electrons. Calculate the charge on the liquid drop. Q2- can an object have a charge of 2.8×10^{-18} coulomb? Justify your answer Q3- A piece of polythene is rubbed wool and it has been found to acquire a negative charge of 3×10^{-7} coulomb. (1) How many electrons are transferred from wool to piece of polythene? (2) Is there a transfer of mass from wool to polythene? If yes, how much? Q4- Two point charges each of 1 coulomb separated by 1 m distance experience a force of 9×10^{9} Newton. How much force is experience by them if they are immersed in water, keeping the distance of separation between them same? Dielectric constant for water= 80 Q5- The identical charges each of 1 micro coulomb are placed at the corners of a equilateral triangle of side 10 cm. calculate the electric field intensity at the geometric centre of the triangle Q6- An electric dipole with dipole moment 3×10^{-8} Cm placed with its axis making an angle of 30^{0} with a uniform electric field, experience is a torque of 1.2×10^{3} Newton. Calculate magnitude of electric field Q7- An electric dipole consists of two opposite charges each of magnitude 8nc separated by 8 cm. The dipole is placed in an external electric field of 5×10^{5} N/c. What maximum torque will the field exert on the dipole? Q8- Two large parallel thin metallic plates are placed close to each other. The plates have surface charge densities of opposite sign and of magnitude 20×10^{-12} C/ m^2. Calculate electric field intensity (1) in the outer region of the plates and (2) in the interior region between the plates. Q9- In which orientation, a dipole placed in a uniform electric field is (1) stable (2) unstable equilibrium? Q10- Write relation between electric flux and electric intensity Q11- When electric flux through a close surface is negative, what type of charge it contains? Q12- What is the electric flux through a cube of side 1 cm which encloses an electric dipole? Q13- A point charge q is rotated around a charge Q in a circle of radius r. what is the work done? Q14- Can we say that the SI unit of absolute permittivity is farad per meter? Q15- What is the value of capacitance of the earth? Q16- What is the electrostatic potential due to an electric dipole at an equatorial point? Q17- CBSE Investigatory Project (03 Marks):- • To study various factprs on which the internal resistance/EMF of a cell depends. • To study the variations in current flowing in a circuit containing a LDR because of a variation in: - a) The power of incandescent lamp, used to illuminate, LDR (keeping all the lamps at a fixed distance). b) The distance of a incandescent lamp (of fixed power) used to "illuminate" LDR c) To find the refractive indices of a.(water), b. oil (transparent) using a plane mirror, and equiconvex lens (make from a glass

	of non-refractive index) and an adjustable object needle.
BIOLOGY	Q1. With a neat, labelled diagram describe the parts of a typical angiosperm ovule. Q2. What are chasmogamous flowers? Q3. What is apomixis? Q4. What is artificial hybridisation? Q5. Write 2 -2 examples of albuminous and non-albuminous seeds. Q6. What are the major components of seminal plasma. Q7. What is oogenesis? Q8. Write two major functions of testis and ovary. Q9. Write the function of fimbriae. Q10. What is ZIFT? Q11. **CBSE Investigatory Project** and its project record + Viva Voce (Compulsory). General instructions Use A4 size Bond paper, Type or write on one side of paper Colored pictures print out can be used (Images should be clear) After writing spiral binding or book binding Front page of the project file should be labelled like Biology Investigatory project Topic, Name, class, roll no., session, school Write index, certificate, acknowledgement, Aim &objective, Project report on------ Introduction, explanation, conclusion, Bibliography. Students can choose from the following topic (each student topic should be different) 1. Conservation of Biodiversity 2. Gene Therapy 3. Use of DNA Fingerprinting 4. Therapeutical drug currently used worldwide 5. Microbes in human welfare 6. HIV/AIDS 7. Cancer 8. Thallasemia 9. Sickle- cell anaemia 10. Recombinant DNA Technology 11. Effect of antibiotics on microorganism 12. Test tube baby/Infertility 13. Pollination
CHEMISTRY	1. Discuss Raoult's law and its application in ideal solutions. 2. What is colligative property? Provide examples and explain its significance. 3. How does the presence of solute affect the boiling point and freezing point of a solvent? 4. Describe Henry's law and its application in real solutions. 5. Discuss the concept of osmosis and osmotic pressure. 6. Explain the process of dialysis and its applications. 7. Compare and contrast ideal solutions with real solutions, providing examples for each. 8.Discuss the limitations of Raoult's law and how it deviates from real solutions. 9.Calculate the osmotic pressure of a solution given the concentration of solute and temperature. 10.Compare and contrast colligative properties in dilute and concentrated solutions.

	11.Describe the phenomenon of supersaturation and its applications. 12.Explain the concept of azeotropes and provide examples. 13.Discuss the role of van't Hoff factor in determining colligative properties of electrolyte solutions. 14.Calculate the boiling point elevation and freezing point depression of a solution containing a non-volatile solute. 15.Calculate the molality of a solution containing 50 grams of glucose (C6H12O6) dissolved in 500 grams of water. 16.Determine the molarity of a solution prepared by dissolving 10 grams of sodium chloride (NaCl) in enough water to make 250 mL of solution. 17.Calculate the mass percent of a solution prepared by dissolving 25 grams of potassium permanganate (KMnO4) in 500 grams of water. 18.Determine the vapor pressure of a solution containing 0.2 moles of sucrose (C12H22O11) dissolved in 500 grams of water at 25°C. Given that the vapor pressure of pure water at 25°C is 23.8 mmHg. 19.Calculate the amount of solute needed to prepare 500 mL of a 0.1 M solution of hydrochloric acid (HCl). 20.Determine the van't Hoff factor for a solution containing 0.2 moles of sodium chloride (NaCl) dissolved in 500 grams of water. 21.Calculate the boiling point elevation of a solution containing 0.05 moles of calcium chloride (CaCl2) dissolved in 500 grams of water. 22. CBSE Project (04 Marks):- • Comparative study of the rate of fermentation of following marterials: Wheat flour, gram flour, potato juice, carrot juice Extraction of essential oils present in SAUF, AJWAIN, ELAICHI • Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chilli powder, pepper • Preparation of soyabean milk and its comparison with natural milk with respect to curd formation, effect to temperature • Study of the presence of oxalate ions in guava fruit at different stages of ripening. • Study of quantity of casein present in different sample of milk.
COMPUTER SCIENCE	BASED ON CHAPTER – 1 (PYTHON REVISION TOUR) 1. What is the output of the following? x = ['ab', 'cd'] for i in x: i.upper() print(x) a) [‘ab’, ‘cd’]. b) [‘AB’, ‘CD’]. c) [None, None]. d) none of the mentioned 2. What is the output of the following? x = ['ab', 'cd']

for i in x:
x.append(i.upper())
print(x)
a) [‘AB’, ‘CD’]. b) [‘ab’, ‘cd’, ‘AB’, ‘CD’]. c) [‘ab’, ‘cd’]. d) none of the mentioned

3. What is the output of the following?

```
i = 1
while True:
 if i%3 == 0:
 break
 print(i)
i + = 1
```

a) 1 2 b) 1 2 3 c) error d) none of the mentioned

4. What is the output of the following?

```
i = 1
while True:
 if i%0O7 == 0:
 break
 print(i)
i += 1
```

a) 1 2 3 4 5 6 b) 1 2 3 4 5 6 7 c) error d) none of the mentioned

5. What is the output of the following?

```
i = 5
while True:
 if i%0O11 == 0:
 break
 print(i)
i += 1
```

a) 5 6 7 8 9 10 b) 5 6 7 8 c) 5 6 d) error

6. What is the output of the following?

```
i = 5
while True:
 if i%0O9 == 0:
 break
 print(i)
i += 1
```

a) 5 6 7 8 b) 5 6 7 8 9 c) 5 6 7 8 9 10 11 12 13 14 15 …. d) error

7. What is the output of the following?

```
i = 1
while True:
 if i%2 == 0:
```

break
print(i)
i += 2

a) 1 b) 1 2 c) 1 2 3 4 5 6 … d) 1 3 5 7 9 11 …

8. What is the output of the following?

```
i = 2
while True:
 if i%3 == 0:
 break
 print(i)
i += 2
```

a) 2 4 6 8 10 … b) 2 4 c) 2 3 d) error

9. What is the output of the following?

```
i = 1
Page No
6
while False:
 if i%2 == 0:
 break
 print(i)
i += 2
```

a) 1 b) 1 3 5 7 … c) 1 2 3 4 … d) none of the mentioned

10. What is the output of the following?

```
True = False
while True:
 print(True)
 break
```

a) True b) False c) None d) none of the mentioned

BASED ON CHAPTER – 2 (FUNCTIONS)

1. Which of the following is the use of function in python?

a) Functions are reusable pieces of programs
b) Functions don’t provide better modularity for your application
c) you can’t also create your own functions
d) All of the mentioned

2. Which keyword is use for function?

a) Fun b) Define c) Def d) Function

3. What is the output of the below program?

```
defsayHello():
 print('Hello World!')
sayHello()
sayHello()
```

a) Hello World!
Hello World!

b) 'Hello World!'
'Hello World!'

c) Hello
Hello

d) None of the mentioned

4. What is the output of the below program?

```
defprintMax(a, b):
 if a > b:
 print(a, 'is maximum')
elif a == b:
 print(a, 'is equal to', b)
 else:
```

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```
 print(b, 'is maximum')
printMax(3, 4)
```

a) 3 b) 4 c) 4 is maximum d) None of the mentioned

5. What is the output of the below program ?

```
x = 50
deffunc(x):
 print('x is', x)
 x = 2
 print('Changed local x to', x)
func(x)
print('x is now', x)
```

a) x is now 50 b) x is now 2 c) x is now 100 d) None of the mentioned

6. What is the output of the below program?

```
x = 50
deffunc():
 global x
 print('x is', x)
 x = 2
 print('Changed global x to', x)
func()
print('Value of x is', x)
```

a) x is 50

Changed global x to 2
Value of x is 50
b) x is 50
Changed global x to 2
Value of x is 2
c) x is 50
Changed global x to 50
Value of x is 50
d) None of the mentioned

7. What is the output of below program?

```
def say(message, times = 1):
 print(message * times)
say('Hello')
say('World', 5)
```

a) Hello
WorldWorldWorldWorldWorld
b) Hello
World 5
c) Hello
World,World,World,World,World
d) Hello
HelloHelloHelloHelloHello

8. What is the output of the below program?

```
deffunc(a, b=5, c=10):
 print('a is', a, 'and b is', b, 'and c is', c)
func(3, 7)
func(25, c = 24)
func(c = 50, a = 100)
```

a) a is 7 and b is 3 and c is 10
a is 25 and b is 5 and c is 24
a is 5 and b is 100 and c is 50
b) a is 3 and b is 7 and c is 10
a is 5 and b is 25 and c is 24
a is 50 and b is 100 and c is 5
c) a is 3 and b is 7 and c is 10
a is 25 and b is 5 and c is 24
a is 100 and b is 5 and c is 50
d) None of the mentioned

9. What is the output of below program?

```
def maximum(x, y):
 if x > y:
 return x
elif x == y:
 return 'The numbers are equal'
 else:
```

	return y print(maximum(2, 3)) a) 2 b) 3 c) The numbers are equal d) None of the mentioned 10. Which of the following is a features of DocString? a) Provide a convenient way of associating documentation with Python modules, functions, classes, and methods b) All functions should have a docstring c) Docstrings can be accessed by the __doc__ attribute on objects d) All of the mentioned Q3. Complete Programs in your Practical file (CBSE Practical file – 07 Marks). Q4. Complete Frontend of your Project. Project should be according to CBSE Syllabus. Ex-Pizza café management system, Hospital Management System etc (CBSE Project – 08 Marks)
MATHEMATICS	1- Find the area of the triangle whose vertices are (3, 8), (– 4, 2) and (5,-3) 2- solve the system of equations : x + y + z = 6, x + 2z = 7, 3x + y + z = 12 3- The monthly incomes of Aryan and Babban are in the ratio 3 : 4 and their monthly expenditures are in the ratio of 5 : 7. If each saves ? 15,000 per month, find their monthly incomes, using the matrix method. 4- solve the system of equations 2x+3y+10z=2 4x-6y+5z=5 6x+9y-20z=-4 5- The total cost C(x) associated with the production of x units of an item is given by C(x) = 0.005x3 – 0.02x2 + 30x + 5000. Find the marginal cost when 3 units are produced, where by marginal cost we mean the instantaneous rate of change of total cost at any level of output. 6- f(x) = x + 1, find d/dx (fof) (x). 7- The cost of 4 kg onion, 3 kg wheat and 2 kg rice is Rs 60. The cost of 2 kg onion, 4 kg wheat and 6 kg rice is Rs 90. The cost of 6 kg onion 2 kg wheat and 3 kg rice is Rs 70. Find the cost of each item per kg by matrix method. 8- Find the Derivative of these function! a. Sin2x Sin3X Sin4x b. (logx)^log(x)

c. x^y+y^x=1
d. (Sinx)^tanx
e. cos3x cos5x
f. logx+x^x
g. log(logx)+logx^logx
h. logx cosx sinx

9. CBSE Activity (03 marks)

Activity 1

OBJECTIVE

To verify that the relation R in the set L of all lines in a plane, defined by $R = \{(l, m) : l \perp m\}$ is symmetric but neither reflexive nor transitive.

MATERIAL REQUIRED

A piece of plywood, some pieces of wires (8), nails, white paper, glue etc.

METHOD OF CONSTRUCTION

Take a piece of plywood and paste a white paper on it. Fix the wires randomly on the plywood with the help of nails such that some of them are parallel, some are perpendicular to each other and some are inclined as shown in Fig.1.

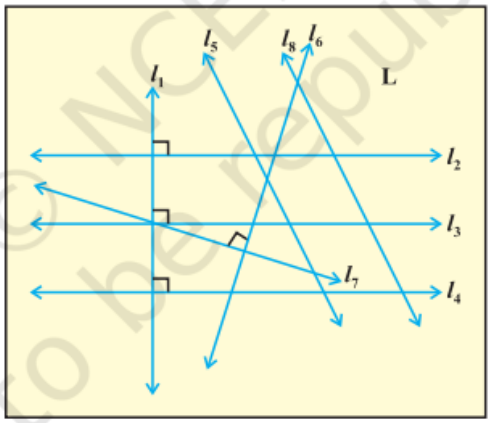

Fig. 1

DEMONSTRATION

1. Let the wires represent the lines $l_1, l_2, ..., l_8$.
2. l_1 is perpendicular to each of the lines l_2, l_3, l_4. [see Fig. 1]

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3. l_6 is perpendicular to l_7.

4. l_2 is parallel to l_3, l_3 is parallel to l_4 and l_5 is parallel to l_8.

5. $(l_1, l_2), (l_1, l_3), (l_1, l_4), (l_6, l_7) \in R$

OBSERVATION

1. In Fig. 1, no line is perpendicular to itself, so the relation $R = \{(l, m) : l \perp m\}$ _____ reflexive (is/is not).

2. In Fig. 1, $l_1 \perp l_2$. Is $l_2 \perp l_1$? _____ (Yes/No)

   $\therefore$ $(l_1, l_2) \in R \Rightarrow (l_2, l_1)$ _____ R $(\notin / \in)$

   Similarly, $l_3 \perp l_1$. Is $l_1 \perp l_3$? _____ (Yes/No)

   $\therefore$ $(l_3, l_1) \in R \Rightarrow (l_1, l_3)$ _____ R $(\notin / \in)$

   Also, $l_6 \perp l_7$. Is $l_7 \perp l_6$? _____ (Yes/No)

   $\therefore$ $(l_6, l_7) \in R \Rightarrow (l_7, l_6)$ _____ R $(\notin / \in)$

   $\therefore$ The relation R .... symmetric (is/is not)

3. In Fig. 1, $l_2 \perp l_1$ and $l_1 \perp l_3$. Is $l_2 \perp l_3$? ... (Yes/No)

   i.e., $(l_2, l_1) \in R$ and $(l_1, l_3) \in R \Rightarrow (l_2, l_3)$ _____ R $(\notin / \in)$

   $\therefore$ The relation R .... transitive (is/is not).

APPLICATION

This activity can be used to check whether a given relation is an equivalence relation or not.

NOTE

1. In this case, the relation is not an equivalence relation.
2. The activity can be repeated by taking some more wire in different positions.

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Activity 2

Objective

To verify that the relation R in the set L of all lines in a plane, defined by $R = \{(l, m) : l \| m\}$ is an equivalence relation.

Material Required

A piece of plywood, some pieces of wire (8), plywood, nails, white paper, glue.

Method of Construction

Take a piece of plywood of convenient size and paste a white paper on it. Fix the wires randomly on the plywood with the help of nails such that some of them are parallel, some are perpendicular to each other and some are inclined as shown in Fig. 2.

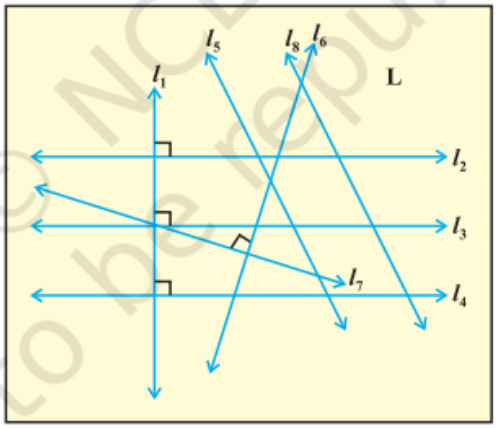

Fig. 2

Demonstration

1. Let the wires represent the lines $l_1, l_2, ..., l_8$.
2. l_1 is perpendicular to each of the lines l_2, l_3, l_4 (see Fig. 2).

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3. l_6 is perpendicular to l_7.

4. l_2 is parallel to l_3, l_3 is parallel to l_4 and l_5 is parallel to l_8.

5. $(l_2, l_3), (l_3, l_4), (l_5, l_8), \subset$ R

OBSERVATION

1. In Fig. 2, every line is parallel to itself. So the relation R = $\{(l, m) : l \| m\}$ .... reflexive relation (is/is not)

2. In Fig. 2, observe that $l_2 \| l_3$. Is l_3 ... l_2? ($\nparallel$ / $\|$)

So, $(l_2, l_3) \in$ R $\Rightarrow (l_3, l_2)$ ... R ($\notin$ / $\in$)

Similarly, $l_3 \| l_4$. Is l_4 ... l_3? ($\nparallel$ / $\|$)

So, $(l_3, l_4) \in$ R $\Rightarrow (l_4, l_3)$ ... R ($\notin$ / $\in$)

and $(l_5, l_8) \in$ R $\Rightarrow (l_8, l_5)$ ... R ($\notin$ / $\in$)

$\therefore$ The relation R ... symmetric relation (is/is not)

3. In Fig. 2, observe that $l_2 \| l_3$ and $l_3 \| l_4$. Is l_2 ... l_4 ? ($\|$ / $\|$)

So, $(l_2, l_3) \in$ R and $(l_3, l_4) \in$ R $\Rightarrow (l_2, l_4)$ ... R ($\in$ / $\notin$)

Similarly, $l_3 \| l_4$ and $l_4 \| l_2$. Is l_3 ... l_2 ? ($\nparallel$ / $\|$)

So, $(l_3, l_4) \in$ R, $(l_4, l_2) \in$ R $\Rightarrow (l_3, l_2)$ ... R ($\in$, $\notin$)

Thus, the relation R ... transitive relation (is/is not)

Hence, the relation R is reflexive, symmetric and transitive. So, R is an equivalence relation.

APPLICATION

This activity is useful in understanding the concept of an equivalence relation.

NOTE

This activity can be repeated by taking some more wires in different positions.

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Activity 3

OBJECTIVE

To demonstrate a function which is not one-one but is onto.

MATERIAL REQUIRED

Cardboard, nails, strings, adhesive and plastic strips.

METHOD OF CONSTRUCTION

1. Paste a plastic strip on the left hand side of the cardboard and fix three nails on it as shown in the Fig.3.1. Name the nails on the strip as 1, 2 and 3.
2. Paste another strip on the right hand side of the cardboard and fix two nails in the plastic strip as shown in Fig.3.2. Name the nails on the strip as a and b.
3. Join nails on the left strip to the nails on the right strip as shown in Fig. 3.3.

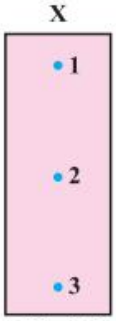

Fig. 3.1

Fig. 3.2

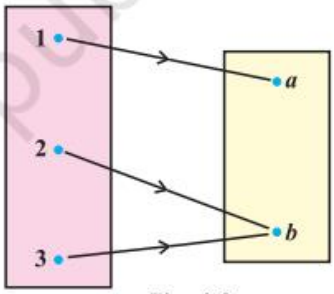

Fig. 3.3

DEMONSTRATION

1. Take the set X = {1, 2, 3}
2. Take the set Y = {a, b}
3. Join (correspondence) elements of X to the elements of Y as shown in Fig. 3.3

OBSERVATION

1. The image of the element 1 of X in Y is _____.

   The image of the element 2 of X in Y is _____.

   The image of the element 3 of X in Y is _____.

   So, Fig. 3.3 represents a _____ .
2. Every element in X has a _____ image in Y. So, the function is _____(one-one/not one-one).
3. The pre-image of each element of Y in X _____ (exists/does not exist). So, the function is _____ (onto/not onto).

APPLICATION

This activity can be used to demonstrate the concept of one-one and onto function.

NOTE

Demonstrate the same activity by changing the number of the elements of the sets X and Y.

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ENGLISH	1-Prepare the project file on any one topic. (I) Child Labour

	(II) Social Media (III) Achievements of Indian Women (IV) Mental Health 2-Read the drama 'On the Face of it'. Write the review and dialogue of it. 3-Read the chapter 'Journey to the End of the Earth' and make PPT of the chapter.
PHYSICAL EDUCATION	**Complete the following questions in your Notebook:-** **Q. 1 Draw a fixture of 6teams on a League basis following the cyclic method.** **Q. 2 Name five functions of sports event management body.** **Q. 3 Draw a knockout picture of 25 teams with all the steps involved.** **Q. 4 Write the importance of organising sports day.** **Q. 5 Write any two postural deformities and their corrective measures.** **CBSE Project file:** • **Complete the Physical Fitness Test: SAI Khelo India Test, Brockport Physical Fitness Test (BPFT)* in your Practical file**

REVISION OF UT-1/PT-1 SYLLABUS (2024-25)

PHYSICS	Chapter 01- Electrostatics Chapter 02- Electric potential and Capacitance Chapter -03 Electricity
CHEMISTRY	Chapter 01- Solution Chapter 02- Electrochemistry
BIOLOGY	Chapter 01- Sexual reproduction in flowering plants Chapter 02- Human reproduction Chapter 03- Reproductive health
MATHEMATICS	Chapter 01- Matrices Chapter 02- Determinants
COMPUTER SCIENCE	Chapter 01- Revision Tour of Python Chapter 02-Functions Chapter-03- Error Handling
ENGLISH	Chapter 01- The last lesson Chapter 02- My mother at sixty six Chapter 03- Third level Chapter 04- Notice writing
PHYSICAL EDUCATION	Unit-01- planning in Sports Unit 02- children and women in sports Unit 03- Yoga as prevention measure for lifestyle disease

NOTE: - School will re-open on 1st – July- 2024