

SAINIK SCHOOL CHITTORGARH

SUMMER VACATION HOLIDAY HOMEWORK(AMENDED)

COMPUTER SCIENCE

CLASS & SECTION: XII

SUBJECT TEACHER NAME: MR. UPENDRA KUMAR SINGH

INSTRUCTIONS: PLEASE PREPARE A SEPARATE NOTEBOOK FOR HOME ASSIGNMENT

ASSIGNMENT

CHAPTER-1 :PYTHON REVISION TOUR-I

1. What is the difference between implicit type conversion and explicit type conversion ?
2. Write difference between mutable and immutable data types in Python
3. What is Type casting?
4. Write a Python program to print tables from 2 to 9
5. Write a program to calculate HCF of two numbers taken by user
6. Write a program print random number between given two numbers
7. Write a program to print star pattern of right angled triangle.
8. Write all functions name of list
9. Write all functions of dictionary
10. Write a program input roll no as key and names as values in dictionary from user

CHAPTER-1 :PYTHON REVISION TOUR-II

1. Write all functions name in string
2. Write a program print an input string in reverse order
3. Write a program to count vowels in an input string
4. Write a program input strings and count total no of upper case and lower case letter.
5. Write a python program to input string and check whether it is palindrome or not.
6. What is the difference between partition and split function . Explain with a program for each.
7. Write a program to input a string and check it contains digits or not.
8. Write a program to count number of times a character occurs in the given string
9. Write a program to input a sentence and print longest word in the given sentence.

CHAPTER-3 : WORKING WITH FUNCTION

1. What are the advantages of using functions?
2. Explain the difference between a function definition and a function call
3. Write a Python function to find the maximum of two numbers.
4. What is the difference between Actual and Formal Parameters?
5. Write a Python function calculate simple interest and return
6. Write difference between default argument and positional argument
7. Write difference between keyword argument and positional argument
8. Write a python function to input number and print its one's place digit

SAINIK SCHOOL CHITTORGARH

SUMMER VACATION HOMEWORK(AMENDED)

ENGLISH

CLASS & SECTION:XII- A & B

SUBJECT TEACHER NAME: MRS POOJA SINGH SISODIA

INSTRUCTIONS: Assignment - The project must be made in a file, addressing all the specified points and showcasing your creativity.

ASSIGNMENT

1. Learn all the antonyms and Synonyms given
2. Write articles on the following topics in your English register (Only 4).
 - (a) Is Artificial Intelligence a boon or a threat to humanity?
 - (b) Discipline versus Freedom
 - (c) Role of Youth in Nation Building
 - (d) Social Media and Mental Conditioning
 - (e) Should military training be compulsory for students?

SAINIK SCHOOL CHITTORGARH

SUMMER VACATION HOLIDAY HOMEWORK (AMENDED)

BIOLOGY

CLASS & SECTION: XII B

SUBJECT TEACHER NAME: Dr MANJIT SINGH

INSTRUCTIONS: PLEASE PREPARE A SEPARATE NOTEBOOK FOR THE HOME ASSIGNMENT

ASSIGNMENT

Chapter 1: Sexual Reproduction in Flowering Plants

1. Angiosperms bearing unisexual flowers are said to be either monoecious or dioecious. Explain with the help of one example each. (All India 2016)
2. Name the parts of the flower which the tassels of corn cob represent. (All India 2014)
3. Draw a diagram of a mature microspore of an angiosperm. Label its cellular components only. (Foreign 2014)
4. State the function of filiform apparatus found in mature embryo sac of an angiosperm. (Foreign 2014)
5. Give an example of a plant which came into India as a contaminant and is a cause of pollen allergy. (All India 2014)
6. A bilobed, ditheous anther has 100 microspore mother cells per microsporangium. How many male gametophytes this anther can produce? (Delhi 2010)
7. An anther with malfunctioning tapetum often fails to produce viable male gametophytes. Give one reason. (Delhi 2010)
8. A pollen grain in angiosperm at the time of dehiscence from an anther could be 2-celled or 3-celled. Explain, how are the cells placed within the pollen grain when shed at a 2-celled stage? (All India 2017)
9. Draw a diagram of a section of a megasporangium of an angiosperm and label funiculus, micropyle, embryo sac and nucellus. (All India 2016)
10. Name the mechanism responsible for the formation of seed without fertilisation in angiosperms. Give an example of a species of flowering plants with such seed formation. (Delhi 2010)

Chapter 2 : Human Reproduction

1. Why are human testes located outside the abdominal cavity? Name the pouch in which they are present. (all India 2014)
 2. Write the location and functions of following in human testes
(i) Sertoli cells
(ii) Leydig cells (All India 2014)
 3. Write the function of the seminal vesicle. (Delhi 2012)
 4. List the different parts of human oviduct through which the ovum travels till it meets the sperm for fertilisation. (Delhi 2014C)
 5. Name and explain the role of inner and middle walls of human uterus. (Delhi 2014)
- Answer:
6. Draw a labelled diagram of reproductive system in a human female. (All India 2011)
 7. When do the oogenesis and the spermatogenesis initiate in human females and males, respectively? (Delhi 2012).
 8. Mention the differences between spermiogenesis and spermiation. (Delhi 2012)

9. Explain the events in a normal woman during her menstrual cycle on the following days (Delhi 2015C)

(i) Ovarian event from 13-15 days.

(ii) Ovarian hormones level from 16-23 days.

(iii) Uterine events from 24-29 days. 10. List the changes the primary oocyte undergoes in the tertiary follicular stage in human embryo. (Foreign 2011)

Chapter 3 : Reproductive Health

1. Our government has intentionally imposed strict conditions for MTP in our country. Justify giving a reason. (Delhi 2017)

2. Name an IUD that you would recommend to promote the cervix hostility to sperms. (Delhi 2014C)

3. State one reason, why breastfeeding the baby acts as a natural contraceptive for the mother. (Delhi 2014C)

4. Mention one positive and one negative application of amniocentesis. (Delhi 2010)

5. Why is tubectomy considered a contraceptive method? (Foreign 2010)

6. Mention the problems that are taken care of by Reproduction and Child Healthcare Programme. (All India 2016)

7. What is amniocentesis? How is it misused? (Delhi 2014C)

OR

Why there is a statutory ban on amniocentesis? Why is this technique so named? (Delhi 2012C)

OR

What is amniocentesis? Why has the government imposed a statutory ban inspite of its importance in medical field? (Foreign 2010)

8. What do oral pills contain and how do they act as effective contraceptives? (Delhi 2014C)

9. Why is Cu-T considered a good contraceptive device to space children? (Delhi 2011)

10. Name an oral pill used as a contraceptive by human females. Explain, how does it prevent pregnancy? (Delhi 2011)

OR

Why is Saheli a well-accepted contraceptive pill? (Foreign 2010)

SAINIK SCHOOL CHITTORGARH

SUMMER VACATION HOLIDAY HOMEWORK (AMENDED)

INFORMATION

SUBJECT NAME: Mathematics

CLASS & SECTION: Class XII A & B

SUBJECT TEACHER NAME: Rakesh Rampuria

INSTRUCTIONS: Compulsory to attempt all questions.

1. Write with neat and clear hand writing on 100 page blank notebook.
2. Read all the questions carefully before solving.
3. Make a neat cover page with the following details:-
 - a. School Name – SAINIK SCHOOL CHITTORGARH (RAJASTHAN)
 - b. Title- HOLIDAY HOMEWORK – SUMMER VACATION
 - c. Submitted by:- (i). Student name (ii). Class (iii). School number (iv). Session – 2026-27
4. Deadline: Deadline for submitting the assignment is 01 July 2026.

ASSIGNMENT

Chapter No. 1 Relations and Functions

Q1 Show that each of the relation R in the set $A = \{x \in Z : 0 \leq x \leq 12\}$, given by

(i) $R = \{(a, b) : |(a - b)| \text{ is a multiple of } 4\}$

(ii) $R = \{(a, b) : a = b\}$

is an equivalence relation. Find the set of all elements related to 1 in each case.

Q 2 Determine whether the relation R defined on set R of all real numbers as

$R = \{(a, b) : a, b \in R \text{ and } a - b + \sqrt{3} \in S, \text{ where } S \text{ is the set of all irrational numbers}\}$, is reflexive, symmetric and transitive.

Q 3 Show that the function f in $A = R - \{\frac{2}{3}\}$ $f(x) = \frac{4x+3}{6x-4}$ is one-one and onto. Hence, find f^{-1}

Q 4 Consider $f: R \rightarrow [-5, \infty)$ given by $f(x) = 9x^2 + 6x - 5$. Show that f is invertible and

$$f^{-1}(y) = \left(\frac{\sqrt{y+6} - 1}{3} \right)$$

Q 5 Show that the relation R on the set R of real numbers, defined as

$R = \{(a, b) : a \leq b^2\}$ is neither reflexive nor symmetric nor transitive.

Q 6 Let N denote the set of all natural numbers and R be the relation on $N \times N$ defined by $(a, b) R (c, d)$ if $a d (b + c) = b c (a + d)$. Show that R is an Equivalence Relation.

Chapter No. 2 Inverse Trigonometric function

Q 1 Prove that : $\tan^{-1} \left(\frac{(\sqrt{1+x} - \sqrt{1-x})}{(\sqrt{1+x} + \sqrt{1-x})} \right) = \frac{\pi}{4} - \frac{1}{2} \cos^{-1} x$, $-\frac{1}{\sqrt{2}} \leq x \leq 1$

Q 2 If $\tan^{-1} \left(\frac{x-1}{x-2} \right) + \tan^{-1} \left(\frac{x+1}{x+2} \right) = \frac{\pi}{4}$, then find the value of x.

Q 3 Prove that : $\tan \left(\frac{\pi}{4} + \frac{1}{2} \cos^{-1} \frac{a}{b} \right) + \tan \left(\frac{\pi}{4} - \frac{1}{2} \cos^{-1} \frac{a}{b} \right) = \frac{2b}{a}$

Chapter No. 3 Matrices & Chapter No. 4 Determinants

Q 1 If $A = \begin{bmatrix} 0 & -\tan \frac{\alpha}{2} \\ \tan \frac{\alpha}{2} & 0 \end{bmatrix}$ and I is the identity matrix of order 2, then show that :

$$(I + A) = (I - A) \begin{bmatrix} \cos \alpha & -\sin \alpha \\ \sin \alpha & \cos \alpha \end{bmatrix}$$

Q 2 Let $A = \begin{bmatrix} 3 & 2 & 5 \\ 4 & 1 & 3 \\ 0 & 6 & 7 \end{bmatrix}$, express A as a sum of two matrices such that one is symmetric and other is skew symmetric.

Q 3 If A is square matrix of order 3 such that $|\text{adj } A| = 64$, then find $|A|$

Q 4 Find inverse of Matrix $A = \begin{bmatrix} 2 & 3 \\ 5 & -2 \end{bmatrix}$

Q 5 If $A = \begin{bmatrix} 1 & 2 & 0 \\ -2 & -1 & -2 \\ 0 & -1 & 1 \end{bmatrix}$, then find A^{-1} . Using A^{-1} solve the system of equation
 $x - 2y = 10$; $2x - y - z = 8$; $-2y + z = 7$.

Q 6 If $|A| = 3$ and $A^{-1} = \begin{bmatrix} 3 & -1 \\ -\frac{5}{3} & \frac{2}{3} \end{bmatrix}$, then write the $\text{adj } A$.

Chapter No. 5 Continuity and Differentiability

Q 1 Find the value of K so that the function f, defined by

$$f(x) = \begin{cases} kx + 1, & \text{if } x \leq \pi \\ \cos x, & \text{if } x > \pi \end{cases} \text{ is continuous at } x = \pi.$$

Q 2 Find the derivative of $\tan^{-1}\left(\frac{\sqrt{1+x^2}-1}{x}\right)$ with respect to $\tan^{-1}\left(\frac{2x}{1-x^2}\right)$

Q 3 Differentiate the following function with respect to x: $y = (\sin x)^x + \sin^{-1} \sqrt{x}$

Q 4 If $f(x) = \begin{cases} x^2 + 3x + a, & x \leq 1 \\ bx + 2, & x > 1 \end{cases}$ is differentiable everywhere, Find the value a & b.

Q 5 If $\sqrt{1-x^2} + \sqrt{1-y^2} = a(x-y)$ then show that $\frac{dy}{dx} = \frac{\sqrt{1-y^2}}{\sqrt{1-x^2}}$

Q 6 If $x = a \sin t - b \cos t$, $y = a \cos t + b \sin t$, Prove that $\frac{d^2y}{dx^2} = -\left(\frac{x^2+y^2}{y^3}\right)$

Q 7 If $x = a \sin pt$, $y = b \cos pt$, then show that $(a^2 - x^2) y \frac{d^2y}{dx^2} + b^2 = 0$

Q 8 For what value of 'K' is the function $f(x) = \begin{cases} \frac{\sin 5x}{3x} + \cos x, & \text{if } x \neq 0 \\ K, & \text{if } x = 0 \end{cases}$

continuous at $x = 0$

SAINIK SCHOOL CHITTORGARH

SUMMER VACATION HOLIDAY HOMEWORK 2026-27 (AMENDED)

CLASS & SECTION : XII (A & B)		SUBJECT TEACHER : Mr ONKAR SINGH	
E-mail Id of Subject Teacher: onkarsingh1967os@gmail.com			
Q.1.	State and explain Coulombs Law in vector form in an electrostatics. Using this law calculate Intensity of Electric Field at a point due to a point charge.		
Q.2	What is an Electric Dipole and Dipole Moment? Calculate Intensity of electric field and Electric Potential due to an Electric Dipole at any point and hence Discuss the above results in the following situations: (a) When point lies on the axial line (b) When point lies on an equatorial line (c) Calculate the torque on an electric dipole placed in an electric field and also defines electric dipole moment on the basis of it.		
Q.3	State and Prove Gauss's Law in electrostatics. Using this law, Calculate the intensity of Electric field. (a) Due to an infinite thin plane sheet of charge (b) Due to a charged spherical shell(Inside and Outside the shell) (c) Two plane sheets of charge having surface charge density σ_1 and σ_2 are placed parallel to each other. Calculate the electric field intensity due to these sheets in the region (i) to the left of first sheet (ii) in between the sheets (iii) to the right of second sheet		
Q.4	(a) An electric dipole of dipole moment p is placed in a uniform electric field E at an angle θ with it. Derive the expression for torque (τ) acting on it. Find the orientation of the dipole relative to the electric field for which torque on it is (i) maximum, and (ii) half of maximum. (b) Two point charges $q_1 = + 1 \mu\text{C}$ and $q_2 = + 4 \mu\text{C}$ are placed 2 m apart in air. At what distance from q_1 along the line joining the two charges, will the net electric field is zero?		
Q.5	Answer the following: (a) Why are the connections between the resistors in a meter bridge made of thick copper strips? (b) Why is it generally preferred to obtain the balance point in the middle of the meter bridge wire?		
Q.6	Define the term drift velocity of an electron. Prove that $v_d = -Ee\tau/m$, Where the symbols have their usual meanings.		
Q.7	A heater coil is cut into two parts and only one of them is used in the heater. What is the ratio of the heat produced by this half coil to that by the original coil if the voltage applied is same?		
Q.8	The resistance of a wire is $R\Omega$. What will be its new resistance if it is stretched to n times to its original length?		
Q.9	Prove that the capacitance of a parallel plate capacitor is given by $C = A\epsilon_0 K/d$.where the symbols have their usual meanings.		
Q.10	A lamp marked 15V-20watt is connected to a D.C source of 25 volt and a resistance R in series for full illumination. Find (i) the current in the circuit (ii) the resistance of the lamp (iii) the resistance R		

SAINIK SCHOOL CHITTORGARH
SUMMER VACATION HOMEWORK (AMENDED)

SUBJECT : CHEMISTRY

CLASS & SECTION: XII A & B

SUBJECT TEACHER NAME: TONY ABRAHAM

INSTRUCTIONS:

- 1. Attempt all the questions**
- 2. Draw diagrams and write equations where necessary**
- 3. Prepare a separate homework note book for chemistry**

ASSIGNMENT

UNIT 1

1. If we place the blood cells in a solution containing less than 0.9% NaCl. It will -----.
Explain
2. The values of Van't Hoff factor 'i' for KNO_3 , NaCl and K_2SO_4 will be -----, ----- and -----.
Give reason
3. The value of Van't Hoff factor for ethanoic acid in benzene is -----. Why?
4. Which out of 1M NaOH and 1M Na_2SO_4 will have a higher boiling point? Why?
5. In comparison to a 0.01 molar glucose, the depression in freezing point of 0.01M MgCl_2 will be ----- times.
6. Why some solutions show abnormal molecular mass? Explain with the help of suitable examples.
7. The solute particles undergo ----- when $i = 0.3$
8. How will you define molal elevation constant K_b and molal depression constant K_f ?
9. What type of mixture the rectified spirit is? Explain giving reason.
10. Why is osmotic pressure is considered to better than other colligative properties?

UNIT 2

1. The standard reduction/electrode potentials of some metals are as follows. Arrange them in their increasing order of reducing power. $\text{K} = -2.93\text{V}$, $\text{Ag} = 0.80\text{V}$, $\text{Hg} = 0.79\text{V}$, $\text{Cr} = -0.74\text{V}$
2. How much charge is required for reduction of (a) 1 mol of Al^{3+} (b) 1 mol of MnO_4^- to Mn^{2+}
3. What are the products when dil. H_2SO_4 is electrolyzed using Pt electrodes?
4. Find the products when an aqueous solution of AgNO_3 is electrolyzed using Ag electrodes.
5. What should be the values of ΔG and E^0 for the spontaneity of the cell?
6. Using E^0 values predict which metal can be used to coat Fe for preventing rusting.
 $\text{Fe} = -0.44\text{V}$, $\text{X} = -2.36\text{V}$, $\text{Y} = -0.14\text{V}$
7. The molar conductivity of 1.5 M solution is $138.9\text{ S cm}^2\text{ mol}^{-1}$. Calculate its conductivity.
8. Why does the conductivity or specific conductance of a solution decrease with dilution?
9. The chemistry of corrosion is essentially an electrochemical phenomenon. Give reactions.
10. Calculate ΔG for the reaction at 298 K. $2\text{Cr} + 3\text{Fe}^{2+} \rightarrow 2\text{Cr}^{3+} + 3\text{Fe}$. Given $E_{0\text{cell}} = 0.30\text{V}$.
11. How does molar conductivity vary with increase in concentration of strong electrolytes?
12. Which out of 0.1M HCl and 0.1M NaCl, do you expect to have greater λ_m at infinite dilution?
13. Which electrodes are used in fuel cell and why?
14. State Faraday's second law of electrolysis.
15. Which cell is generally used in inverters? Give the chemical reactions at anode and cathode?