

Dear Parents / Students

Vacations can be beneficial for the overall development of every child. During the summer vacations, children usually divert their energy in outdoor activities and games. So during the summer break, we request you to motivate and encourage your wards actively to participate in the project and other activities provided by the teachers,

The teachers have prepared a productive set of worksheets and projects for the students to help them to revise their concepts. Write the Holiday Homework in different notebooks (Each subject in one Notebook).

Thank you

Mrs. Dharashree Padhi
Principal

ENGLISH CORE

1. What was Franz confused about the school that day?
2. What changes came over little Franz after he heard about M. Hamels announcement?
3. What was M. Hamel's opinion about French language?
4. What lessons did M. Hamel deliver in the class on his last day at school?
5. Why did M. Hamel write 'Vive La France' on the back board?
6. Why did Kamala Das put that thought away?
7. Why did the poet notice in the outside world as she was driving the car?
8. What was the poet's childhood fear?
9. What does the parting smile of the poet signify?
10. How did the poet suppress her feelings about her mother while parting from her?
11. What was the prediction of the chief astrologer about the new born baby ?
12. How did the young prince grow up t be?
13. Why did the Maharaja decide to marry ?
14. What happened when the Maharaja killed the ninety tiger ?
15. How did the hundredth tiger take revenge upon the Maharaja ?
16. What does the third level refer to?
17. What does the narrator think of Grand central ?What does it symbolize?
18. How does the narrator describe Galesburg ,Illinois ?
19. What did the narrator do the nect day after coming out from the third level?
20. What is the first –day cover?

LONG QUESTIONS

1. Analyse the pains of losing our near and dear ones due to old age in context of the poem 'my Mother at Sixty-six'.
2. Bring out the significance of smile of the poet at the moment of her parting.
3. What does M. Hamel impress upon the mother tongue in his last lesson? What should be the responsibility of the native speakers in context with the lesson?
4. Evaluate M. Hamel as a teacher.
5. Life in the modern world is filled up with uncertainties, anxiety and fear. Justify.

- Charley is an example each individual in 20th century who is in need of escape. Rationalize.
- What happened when there remained only one tiger to complete the counting of hundredth?
- What reactions did the minions and public face due to Maharaja's rage? How did the Dewan handle the situation?

MATHEMATICS

- Update your Notebook with all concepts and questions of Chapters -1.
- Write all questions and answer of Chapter 1 from NCERT Exemplar book.
- Answer the following extra questions.

NOTE: Do all above in a separate long notebook. After vacation you are supposed to submit in school.

CHAPTER-1

- Find the number of Surjection from $A = \{1, 2, 3, 4, 5\}$ to set $B = \{a, b\}$.
- If $n(A) = 3$, $n(B) = 4$, find the number of injective functions from A to B.
- If $f = \{(1, 2), (3, 5), (4, 1)\}$ and $g = \{(2, 3), (5, 1), (1, 3)\}$, write gof .
- If $f(x) = (a - x^n)^{\frac{1}{n}}$, where $a > 0$ and $n \in \mathbb{N}$, find the value of $f(f(x))$.
- Let R be the equivalence relation in set Z defined as $R = \{(a, b) : 2 \text{ divides } a-b\}$, write the equivalence class of $\{0\}$.
- If $A = \{1, 2, 3, \dots, n\}$ then write the number of invertible functions in set A.
- Find the value of parameter α for which the function $f(x) = 1 + \alpha x$, $\alpha \neq 0$ is the inverse of itself
- Consider $f: [0, \infty) \rightarrow [-5, \infty)$ given by $f(x) = 9x^2 + 6x - 5$. Show that f is invertible with
$$f^{-1}(y) = \frac{\sqrt{y+6}-1}{3}.$$
- Show that the function $f: \mathbb{R} \rightarrow (-1, 1)$ defined by $f(x) = \frac{x}{x+|x|}$, $\forall x \in \mathbb{R}$ is one-one and onto function.
- Show that the relation R in $\mathbb{N} \times \mathbb{N}$ defined by $(a, b) R (c, d)$ iff $a + d = b + c$ is an equivalence relation.
- Find the value of parameter α for which the function $f(x) = 1 + \alpha x$, $\alpha \neq 0$ is the inverse of itself.
- Let $f: \mathbb{N} \rightarrow \mathbb{N}$ be a function defined as $f(x) = 4x^2 + 12x + 15$. Show that $f: \mathbb{N} \rightarrow S$ is invertible Where S is range of f. Find the inverse of f and hence find $f^{-1}(31)$ and $f^{-1}(87)$.
- Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be the signum function, defined as $f(x) = \begin{cases} 1 & x > 0 \\ 0 & x = 0 \\ -1 & x < 0 \end{cases}$ and $g: \mathbb{R} \rightarrow \mathbb{R}$ be the greatest integer function given by $g(x) = [x]$, where $[x]$ is the greatest integer less than equal to x. Does gof and fog coincide in $[0, 1]$?
- If $f: \mathbb{R} \rightarrow \mathbb{R}$ satisfies $f(x+y) = f(x) + f(y)$, for all $x, y \in \mathbb{R}$ and $f(1) = 7$ then find the value of $\sum_{r=1}^n f(r)$.
- Let $f: (-1, 1) \rightarrow \mathbb{B}$ be a function defined by $f(x) = \tan^{-1}\left(\frac{2x}{1-x^2}\right)$, find the interval i.e. the set B for which f is both one – one and onto.

16. Consider the following relations:
 $R = \{(x, y): x, y \text{ are real numbers and } x = wy \text{ for some rational number } w\}$; $S = \{(\frac{m}{n}, \frac{p}{q}): m, n, p, q \text{ are integers such that } n, q \neq 0 \text{ and } qm = pn\}$ Then
 (a) R is an equivalence relation but S is not an equivalence relation
 (b) Neither R nor S is an equivalence relation
 (c) S is an equivalence relation but R is not an equivalence relation
 (d) R and S both are equivalence relation
17. If $f(x) + 2f(\frac{1}{x}) = 3x$, $x \neq 0$ and $S = \{x \in \mathbb{R}: f(x) = f(-x)\}$, then S
 a) contains exactly one element
 b) Contains exactly two elements
 c) Contains more than two elements
 d) Is an empty set
18. The function $f: \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(x) = 6^x + 6^{|x|}$ is:
 (a) One – one and onto
 (b) Many – one and onto
 (c) One – one and into
 (d) Many – one and into
19. Which of the following functions from $A = \{x \in \mathbb{R}: -1 \leq x \leq 1\}$ to itself are bijections?
 (a) $f(x) = |x|$
 (b) $f(x) = \sin \frac{\pi x}{2}$
 (c) $f(x) = \sin \frac{\pi x}{4}$
 (d) None of these
20. Suppose $f(x) = (x + 1)^2$ for $x \geq -1$. If $g(x)$ is a function whose graph is the reflection of the graph of $f(x)$ with respect to the line $y = x$, then $g(x)$ equals:
 (a) $-\sqrt{x} - 1, x \geq 0$
 (b) $\frac{1}{(x+1)^2}, x > -1$
 (c) $-\sqrt{(x + 1)}, x \geq -1$
 (d) $\sqrt{x} - 1, x \geq 0$

CHEMISTRY

Unit-2: Solutions

Examples: 2.1 to 2.3

In text: 2.1 to 2.5

Exercise: 2.3 to 2.9

Project Work:

- XII A: Study of the presence of oxalate ions in guava fruit at different stages of ripening.
- XII B: Preparation of soybean milk and its comparison with natural milk with respect to curd formation, the effect of temperature, etc.
- XII C: Study of common food adulterants in oil, sugar, turmeric powder and chilli powder.

PHYSICS

CH:01-ELECTRIC CHARGE & FIELD

Q1. (i) Use Gauss's law to find the electric field due to a uniformly charged infinite plane sheet. What is the direction of the field for positive & negative charge densities?

(ii) **Two identical conducting spheres A and B, carry equal charge. They are separated by a distance much larger than their diameters, and the force between them is F. A third identical conducting sphere, C, is uncharged. Sphere C is first touched to A, then to B, and then removed. As a result, the force between A and B would be equal to?**

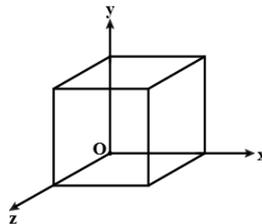
Q2. If two similar large plates, each of area A having surface charge densities $+\sigma$ & $-\sigma$ are separated by a distance d in air, find the expressions for

(i) Field at points between the two plates and on the outer side of the plates. specify the direction of the field in each case.

(ii) The potential difference between the plates.

Q3. (i) Use Gauss's law to show that due to a uniformly charged spherical shell of radius R, the electric field at any point situated outside the shell at a distance r from its centre is equal to the electric field at the same point, when the entire charge on the shell were concentrated at its centre. Also plot the graph showing the variation of electric field with r, for $r \leq R$ and $r \geq R$

(ii) A cube of side 20 cm is kept in a region as shown in the figure. An electric field E exists in the region such that the potential at a point is given by $V = 10x + 5$, where V is in volt and x is in m. Find the electric field and total electric flux through the cube.



Q4. (i) Derive an expression for the torque experienced by an electric dipole kept in a uniform electric field.

(ii) Calculate the work done to dissociate the system of three charges placed on the vertices of a triangle as shown. Here $q = 1.6 \times 10^{-10} \text{C}$.

Q5. (i) State Gauss theorem. Obtain an expression for coulomb's law using it.

(ii) A uniformly charged conducting sphere of 2.5 m in diameter has a surface charge density of $100 \mu\text{C}/\text{m}^2$. Calculate the Charge on the sphere and Total electric flux passing through the sphere.

CH:02-ELECTRIC POTENTIAL & CAPACITANCE

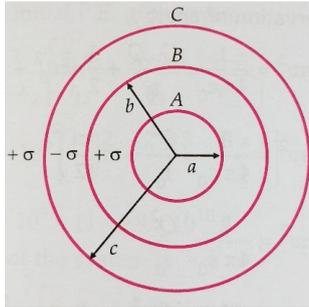
Q1. Charges of $+1.0 \times 10^{11} C$, $-2.0 \times 10^{11} C$ & $1.0 \times 10^{11} C$ are placed respectively at the corners B, C, D of a rectangle ABCD. Determine the potential at the corner A. Given $AB = 4\text{cm}$ & $BC = 3\text{cm}$.

Q2. A charge Q is distributed over two concentric hollow spheres of radii r & R where $R > r$, such that the surface charge densities are equal. Find the potential at the common centre.

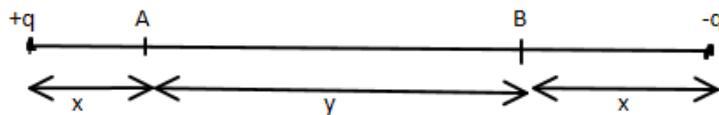
Q3. Three concentric spheres A, B, C of radii a , b & c ($a < b < c$) have surface charge densities $+\sigma$, $-\sigma$ & $+\sigma$ respectively as shown in the figure

(i) Find the potentials of the three shells A, B, C.

(ii) If shells A & C are at the same potential, obtain the relation between a , b , c .



Q4. In the figure the potentials at point A & B are V_A & V_B respectively. Calculate $V_A - V_B$ for the given arrangement.



Q5. There are two particles each of mass m & carrying a charge Q . Initially one of them is at rest on a smooth horizontal plane & the other is projected from a long distance along the plane, directly towards the first particle with a velocity v . Find the distance of closest approach.

Q6. N spherical droplets, each of radius r , have been charged to potential V each. If all these droplets were to coalesce to form a single large drop, what would be the potential of this large drop?

Q7. Two charges $5 \times 10^{-8} C$ & $-3 \times 10^{-8} C$ are located 16cm apart. At what point along the line joining the two charges is the electric potential zero? take the potential at infinity to be zero.

Q8. If one of the two electrons of a H_2 molecule is removed, we get a hydrogen molecular ion (H_2^+). In the ground state of H_2^+ ion, the two protons are roughly separated by 1.5 \AA & the electron is roughly 1 \AA from each proton. Determine the potential energy of the system. Specify your choice of zero potential energy.

Q9. Calculate potential on the axis of a ring due to charge Q uniformly distributed along the ring of radius R .

Q10. Derive an expression for electric potential due to an electric dipole at

(i) Axial point (ii) Equatorial point (iii) any point of electric dipole.

Q11. Calculate the potential on the axis of the disc of radius R due to a charge Q uniformly distributed on its surface.

BIOLOGY

ACTIVITY:

- Prepare revision maps/mind map /concept map/diagrammatic map of chapters -2,3and 4.

OR

- Make Rangoli / Painting/slogans with effective diagram / Warli art /clay model on any of the following topics.
 - Amnioscentesis (female foeticide)
 - Female reproductive structure.
 - Embryogenesis
 - Watson and crick model of DNA
 - Packaging of DNA
 - Dihybrid cross
 - Population control
 - Pollination (any type)
 - Megasporogenesis
 - Out breeding devices

NOTE BOOK WORK:

- Complete the very short answer types and short answer type questions of **NCERT EXEMPLAR** book of chapters- 2, 3 and 4.
- Complete exercise questions of Chapter 01, 02, 03 and 04 from NCERT book (if not completed yet).
- Write down all the scientific names and their use from all 16 chapters of your NCERT Biology book.

For Example :-

CH 01- *Strobilanthus kunthiana*- flowers once in 12 years.

***Bryophyllum*- reproduces asexually by adventitious leaf buds.**

RECORD WORK

- Spotting Experiments:
 - a. Adaptation of flowers for pollination: wind pollinated flower, insect pollinated flowers.
 - b. Gametogenesis: T.S of testis and T.S of Ovary.
 - c. V.S of blastula.
 - d. Prepared pedigree charts of the genetic traits such as rolling of tongue, widow's peak and colour blindness.
 - e. Controlled pollination – emasculation, bagging and tagging.
 - f. Common disease causing organisms like: *Ascaris*, *Entamoeba*, and *Plasmodium* through permanent slides and specimen. Comment on symptoms of diseases that they cause.
 - g. Study the morphological adaptations of the given plant (*Opuntia*, *Zizyphus*, *Calotropis*) and animal (Kangaroo rat, Camel) found in xeric conditions.
 - h. Study the morphological adaptations of the given plant (Water hyacinth) and animal (Bony fish) found in aquatic conditions.

SPECIAL INSTRUCTIONS

- **Do not mention experiment number and date neither in the index page nor in the experiment page.**
- Do not draw any diagram on the backside white page of last page of each experiment.
- Draw well labelled diagrams, labelling should be on right hand side only.
- Submit the completed record and notebook soon after the school re-opens (on the day you have practical class).

COMPUTER SCIENCE
PRACTICAL FILE PROGRAMS

1. Write a Python program to do the following:
 - a. Create a list of N numbers
 - b. Input the position of the element to be deleted from the list and delete the element at the desired position in the list.
 - c. Input the element and the position where it is to be inserted in the list.
 - d. Display the list
2. Write a program to read a list of n integers (positive as well as negative). Create two new lists, one having all positive numbers and the other having all negative numbers from the given list. Print all the three lists.
3. Write a program in Python to enter the list of N numbers and do the following:
 - a. Display the list.
 - b. Display the largest and smallest number in the list.
 - c. Display the third largest number in the list.
 - d. Input another list of five numbers and add it with the original list. Display the list.
4. Write a function to read a list of N numbers and display the list in reverse order without using any function.
5. Write a program to read a list of N numbers and replace odd position element with even position element. Display the final list.
6. Write a function to read a list of N numbers and replace the even values with number divided by 2 and odd values with number multiply with 5. Display the final list.
7. Write a program to input your friend's names and their phone numbers and store them in the dictionary as the key-value pair. Perform the following operations on the dictionary:
 - a. Display the name and phone number for all your friends.
 - b. Enter the name whose phone number you want to modify. Display the modified dictionary.
8. Write a function to input roll number and marks obtained in five subjects of N number of students. Store the data in a dictionary as the key-value pair. Perform the following operations on the dictionary:
 - a. Display the roll number and marks obtained in five subjects.
 - b. Calculate the sum of 5 subjects & display the roll number & sum of all the five subjects.
9. Write a function to count the number of times a character appears in a given string.
10. Write a function to convert a number entered by the user into its corresponding number in words. For example, if the number is 876, then the output should be 'Eight Seven Six'
11. Write a function in Python to input a number and display whether it is a prime number or not.
12. Write a function in Python to input a string and display whether it is a palindrome or not.
13. Write a function in python to input two numbers and display the greatest common divisor.
14. Write a function in Python to input two numbers and display the least common multiple.
15. Write a function in Python to input a number and display whether it is an Armstrong number or not. An Armstrong number is where number is equal to the sum of cube of the digits.
16. Write a program in Python that input a number - how many times random number is generated, and generates random numbers between 1 and 6.

NOTE :-

1. Complete the Holiday Home work in a separate Copy.
2. Practical file in printed form with output.
3. All above programs are to be programmed using Python language.
