

South Point High School

Holiday Homework

Class XII

Science 2019

ENGLISH

1. Write a description of a home stay facility where you had recently put up. Mention the place, tariff rates, special features, why it is a better option than a hotel or guest house and any other relevant point.
2. You are Nirvan/ Niyali, a reporter with The Daily Mirror. You were in Puri when the Cyclone Fani hit. Write a report for the newspaper mentioning the steps taken in advance to avoid disaster, the impact, the present condition of the residents, relief work and other relevant points.

PHYSICS

1. State Coulomb's law of force between two charges at rest. What is the force of repulsion between two charges of 1C each, kept 1 m apart in vacuum.
2. The electrostatic force on a small sphere of charge $0.4 \mu\text{C}$ due to another small sphere having charge $-0.8 \mu\text{C}$ in air is 0.2 N. (a) What is the distance between the two spheres? (b) What is the force on the second sphere due to the first?
3. State the superposition principle for electrostatic force on a charge due to a number of charges.
4. Four point charges $q_A = 2 \mu\text{C}$, $q_B = -5\mu\text{C}$, $q_C = 2 \mu\text{C}$ and $q_D = -5 \mu\text{C}$ are located at the corners of a square ABCD of side 10 cm. What is the force on a charge of $1 \mu\text{C}$ placed at the center of the square?
5. Two point charges $q_A = 3 \mu\text{C}$ and $q_B = -3 \mu\text{C}$ are located 20 cm apart in vacuum. (a) What is the electric field at the mid point O of the line AB joining the two charges? (b) If a negative test charge of magnitude $1.5 \times 10^{-9} \text{ C}$ is placed at this point, what force will be experienced by this charge?
6. A square wire of side 3 cm is placed 25 cm away from a concave mirror of focal length 10 cm in an upright position. What area is enclosed by the image of the wire loop? Centre of the wire loop is on the principal axis.
7. The image of a small electric bulb fixed on the wall of a room is to be obtained on the opposite wall 3 m away by means of a large convex lens. What is the maximum focal length of the lens required for the purpose?
8. An eye piece of a telescope consists of two plano convex lenses L_1 and L_2 each of focal length 'f' separated by a distance of $2f/3$. Where should L_1 be placed relative to

the focus of the objective lens of telescope so that the final image through L_2 is seen at infinity?

CHEMISTRY

1. When 2.56 g of sulphur was dissolved in 100g of CS_2 , the freezing point lowered by 0.383 K. Calculate the formula of sulphur (S_x). (K_f for $CS_2 = 3.83 \text{ K Kg mol}^{-1}$, atomic mass of sulphur = 32 g mol^{-1}).
2. At 25°C the saturated vapour pressure of water is 3.165 kPa (23.75 mm Hg). Find the saturated vapour pressure of a 5% aqueous solution of urea at the same temperature. (Molar mass of urea = 60.05 g mol^{-1}).
3. Suggest the most important type of intermolecular attractive interaction in the following pairs:
 - i) n-hexane and n-octane
 - ii) $NaClO_4$ and water
 - iii) Methanol and acetone
4. How will you carry out the following conversions?
 - a) Prop-1-ene to 1-Fluoropropane
 - b) Ethanol to propanenitrile
 - c) Bromobenzene to 2-Bromoacetophenone
 - d) tert-Butyl bromide to Isobutyl bromide
 - e) Ethyl chloride to propanoic acid
5. Predict all the alkenes that would be formed by dehydrohalogenation of the following halides with sodium ethoxide in ethanol and identify the major alkene:
 - a) 1-Bromo-1-methylcyclohexane
 - b) 2-Chloro-2-methylbutane
 - c) 2,2,3-Trimethyl-3-bromopentane

MATHEMATICS

(i) ACTIVITY – 7 :(with some application)

To be done on graph paper . You may take the graph of $y = 2^x$ and $y = \log_2 x$

(ii) ACTIVITY – 1 :(with some application)

(iii) ACTIVITY -3 : (with some application)

Submit the above three activities in a LAB NOTE BOOK (well designed , well maintained) immediately after summer vacation and get it signed by your respective subject teacher .

You should remember that the above task is mandatory and you must do it as a part of internal assessment carrying significant marks .

For your further clarification and guidelines you may follow the CBSE site(curriculum) where you get also the link for NCERT LAB MANUALS .

BIOLOGY

Investigatory projects :

Topics:

- I. Pollination- an agent dependent process
- II. Sexually Transmitted Diseases: 3 case studies
- III. Chromosomal Aberrations: 3 case studies
- IV. DNA fingerprinting : a case study
- V. Apiculture : a means of livelihood
- VI. Biofertilizer : the answer to chemical pollution
- VII. Human Genome Project

Instructions have been given in the class

COMPUTER SCIENCE

Declare an integer matrix $M[10][11]$. In each row of the matrix store the series of numbers from 0 to R, where R is calculated as $R = \text{random}(10)$ for each row of the matrix separately. For example, for row number 5, if $R=4$, then the elements of row-5 will be $M[5][0] = 0$, $M[5][1]= 1, M[5][2]= 2, M[5][3] = 3, M[5][4] = 4$, $M[5][5] = -1$, respectively. Note that an extra value -1 is stored in $M[5][5]$, after the numbers from 0 to 4 are stored (this indicates the end point of the row, up to which values are stored). Add this extra -1 after the last element stored in each row.

Next, declare an array $A[10]$ of 10 integer pointers. Read the data from each row of the matrix M and count the number of integer values stored in that row (including the -1). Allocate memory dynamically to store that many number of values and store the allocated memory address in the corresponding array element of array of pointers.

Next, copy the values from the matrix row to the dynamically allocated memory block (including the -1). For example, for the row-5 (of the example in the last paragraph), dynamically allocate memory to store 6 values (i.e. 0, 1, 2, 3, 4, -1), and store the dynamic address returned, in the pointer array element $A[5]$.

Repeat the above process for all the rows of the matrix.

Finally read the dynamically allocated memory blocks and find the overall maximum value stored there. Print this overall maximum value.

Also, calculate the total dynamic memory allocated for all the blocks and compare it with the overall byte requirement of the integer matrix (take integer size based on compiler

used). Display the difference between these two memory requirements (calculate difference as, matrix – dynamic block).

NOTE: Submit the program HANDWRITTEN in A4 size paper with a cover indicating your ID, Name, Class, Section and Roll. The code should be CLEARLY and NEATLY written, with proper comments and proper indentation. Staple the pages properly like a book. DO NOT SUBMIT IN A CHANNEL FILE.

ECONOMICS

Students of class XII have to complete one project of about 3500-4000 words during the academic session. Since the project is research based, the topics have been discussed and allotted to students. A total of 10 topics have been given. Students will do the basic research during the vacation. They will also form suitable questionnaire for conducting a survey as relevant to their topic. For some topics, they will collect secondary data from Newspapers, journals, magazines or the internet along with pictures.

A brief synopsis and outline of the project, along with their basic research materials will have to be submitted in a lace file latest by 17th June, 2019.

PSYCHOLOGY

1. Final project on case history.
2. Read and write short questions with answers from chapter 8.
3. Watch any 2 or more movies or read books (related to psychological disorders)
 - Like- a beautiful mind(2001-paranoid schizophrenia)
 - Good will hunting (1997-gifted/counseling/PTSD)
 - Rain man (1988-autism), I am Sam(2001)
 - As good as it gets(1997), the aviator(2004-OCD)
 - The prince of tides', 'girl, Interrupted'(1999- substance abuse-BPD)
 - Silver linings playbook (2012-bipolar disorders/depression)
 - The breakfast club(1985-stereotypes), Three faces of eve, Etc.