



Rich Harvest Public School

HOLIDAY HOMEWORK (2022-23)

BIOLOGY : XII

*** Note:**

The holiday homework should be done on registers/notebooks as per the given instructions & must be uploaded on MS TEAMS (Assignment Sections)

SECTION A: 1Mark Question

1. Failure of testes to descend into scrotal sacs leads to sterility. Why?
2. Both vaccine and colostrum produce immunity. Name the type of immunity produced by these.
3. How many sperms will be produced from 10 primary spermatocytes and how many eggs will be produced from 10 primary oocytes?
4. The spermatogonial cell has 46 chromosomes in a human male. Give the number of chromosomes in:
 - a. Primary spermatocyte
 - b. Spermatid
5. In ovary, which structure transforms as corpus luteum and names the hormone secreted by corpus luteum?
6. "Each and every coitus does not result in fertilisation and pregnancy". Justify the statement.
7. Why are male testes located outside the abdominal cavity?
8. State the function of Leydig cells.
9. Where do we find fimbriae?
10. What is semen?
11. Define parturition.
12. Where does fertilization normally take place in a human female.
13. Name the substance present in the sperm acrosome & which help in sperm entry into egg.
14. Name the layer of cells that forms the outer wall of blastocyst.
15. At what stage is the mammalian embryo implanted in uterus?
16. Despite the presence of so many sperms in the vicinity of an egg cell, only one sperm enters the ovum. Why?

17. How many polar bodies are given out in production of one egg during oogenesis?

SECTION A: 2Mark Question

1. Give the function of
 - a. Corpus luteum
 - b. Endometrium.
2. Give reason for the following :
 - a. The first half of the menstrual cycle is called the follicular phase as well as the proliferative phase.
 - b. The second half of the menstrual cycle is called the luteal phase as well as the secretory phase..
3. What is meant by L.H. Surge? Write the role of L.H.
4. Explain the significance of the condition in which the testes remain suspended in the scrotum outside the abdomen.
5. Describe the structure of a sperm with a diagram.
6. Enlist any two functions of a female placenta.
7. What is the number of chromosomes in the following cells? Primary oocyte, secondary oocyte, ootid, and follicle.
8. What is corpus luteum? How does it function as an endocrine gland?
9. Where are Leydig cells located? What do they secrete?
10. Draw a well labeled diagram of T.S. of ovary?
11. Why are testes of human males considered extra abdominal?
12. Draw a diagram of the T.S. of seminiferous tubule of testis of an adult human male & label any four parts in it.
13. What is colostrum? What is its significance to a newborn baby?

SECTION A: 3Mark Question

1. Mention the name and role of hormones which are involved in regulation of gamete formation in human male.
2. Three of the steps of neuroendocrine mechanism in respect of parturition are mentioned below.

Write the missing steps in proper sequence.

- a. Signals originate from fully developed foetus and placenta.
 - b. _____
 - c. Oxytocin causes strong uterine contraction
 - d. Uterine contraction stimulates the further secretion of oxytocin.
 - e. _____
3. The events of the menstrual cycle are represented below. Answer the following questions.
 - (i) State the levels of FSH, LH, and Progesterone simply by mentioning high or low around the 13th and 14th day and 21st to 23rd day.



Rich Harvest Public School

HOLIDAY HOMEWORK (2022-23)

CHEMISTRY : XII

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SECTION A (Weightage : 1 mark)

1. Identify the order of the reaction from the following unit for its rate constant:
 $L^2mol^{-2}S^{-1}$.
2. The conversion of molecules X to Y follows second order kinetics. If concentration of X is increased to four times, How will it affect the rate of formation of Y?

SECTION B (Weightage : 2 mark)

3. Define the following term: A) Molarity. B) Molality. C).Mole fraction.
4. Calculate the molarity of a solution containing 5 g of NaOH in 450 mL solution?
5. Calculate molality of 2.5 g of ethanoic acid (CH_3COOH) in 75 g of benzene?
6. Calculate the mole fraction of ethylene glycol ($C_2H_6O_2$) in a solution containing 20% of $C_2H_6O_2$ by mass?
7. Write two differences between an ideal solution and non-ideal solution?
8. For a reaction, $A \rightarrow B$, the rate of the reaction becomes twenty seven times when the concentration of A is increased by three times. What is the order of reaction?
9. A reaction is first order in A and second order in B.
10. A). Write the differential rate equation.
B). How is the rate affected on increasing the concentration of B three times?
C). How is the rate affected when the concentrations of both A and B are doubled?
11. A). Define order of reaction. Write the condition under which a bimolecular reaction follows first order kinetics.
B). How order of reaction and molecularity differ towards a complex reaction?

12. The decomposition of on NH_3 platinum surface is zero order reaction. If rate constant (k) is $4 \times 10^{-3} \text{Ms}^{-1}$, How long will it take to reduce the intial concentration of NH_3 from 0.1M to 0.064M?
13. Write the two conditions for collisions to be effective collisions.
14. The decomposition of hydrocarbon follows the equation:
 - i. $k = (4.5 \times 10^{11} \text{ s}^{-1}) e^{-28000K/T}$
 - ii. Calculate E_a .

SECTION C (Weightage : 3 mark)

15. The vapour pressure of pure liquids A and B are 450 and 700 mm Hg respectively, at 350 K. Find out the composition of the liquid mixture if total vapour pressure is 600 mm Hg. Also, find the composition of the vapour phase?
16. The vapour pressure of pure benzene at a certain temperature is 0.850 bar. A non-volatile, non-electrolyte solid weighing 0.5 g when added to 39.0 g of benzene (molar mass 78 g mol^{-1}). Vapour pressure of the solution, then, is 0.845 bar. What is the molar mass of the solid substance?
17. The boiling point of benzene is 353.23 K. When 1.80 g of a non-volatile solute was dissolved in 90 g of benzene, the boiling point is raised to 354.11 K. Calculate the molar mass of the solute. K_b for benzene is $2.53 \text{ K kg mol}^{-1}$?
18. 45 g of ethylene glycol ($\text{C}_2\text{H}_6\text{O}_2$) is mixed with 600 g of water. Calculate A). The freezing point depression. (B). The freezing point of the solution?
19. 1.00 g of a non-electrolyte solute dissolved in 50 g of benzene lowered the freezing point of benzene by 0.40 K. The freezing point depression constant of benzene is $5.12 \text{ K kg mol}^{-1}$. Find the molar mass of the solute?
20. Calculate the mass of a non-volatile solute (molar mass 40 g mol^{-1}) which should be dissolved in 114 g of octane to reduce its vapour pressure to 80%.
 - (A). What is the effect of temperature on solubility of gases in liquid?
 - (B). State Henry's law and Write its applications.
21. State Raoult's law for a solution containing volatile components. What is the similarity between Raoult's law and Henry's law?
22. A first order reaction is 25% complete in 40 minutes. Calculate the value of rate constant. In what time will the reaction be 80% completed?
23. A certain reaction is 50% complete in 20 minutes at 300 K and the same reaction is again 50% complete in 5 minutes at 350 K. Calculate the activation energy if it is a first order reaction? {Given : $R = 8.314 \text{ JK}^{-1}\text{mol}^{-1}$, $\log 4 = 0.602$ }
24. The first order rate constant for the decomposition of ethyl iodide by the reaction:
 - i. $\text{C}_2\text{H}_5\text{I (g)} \rightleftharpoons \text{C}_2\text{H}_4 \text{ (g)} + \text{HI (g)}$
25. At 600K is $1.60 \times 10^{-5} \text{ s}^{-1}$. Its energy of activation is 209 kJ/mol. Calculate the rate constant of the reaction at 700K.

SECTION D (Weightage : 5 mark)

26. (A).How does a catalyst effect activation energy? Explain with the help of a diagram.
(B).For which type of reactions, order and molecularity have the same value?
(C).State a condition under which a bimolecular reaction is kinetically first order?
(D).Define threshold energy of a reaction.
(E).What is temperature coefficient of a reaction?



Rich Harvest Public School
HOLIDAY HOMEWORK (2022-23)
COMPUTER SCIENCE : XII

*** Note:**

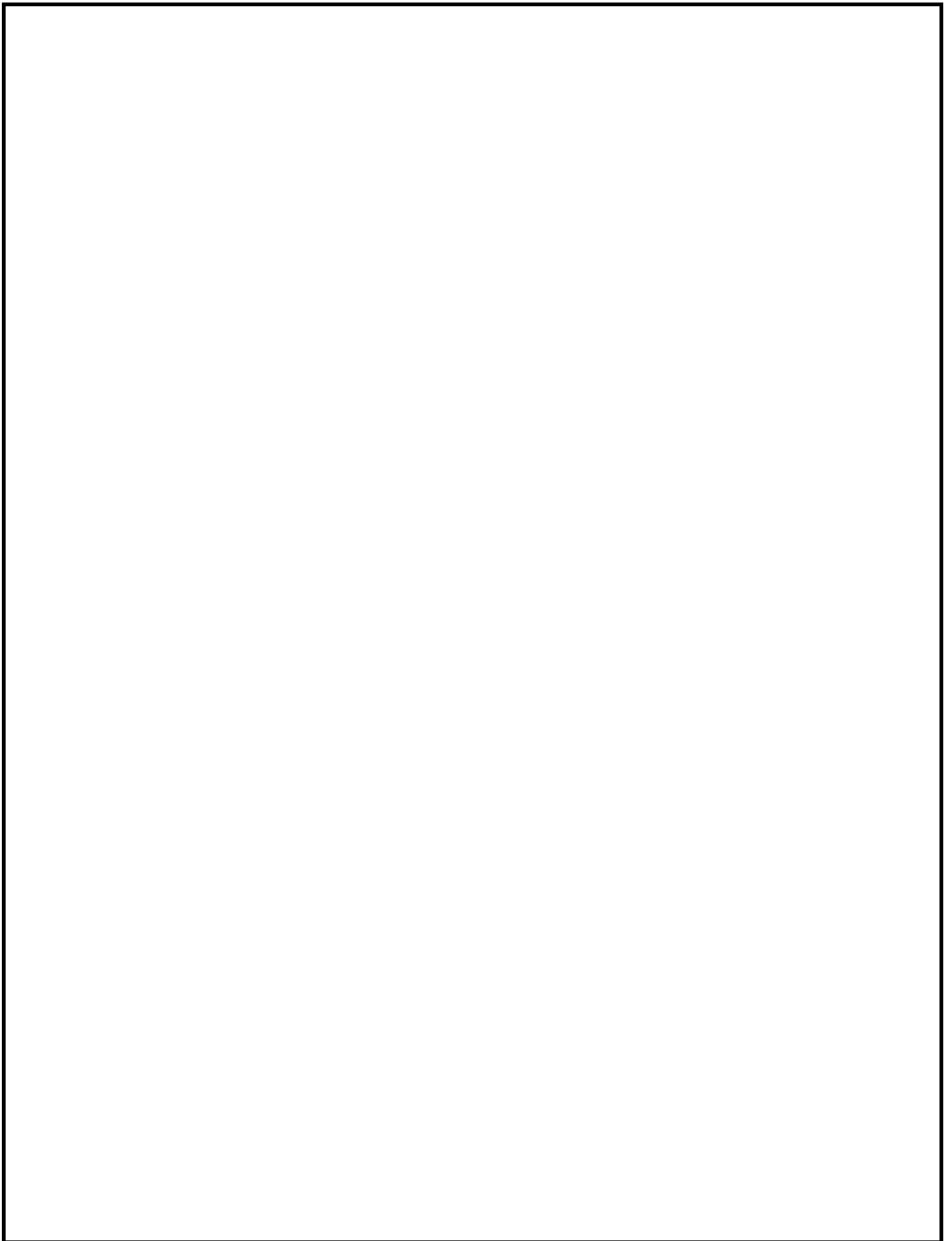
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Revision Tour of Python	
1.	Write a Python program to calculate the length of a string.
2.	Write a Python program to count the number of characters (character frequency) in a string. Sample String: 'google.com' Expected Result: {'g': 2, 'o': 3, 'l': 1, 'e': 1, '.': 1, 'c': 1, 'm': 1}
3.	Write a Python program to get a string from a given string where all occurrences of its first char have been changed to '\$', except the first char itself. Sample String: 'restart' Expected Result: 'resta\$t'
4.	Write a Python program to remove the nth index character from a nonempty string.
5.	Write a Python program that accepts a comma separated sequence of words as input and prints the unique words in sorted form (alphanumerically). Sample Words: red, white, black, red, green, black Expected Result: black, green, red, white, red
6.	Write a Python function to get a string made of its first three characters of a specified string. If the length of the string is less than 3, then return the original string. Sample function and result: first_three('ipy') -> ipy first_three('python') -> pyt
7.	Write a Python program to check whether a string starts with specified characters. Note: In cryptography, a Caesar cipher, also known as Caesar's cipher, the shift cipher, Caesar's code or Caesar shift, is one of the simplest and most widely known encryption techniques. It is a type of substitution cipher in which each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet. For example, with a left shift of 3, D would be replaced by A, E would become B, and so on. The method is named after Julius Caesar, who used it in his private correspondence.
8.	Write a Python program to print the following floating numbers with no decimal places.
9.	Write a Python program to print the index of the character in a string. Sample string: Python Program Expected output: Current character P position at 0 Current character y position at 1 Current character t position at 2
10.	Write a Python program to count and display the vowels of a given text.
11.	Write a Python program to sum all the items in a list.
12.	Write a Python program to get the largest number from a list.

13.	Write a Python program to remove duplicates from a list. a = [10,20,30,20,10,50,60,40,80,50,40]	
14.	Write a Python function that takes two lists and returns True if they have at least one common member.	
15.	Write a Python program to shuffle and print a specified list.	
16.	Write a Python program to count the number of elements in a list within a specified range.	
17.	Write a Python program to generate groups of five consecutive numbers in a list.	
18.	Write a Python program to replace the last element in a list with another list. Sample data: [1, 3, 5, 7, 9, 10], [2, 4, 6, 8] Expected Output: [1, 3, 5, 7, 9, 2, 4, 6, 8]	
19.	Write a Python program to create a dictionary from two lists without losing duplicate values. Sample data: ['Class-V', 'Class-VI', 'Class-VII', 'Class-VIII'], [1, 2, 2, 3] Expected Output: defaultdict(<class 'set'>, {'Class-V':{1}, 'Class-VI':{2}, 'Class-VII':{2}, 'Class-VIII':{3}})	
20.	Write a Python program to iterate over dictionaries using for loops.	
Functions		
21.	Write a Python function to find the maximum of three numbers.	
22.	Write a Python function to sum all the numbers in a list. Sample List: (4, 6, 3, 5, 6) Expected Output: 24	
23.	Write a Python function to reverse a string. Sample String: "python123" Expected Output: "321nohtyp"	
24.	Write a Python function that accepts a string and calculates the number of uppercase letters and lowercase letters. Sample String: PythonProgramminG Expected Output: Original String: Python Programming No. of Uppercase characters: 3 No. of Lowercase characters: 14	
25.	Write a Python program to print the even numbers from a given list. Sample List: [1, 2, 3, 4, 5, 6, 7, 8, 9] Expected Result: [2, 4, 6, 8]	
26.	Write a Python function to check whether a number is perfect or not. According to Wikipedia, in number theory, a perfect number is a positive integer that is equal to the sum of its proper positive divisors, that is, the sum of its positive divisors excluding the number itself (also known as its aliquot sum). Equivalently, a perfect number is a number that is half the sum of all of its positive divisors (including itself). Example: The first perfect number is 6, because 1, 2, and 3 are its proper positive divisors, and $1 + 2 + 3 = 6$. Equivalently, the number 6 is equal to half the sum of all its positive divisors: $(1 + 2 + 3 + 6) / 2 = 6$. The next perfect number is 28 = $1 + 2 + 4 + 7 + 14$. This is followed by the perfect numbers 496 and 8128.	

27.	<p>22. Write a Python function that prints the first n rows of Pascal's triangle. Note: Pascal's triangle is an arithmetic and geometric figure first imagined by Blaise Pascal.</p> <pre> 1 1 1 1 2 1 1 3 3 1 1 4 6 4 1 </pre> <p>Sample Pascal's triangle: Each number is the two numbers above it added together.</p>	
28.	Write a Python program to make a chain of function decorators (bold, italic, underline, etc.) in Python.	
29.	Write a Python program to access a function inside a function.	
30.	Write recursive code to compute and print sum of squares of n numbers. Value of n is passed as parameter.	
31.	Write recursive code to compute the greatest common divisor of two numbers.	
32.	<p>Create a module lengthconversion.py that stores functions for various lengths conversions, e.g.,</p> <ul style="list-style-type: none"> • Miletokm() to convert miles into kilometres • Kmtomile() to convert kilometres into miles • Feettoinches() • Inchestofoet() <p>It should also store constant values such as value of (mile in kilometre and vice versa) [1 mile = 1.609344 kilometre; 1 feet = 12 inches] Help() function should display proper information.</p>	
33.	<p>Create a module MassConversion.py that stores function for mass conversion, e.g.,</p> <ul style="list-style-type: none"> • Kgtotonne() to convert kg into tonnes • Tonnetokg() to convert tonne into kg • Kgtopound() to convert kg into pound • Poundtokg() to convert pound into kg (<p>Also store constants 1 kg = 0.001 tonne, 1 kg = 2.20462 pound) Help () function should give proper information about the module.</p>	
Using Python Library		
34.	Write a method in Python to find and display the prime numbers between 2 to N. Pass N as argument to the method.	
35.	Write definition of a method ZeroEnding(SCORES) to add all those values in the list of SCORES, which are ending with zero (0) and display the sum. [Delhi 2018] For example, If the SCORES contain [200,456,300,100,234,678] The sum should be displayed as 600	
Data File Handling		
36.	Write a function file_long() that accepts a filename and reports the file's longest line.	
37.	Write a function remove_lowercase() that accepts two file names, and copies all lines that do not start with a lower case letter from the first file to the second file.	
38.	Write a method in Python to write multiple lines of text contents into a text file daynote.txt line.	

39.	Write a user-defined function in Python that displays the number of lines starting with 'H' in the file Para.txt. Example, if the file contains: Whose woods these are I think I know. His house is in the village though; He will not see me stopping here To watch his woods fill up with snow. Then the line count should be 2.
40.	Consider a binary file Employee.dat containing details such as empno: ename: salary (separator ':'). Write a Python function to display details of those employees who are earning between 20000 and 40000 (both values inclusive).
41.	Write a function countmy() in Python to read the text file "DATA.TXT" and count the number of times "my" occurs in the file. For example, if the file "DATA.TXT" contains— "This is my website. I have displayed my preferences in the CHOICE section." —the countmy() function should display the output as: "my occurs 2 times".
42.	Write a method in Python to read lines from a text file DIARY.TXT and display those lines which start with the alphabet 'P'.
43.	Write definition of a method MSEARCH(STATES) to display all the state names from a list of STATES which start with the alphabet M. For example: If the list STATES contains ["MP","UP","WB","TN","MH","MZ","DL","BH","RJ","HR"] The following should get displayed: MP MH MZ
44.	Write a method in Python to read lines from a text file MYNOTES.TXT and display those lines which start with the alphabet 'K'.
45.	Write a program using Dictionary and Text files to store roman numbers and find their equivalents.
46.	Write a program to display all the records in a file along with line/record number.
47.	Write a program that copies a text file "source.txt" onto "target.txt" barring the lines starting with a "@" sign.
48.	Write a menu-driven program to perform read and write operations using a text file called "student.txt" containing student roll_no, name and address using two separate functions as given below: <ul style="list-style-type: none"> • student_record(filename)—Entering student details While writing to a file (student.txt), the roll_no field will be separated from the remaining fields with a comma operator. • student_readdata(filename)—Display student details • student_search(filename)—Search a student on the basis of roll_no
49.	Write a method/function DISPLAYWORDS() in Python to read lines from a text file POEM.TXT and display those words which are less than 4 characters.





RICH HARVEST PUBLIC SCHOOL

HOLIDAY HOMEWORK (2022 - 23)

ENGLISH: XII

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Q.1 With reference to text book solve the following Questions(To be done in registers)

1. Everybody during the last lesson is filled with regret. Comment.
2. Describe the life of ragpickers at Seemapuri
3. Describe the difficulties the bangle makers of Firozabad have to face in their lives.
4. Our native language is part of our culture and we are proud of it. How does the presence of village elders in the classroom and M.Hamel's last lesson show their love for French?
5. Why does the poet smile and what does she say while bidding good bye to her mother?

WRITING AND READING SKILLS (To be done in registers)

6. Water supply will be suspended for eight hours (10 am to 6 pm) on 6th of March for cleaning of the water tank. Write a notice in about 50 words advising the residents to store water for a day. You are Karan Kumar/Karuna Bajaj, Secretary, Janata Group Housing Society, Palam Vihar, Kurnool.
7. Write an article in about 250-300 words on the following topics-
 - i. Effects of Social Media on Youth's Ability to learn.
 - ii. Cyber crimes & safety measures against it.
 - iii. Strict traffic laws can prevent accidents.
8. You are Samita/Sumit , a resident of C-41, Sant Vihar, Delhi. You find participation of children in various reality shows on T.V. a form of child exploitation. Write a letter to Editor of a national T.V. showing your concern about various forms of child exploitation prevalent in Educated, urban society, giving some suggestions to curtail it.

9. Read the newspaper daily and cut samples of the following and paste it in the register

1. 3 reports
2. 3 articles (on Coronavirus)
3. Posters (on Coronavirus)
4. 5 classified advertisement

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Rich Harvest Public School
HOLIDAY HOMEWORK (2022-23)
MATHEMATICS : XII

*** Note:**

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MATRICES & DETERMINANT

Q1. If A is a square matrix of order 3 , such that $(A^{-1})^{-1}$, then $|A^{-1}|$ is equal to.....

Q2. If A is an invertible matrix and $|A| = 5$ then $|A^{-1}|$ is

- (a) 7A (b) $\frac{1}{5}$ (c) 49A (d) $\frac{1}{7A}$

Q3. Express the matrix as the sum of a symmetric and a skew-symmetric matrix:

- (i) $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ (ii) $\begin{bmatrix} 1 & 2 \\ -2 & 1 \end{bmatrix}$

Q4. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = O$, find K .

Q5. Obtain the inverse of the following matrices using ELEMENTARY TRANSFORMATION :

- (i) $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ (ii) $\begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$ (iii) $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \end{bmatrix}$ (iv) $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 4 & 5 \end{bmatrix}$

Q6. If a , b and c are all positive and term of a G.P. , then :

prove that $| \begin{matrix} a & b & c \\ b & c & a \\ c & a & b \end{matrix} | = 0$
 :

Q7. Use ELEMENTARY TRANSFORMATIONS , find the inverse of the $\begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$ and use it to solve the following system of linear equations :

$8x + 4y + 3z = 19$, $2x + y + z = 5$, $x + 2y + 2z = 7$ Q8. Using matrix method solve the following system of equations :

- - - - -

Q9. If $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$, find and hence solve the following system of equations :

Q10. Use product $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ to solve the system of equations :

$$x - y + z = 4, x - 2y - 2z = 9, 2x + y + 3z = 1$$

Q11. If $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$, for three matrices X, Y, Z, find the values of m, p and b. Q12. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ and $KA = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ find the values of K and a.

Q13. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ and $BA = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$, find

Q14. Construct matrix where, (i) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (ii) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (iii) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$

Q15. Show that $A'A$ and AA' are both symmetric matrices for any matrix A.

Q16. If $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ then find the value of A.

Q17. If matrix $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ is a skew symmetric matrix, then find the values of a, b and c.

Q18. Express the following matrix as the sum of a symmetric or skew-symmetric matrix :

(i) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (ii) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (iii) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (iv) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (v) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$

Q19. Obtain the inverse of the following matrices using ELEMENTARY TRANSFORMATION :

(i) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (ii) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (iii) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (iv) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (v) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (vi) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$

(vii) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ (viii) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$

Q20. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$, then prove that by the principal of mathematical induction that

$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}^n$ positive integer n.

Q21. Using properties of determinant :

(C.B.S.E. 2018)

prove that : $\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix} = 0$

Q22. Prove that $\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix}$ is divisible by $(a + b + c)$ and find quotient.

Q23. Show that is an isosceles triangle , if the determinant :

$$\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix} = 0$$

Q24. Obtain the inverse of the following matrices using ELEMENTARY TRANSFORMATION :

(i) $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ (ii) $\begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$ (iii) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ (iv) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ (v) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$

(vi) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ (vii) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ (viii) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ (ix) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ (x) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$

(xi) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$

Q25. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, find A^{-1} Hence, solve the system of equations :

Q26. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, find A^{-1} and hence solve the following system of equations :

Q27. Use product $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} 4 & 3 \\ 2 & 1 \end{bmatrix}$ to solve the system of equations : (C.B.S.E. 2011)

Q28. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 3 \\ 2 & 1 \end{bmatrix}$ are two square matrices , find AB and hence solve the

system of linear equations : $x - y = 3$, $2x + 3y + 4z = 17$, $y + 2z = 7$

Q29. Simplify : [] []

Q30. Find x , y and z , if $A = \begin{bmatrix} x & y & z \\ \dots & \dots & \dots \end{bmatrix}$ satisfies $A' =$

Revise all the questions , examples , misc. Exercise , Ncert Exemplar & last 10 years paper for the following chapter :

CHAPTER 3 MATRICES CHAPTER 4 DETERMINANTS



Rich Harvest Public School

HOLIDAY HOMEWORK (2022-23)

PHYSICAL EDUCATION: XII

* *Note:*

The holiday homework should be done in Practical File as per the given instructions & must be uploaded on MS TEAMS (Assignment Sections)

PRACTICAL-1: Fitness tests administration.

- Fitness Test – SAI Khelo India Fitness Test in school:
Age group 5-8 yrs/ class 1-3: BMI, Flamingo Balance Test, Plate Tapping Test
Age group 9-18yrs/ class 4-12: BMI, 50mt Speed test, 600mt Run/Walk, Sit & Reach flexibility test, Strength Test (Abdominal Partial Curl Up, Push-Ups for boys, Modified Push-Ups for girls).

PRACTICAL-2: Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.

- **Obesity:** Procedure, Benefits & Contraindications for Tadasana, Katichakrasana, Pavanmuktasana, Matsayasana, Halasana, Pachimottansana, Ardha – Matsyendrasana, Dhanurasana, Ushtrasana, Suryabedhan pranayama.
- **Diabetes:** Procedure, Benefits & Contraindications for Katichakrasana, Pavanmuktasana, Bhujangasana, Shalabhasana, Dhanurasana, Supta-vajarasana, Paschimottanasana, Ardha-Mastendrasana, Mandukasana, Gomukasana, Yogmudra, Ushtrasana, Kapalabhati.
- **Asthma:** Procedure, Benefits & Contraindications for Tadasana, Urdhwahastottansana, UttanMandukasana, Bhujangasana, Dhanurasana, Ushtrasana, Vakrasana, Kapalabhati, Gomukhasana Matsyaasana, Anuloma-Viloma.
- **Hypertension:** Procedure, Benefits & Contraindications for Tadasana, Katichakrasana, Uttanpadasana, Ardha Halasana, Sarala Matyasana, Gomukhasana, UttanMandukasana, Vakrasana, Bhujangasana, Makarasana, Shavasana, Nadi-shodhanapranayam, Sitlipranayam.

PRACTICAL-3: Anyone IOA recognized Sport/Game of your choice.
Draw/Paste Labelled diagram of Field & Equipment. Also mention its Rules, Terminologies & Skills.



Rich Harvest Public School

HOLIDAY HOMEWORK (2022-23)

CLASS: XII

PHYSICS

* Note:

The holiday homework should be done on registers/notebooks as per the given instructions & must be uploaded on MS TEAMS (Assignment Sections)

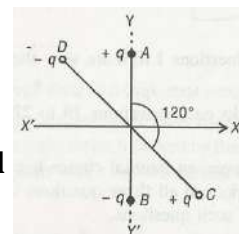
Q.1: An electric dipole is held in a uniform electric field.

- Using suitable diagram, show that it does not undergo any translator motion, and
- derive an expression for the torque acting on it and specify its direction.

Q.2: Give two properties of electric lines of force. Sketch them for an isolated positive point charge.

Q.3: The electric field \vec{E} due to a point charge at any point near it is defined as $\vec{E} = \lim_{q \rightarrow 0} \frac{\vec{F}}{q}$ where 'q' is the test charge and F is the force acting on it. What is the physical significance of \lim in this expression?

Q.4: Two small identical electrical dipoles AB and CD, each of dipole moment 'p' are kept at an angle of 120° as shown in the figure. What is the resultant dipole moment of this combination? If this system is subjected to electric field (\vec{E}) directed along + X direction, what will be the magnitude and direction of the torque acting on this?



Q.5: Why should electrostatic field be zero inside a conductor?

Q.6: An electric dipole of length 4 cm, when placed with its axis making an angle of 60° with a uniform electric field, experience a torque of $4\sqrt{3}$ Nm. Calculate the potential energy of the dipole, if it has charge $\pm 8\text{nC}$. [Ans: - 4J]

Q.7: An electric dipole of dipole moment \vec{p} consists of point charges +q and -q separated by a distance '2a' apart. Deduce the expression for the expression for the electric field \vec{E} due to the dipole at a distance 'x' from the centre of the dipole on its axial line in terms of the dipole moment \vec{p} . Hence

$$\text{show that in the limit } x \gg a, \vec{E} \rightarrow \frac{2\vec{p}}{4\pi\epsilon_0 x^3}.$$

ELECTRIC FLUX

Q.8: A spherical Gaussian surface encloses a charge of $8.85 \times 10^{-8} \text{ C}$.

(i) Calculate the electric flux passing through the Gaussian surface.

(ii) If the radius of Gaussian surface is doubled, how would the flux change?

[Ans: (i) $10^4 \text{ Nm}^2 \text{ C}^{-1}$ (ii) remain the same]

Q.9: An electric dipole of dipole moment $20 \times 10^{-6} \text{ C - m}$ is enclosed by a closed surface. What is the net flux coming out of the surface?

Q.10: Using Gauss's law, derive an expression for the electric field intensity at any point outside a uniformly charged thin spherical shell of radius R and charge density $\sigma \text{ C / m}^2$. Draw the field lines when the charge density of the sphere is (i) positive (ii) negative.

(b) A uniformly charged conducting sphere of 2.5 m in diameter has a surface charge density of

$$100 \mu\text{C / m}^2.$$

(i) Find the charge on the sphere.

(ii) What is the total electric flux leaving the surface of the sphere?

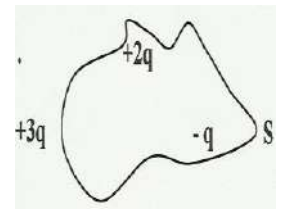
[Ans: (i) $1.96 \times 10^{-3} \text{ C}$ (ii) $2.2 \times 10^8 \text{ Nm}^2 \text{ C}^{-1}$]

Q.11: State Gauss's law in electrostatics. Using this law, derive an expression for the electric field due to a uniformly charged infinite plane sheet.

Q.12: State Gauss's law in electrostatics. Using this law, derive an expression for the electric field due to an infinitely long straight wire of linear charge density $\lambda \text{ C / m}$.

Q.13: Figure shows three point charges $+2q$, $-q$ and $+3q$.

Two charges $+2q$ and $-q$ are enclosed within a surface S . What is the electric flux due to this configuration through the surface S ?



Q.14: (a) Define electric flux. Write its S.I unit.

(b) Using Gauss's law, prove that the electric field at a point due to a uniformly charged infinite plane sheet is independent of the distance from it.

(c) How is field directed if (i) the sheet is positively charged, (ii) negatively charged?

Q.15: A hollow cylindrical box of length 1 m and area of cross-section 25 cm^2 is placed in a three dimensional coordinate system as shown in the figure. The electric field in the region is given by

$$\vec{E} = 50 x \hat{i}, \text{ where } E \text{ is in } \text{NC}^{-1} \text{ and } x \text{ is in metres.}$$

Find : (i) Net flux through the cylinder (ii) Charge enclosed by the cylinder.

