DELHI PUBLIC SCHOOL HATHRAS
SUMMER HOLIDAY HOMEWORK
SESSION: 2022-23
CLASS – XII A

ENGLISH -

Q1. Write a script for dramatization based on the story Lost Spring highlighting the symbolical meaning of the lost spring.

Q2. Write a letter to the Editor of a national daily voicing your serious concern for the moral degradation of the young children due to their excessive involvement in online activities.

Q3. Prepare the classified advertisements on the following topics.

I) To Let (Flat for rent)

II) Situation Vacant (Post of Sales executive for a Car Showroom)

III) For Sale (Old Car)

IV) Lost & Found (Lost Document File)

Q4. Take interview of five persons, hailing from different professions, living in your colony and ask questions to them related to their experience during the lockdown period and write a brief description of each in about 100 words.

Q5. You have to present a skit on the occasion of mother's day in the special assembly of your school. As a script writer, prepare the script of the skit in 200 to 250 words.

MATHEMATICS -

1. Learn and write all trigonometric identities (Class XI and Class XII) and inverse Trigonometric identities from NCERT books and other reference books.

2. Make a table of domains and ranges of inverse trigonometric functions.

3. Make 2 matrices A and B of order 3 X 3 and Add, subtract and multiply them. Also check whether AB = BA or not.

4. Make at least 2 matrices of order 3 X 3 and find their inverse.

5. Make at least 2 matrices of order 3 X 3 and find their minors, co-factors, adj A and inverse using determinant.

6. Learn and Write squares (1 to 35) and cubes (1 to 20)

7. Do Revision of all class work in a separate note book.

PHYSICS -

1. Carry out a detailed case study on any one topic and make a report.

a. The James Webb Space Telescope, the largest and most powerful space telescope ever developed.

b. Three missions arrived at Mars in February 2021.

CHEMISTRY -

2. Carry out a detailed case study on any one topic and make a report.

a. What is the role of Chemistry in the development of chemical preventive measures and drugs for COVID-19?

b. Compare the chemical effects of ayurvedic and allopathic medicines on our health during the post COVID.

BIOLOGY -

3. Choose one topic from the following list and collect literature and relevant material on it.

- Vaccines and Vaccination
- Pollen-pistil Interaction
- Pollen grains and Pollination
- Medicinal plants / Ayurvedic Medicines
- Plant Tissue Culture
- Vitamins and Minerals Deficiency
- IVF/ART
- Special Mode of Reproduction
- Healthy Lifestyles and various related Diseases

- AIDS/HIV Infection
- Cancer (Diagnosis, Symptoms, Treatment)
- Bird Migration
- Effect of Pesticide in Food Chain (Bio magnification)
- Eutrophication
- Role of Breathing Exercises in daily life
- Photosynthesis (Chlorophyll related activities)
- Diagnostic Techniques (e.g. CT Scan, MRI, PET etc.)

Prepare a report with relevant case studies and other data and to be submitted to respected teacher.

3. Solve the Holiday Homework Worksheet attached with your Summer Holiday Homework.

4. Revise the Chapters of Biology (Ch- 1, 2), Chemistry (Ch – 2, 3) and Physics (Ch -1, 2) discussed during teaching learning activity in month of April and May 2022.

PHYSICAL EDUCATION -

Prepare a project file (as per CBSE Norms). Any game of your choice out of the list given below. Labeled diagram of field and equipment, rules, terminologies and skill.

List of games:

Handball Basketball
Football Hockey
Kabaddi Cricket
Khokho

COMPUTER SCIENCE

Q1. Draw the main parts of Computer Organization with its functioning Units.
Q2. Write the function of Memory UNIT.
Q3. Explain the process of Booting.
Q4. Write any two weaknesses of computer?
Q5. Write two common examples of Multi-user operating system.
Q6. What are cookies?
Q7. What type of damages can be caused by viruses to the computer system?
Q8. Explain the term Integrated Development Environment with its tools.
Q9. Explain the basic architecture of computer. along with the functioning of each of its subunit.
Q10. What is Spamming? Why has it become a big Internet issue?
Q11. Draw and explain the main symbols used in flow charting.
Q12. Write the algorithm to multiply any two numbers?
Q13. What is Operands explain it with examples?
Q14. Explain the type of operators used in Python programming.
Q15. Draw a flowchart to print the lowest number out of given three numbers.
Q16. Draw a flow chart to print the sum of series 0+3+6+9+12……Nth term
Q17.Draw a flow chart to print the series 2+4+6+8 up to 10th Term
Q18. What is BMDAS? Explain it with example
Q19. Write the following expression in the order of operational precedence for Python.

S= ((2 x 4) / 2) + (10-7) x 19) /3

Q20. What are Unary, Binary and Tertiary operators?
Q21. What is the value of the following expression in Python?
2+4.00, 2**4.0
a) (6.0, 16.0)
b) (6.00, 16.00)
c) (6, 16)
d) (6.00, 16.0)

Q22. What will be displayed by print(ord('b') – ord('a'))?
a) 0 b) 1 c) -1 d) 2

Q23. Suppose J1 is [3, 4, 5, 20, 5, 25, 1, 3], what is J1 after J1.pop( )?
a) [3, 4, 5, 20, 5, 25, 1] b) [1, 3, 3, 4, 5, 5, 20, 25]
c) [3, 5, 20, 5, 25, 1, 3] d) [1, 3, 4, 5, 20, 5, 25]

Q24. What is the output of the following code?

```
count={}
count[(1,2,4)] = 5
count[(4,2,1)] = 7
count[(1,2)] = 6
count[(4,2,1)] = 2
tot = 0
for i in count: tot=tot+count[i]
print(len(count)+tot)
```

Q25. Explain the procedure: Break the line and change the sign.
Q26. Mr. Rehman is confused between Shareware and Open-Source software. Mention at least two points of differences to help him understand the same.
Q27. Explain the following Memory management techniques with respect to an operating system:
a) Partitioned Allocation b) Segmented Allocation
Q28. Write programs in Python to do the following:

a) To accept three distinct digits and prints all possible combinations from the digits
b) The program takes in the number of terms and finds the sum of series: 1 + x^2/2 + x^3/3 + … x^n/n.
c) To calculate the length of a string without using library functions.
d) To count the frequency of words appearing in a string using a dictionary
e) Find the shipping cost if the amount of the packet is less than or equal to 50 is $50 or less than or equal to100 is $90 or less than or equal to 150 is $125 otherwise $ 200 for above amount. Secondly if the country is Australia added shipping charges will be $200 else $100 for others

Q29. Write SQL query to create a table 'Bank_Customer' with the following structure:
Q30. Define cyber troll and Digital footprints

Holiday Homework:

To prepare the notes for the first 3 chapter and collect the examples of basic computing for PST (problem Solving Techniques)

II. <u>Mulitple Choice Questions</u> -

1. Which of the following correctly declares an array?

a) intarray[10];
b) int array;
c) array{10};
d) array array[10];

2. What is the index number of the last element of an array with 9 elements?

a) 9
b) 8
c) 0
d) Programmer-defined

3. What is a array?

a) An array is a series of elements of the same type in contiguous memory locations
b) An array is a series of element
c) An array is a series of elements of the same type placed in non-contiguous memory locations
d) None of the mentioned

4. Which of the following accesses the seventh element stored in array?

a) array[6];
b) array[7];
c) array(7);
d) array;

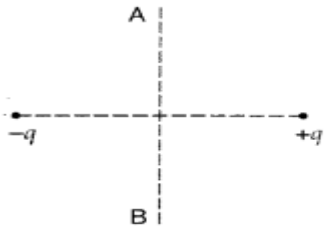
5. Which of the following gives the memory address of the first element in array?

a) array[0];
b) array[1];
c) array(2);
d) array;

PHYSICS
HOLIDAY HOMEWORK WORKSHEET

1. If the radius of the Gaussian surface enclosing a charge is halved, how does the electric flux through the Gaussian surface change ? Why do the electric field lines not form closed loops?
2. Two charges of magnitudes -3Q and + 2Q are located at points (a, 0) and (4a, 0) respectively. What is the electric flux due to these charges through a sphere of radius '5a' with its center at the origin?
3. Derive an expression for the torque experienced by an electric dipole kept in a uniform electric field.
4. A spherical conducting shell of inner radius r1 and outer radius r2 has a charge 'Q'. A charge 'q' is placed at the center of the shell.
   (a) What is the surface charge density on the-
   (i) inner surface,
   (ii) outer surface of the shell?
   (b) Write the expression for the electric field at a point $x > r_2$ from the center of the shell.
5. A thin straight infinitely long conducting wire having charge density X is enclosed by a cylindrical surface of radius r and length l, its axis coinciding with the length of the wire. Find the expression for the electric flux through the surface of the cylinder.
6. Plot a graph showing the variation of coulomb force (F) versus (1/r2), where r is the distance between the two charges of each pair of charges (1μC, 2μC) and (2μC, – 3μC). Interpret the graphs obtained.
7. A hollow cylindrical box of length 1m 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 $E\rightarrow=50xi\hat{}$ where E is in NC^{-1} and x is in metres. Find
   (i) Net flux through the cylinder.
   (ii) Charge enclosed by the cylinder.
8. Given a uniform electric field $E= 2 \times 10^3$ iN/ 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° with the x-axis?
9. A sphere S_1 of radius r_1 encloses a net charge Q. If there is another concentric sphere S_2 of radius r_2 ($r_2 >$ r,) enclosing charge 2Q, find the ratio of the electric flux through S_1 and S_2. How will the electric flux through sphere S_1 change if a medium of dielectric constant K is introduced in the space inside S_2 in place of air?
10. A thin conducting spherical shell of radius R has charge Q spread uniformly over its surface. Using Gauss's law, derive an expression for an electric field at a point outside the shell.
    Draw a graph of electric field E(r) with distance r from the centre of the shell for $0 \leq r \leq \infty$
11. What is the work done in moving a test charge q through a distance of 1 cm along the equatorial axis of an electric dipole?

12. A point charge Q is placed at point O as shown in the figure. Is the potential difference $V_A - V_B$ positive, negative or zero, if Q is-
    (i) positive
    (ii) negative?
13. A hollow metal sphere of radius 10 cm is charged such that the potential on its surface is 5 V. What is the potential at the center of the sphere?
14. What is the amount of work done in moving a point charge around a circular arc of radius r at the center of which another point charge is located?
15. A charge 'q' is moved from a point A above a dipole of dipole movement 'p' to a point B below the dipole in equitorial plane without acceleration. Find the work done in the process.



16. Derive the expression for the electric potential at any point along the axial line of an electric dipole
17. Two point charges, $q_1 = 10 \times 10^{-8}$C, $q_2 = -2 \times 10^{-8}$C are separated by a distance of 60 cm in air.
    (i) Find at what distance from the 1st charge, q_1 would the electric potential be zero.
    (ii) Also calculate the electrostatic potential energy of the system.
18. Net capacitance of three identical capacitors in series is 1 pF. What will be their net capacitance if connected in parallel?
19. Find the ratio of energy stored in the two configurations if they are both connected to the same source.An electric dipole of length 4 cm, when placed with its axis making an angle of 60° with a uniform electric field, experiences a torque of $4\sqrt{3}$ Nm. Calculate the potential energy of the dipole, if it has charge ± 8 nC.
20. A network of four capacitors, each of capacitance 15 μF, is connected across a battery of 100 V, as shown in the figure. Find the net capacitance and the charge on the capacitor C_4.

CHEMISTRY-XII
HOLIDAY HOMEWORK WORKSHEET

1. Differentiate between molarity and molality of a solution.What is the effect of change in temperature of a solution on its molality and molarity?
2. What is meant by 'reverse osmosis'?
3. Out of $BaCl_2$ and KCl, which one is more effective in causing coagulation of a negatively charged colloidal Sol? Give reason.
4. Non-ideal solutions exhibit either positive or negative deviations from Raoult's law. What are these deviations and why are they caused? Explain with one example for each type.
5. A 1.00 molal aqueous solution of trichloroacetic acid (CCl_3COOH) is heated to its boiling point. The solution has the boiling point of 100.18°C. Determine the van't Hoff factor for trichloroacetic acid. (K_b for water = 0.512 K kg mol^{-1})
6. Define the following terms :
   (i) Mole fraction

(ii) Isotonic solutions
(iii) van't Hoff factor
(iv) Ideal solution

7. State Henry's law and mention two of its important applications.
8. 18 g of glucose, $C_6H_{12}O_6$ (Molar mass – 180 g mol^{-1}) is dissolved in 1 kg of water in a sauce pan. At what temperature will this solution boil? (K_b for water = 0.52 K kg mol^{-1}, boiling point of pure water = 373.15 K)
9. An aqueous solution of sodium chloride freezes below 273 K. Explain the lowering in freezing points of water with the help of a suitable diagram.
10. What do you mean by colligative properties. Explain any two.
11. What is the effect of catalyst on:
    (i) Gibbs energy (ΔG) and
    (ii) activation energy of a reaction?
12. What is the effect of adding a catalyst on
    (a) Activation energy (Ea), and
    (b) Gibbs energy (AG) of a reaction?
13. Two half cell reactions of an electrochemical cell are given below :
    $MnO^-_4(aq) + 8H^+(aq) + 5e^- \rightarrow Mn^{2+}(aq) + 4H_2O(I)$, E° = + 1.51 V
    $Sn^{2+}(aq) \rightarrow 4\ Sn^{4+}(aq) + 2e^-$, E° = + 0.15 V
    Construct the redox equation from the two half cell reactions and predict if this reaction favours formation of reactants or product shown in the equation.
14. Express the relation among the cell constant, the resistance of the solution in the cell and the conductivity of the solution. How is the conductivity of a solution related to its molar conductivity?
15. Given that the standard electrode potentials (E°) of metals are :
    K^+/K = -2.93 V, Ag^+/Ag = 0.80 V, Cu^{2+}/Cu = 0.34 V,
    Mg^{2+}/Mg = -2.37 V, Cr^{3+}/Cr = -0.74 V, Fe^{2+}/Fe = -0.44 V.
    Arrange these metals in increasing order of their reducing power.
16. Express the relation among cell constant, resistance of the solution in the cell and conductivity of the solution. How is molar conductivity of a solution related to its conductivity?
17. The standard electrode potential (E°) for Daniel cell is +1.1 V. Calculate the ΔG° for the reaction
    $Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$
    (1 F = 96500 C mol^{-1}).
18. State Kohlrausch law of independent migration of ions. Why does the conductivity of a solution decrease with dilution?
19. Define the following terms :
    (i) Fuel cell
    (ii) Limiting molar conductivity (Λ°_m)
20. Set up Nemst equation for the standard dry cell. Using this equation show that the voltage of a dry cell has to decrease with use.

HOLIDAY HOMEWORK WORKSHEET
SUBJECT: BIOLOGY
CLASS XII

Q1. Write briefly the role of pollination in the growth and development in an angiosperm.

Q2. Describe the structure of a typical/polygonum type embryo sac found in flowering plants. Why is it called monosporic?
Q3. Why is the process of fertilization in a flowering plant referred to as double fertilization?
Q4. Where does triple fusion take place in a flowering plant? Why is it so called? Mention its significance.
Q5. (a) Mention any four strategies adopted by flowering plants to prevent self pollination.
(b) Why is geitonogamy also referred to geneticalautogamy?
Q6. How many haploid cells are present in a mature female gametophyte of a flowering plant. Name them.
Q7. Draw a diagram of a male gametophyte of an angiosperm. Label any four parts. Why is sporollenin considered the most resistant organic material?
Q8. Write the cellular contents carried by the pollen tube. How does the pollen tube gain entry into the embryo sac?
Q9. How does pollen mother cell develop into a mature pollen grain? Illustrate the stages with labelled diagrams.
Q10. How does the megaspore mother cell develop into 7-celled, 8 –nucleate embryo sac in an angiosperm? Draw labelled diagram of a mature embryo sac.

NOTE:-

- **Do the homework in separate note book.**
- **10 marks will be awarded for Summer Holiday Homework.**

CLASS TEACHER'S SIGNATURE **PRINCIPAL'S SIGNATURE**