

Mathematics

INSTRUCTIONS :

** Use Ruler, Pencil, Compass and Protractor for constructions.

** Do all the work on a notebook of 20 pages.

1. Out of 280 students in class XII of a school. 135 play hockey, 110 play football, 80 play volleyball. 35 of these play hockey and football, 30 play volleyball and hockey, 20 play football and volleyball. Also, each student plays at least one of three games. How many students play all the three games.

2. Let $A = \{3, 5\}$ and $B = \{7, 11\}$. Let $R = \{(a, b) : a \in A, b \in B, a-b \text{ is odd}\}$. Show that R is an empty relation from A to B .

3. Let $A = \{1, 2\}$ and $B = \{3, 4\}$. Find the total number of relation from A to B .

4. Find the domain of the following real valued function

(i). $f(x) = \frac{2x-3}{x^2-3x+2}$ (ii) $F(x) = \sqrt{4-x^2}$ (iii) $F(x) = \frac{1}{\sqrt{1-x}}$ (iv) $F(x) = \sqrt{x-2}$

5. If $\sec x + \tan x = p$, obtain the values of $\sec x$, $\tan x$ and $\sin x$ in terms of p

6. Prove that $\sin^2\left(\frac{\pi}{8} + \frac{x}{2}\right) - \sin^2\left(\frac{\pi}{8} - \frac{x}{2}\right) = \frac{1}{\sqrt{2}} \sin x$

7. Prove that $\tan 70^\circ = \tan 20^\circ + 2\tan 50^\circ$

8. Prove that $\frac{\cos 6x + 6\cos 4x + 15\cos 2x + 10}{\cos 5x + 5\cos 3x + 10\cos x} = 2\cos x$

9. Prove that $\frac{\sin 2x}{1 + \cos 2x} = \tan x$ (ii) $\cos x / (1 + \sin x) = \tan\left(\frac{\pi}{4} - x/2\right)$

10. If $\tan x = 3/4$, $\pi < x < \frac{3\pi}{2}$, find the values of $\sin(x/2)$, $\cos(x/2)$, $\tan(x/2)$

11. Prove that $\sin \frac{\pi}{10} = \frac{\sqrt{5}-1}{4}$

HOLIDAY HOMEWORK

CHEMISTRY-XI SC

1. STATE MODERN PERIODIC LAW. HOW IS LONG FORM OF PERIODIC TABLE SUPERIOR TO MENDELEEV'S PERIODIC TABLE?

2. WHAT IS THE CAUSE OF PERIODICITY IN THE PROPERTIES OF THE ELEMENTS? HOW DO THE FOLLOWING PROPERTIES VARY IN A

(I) GROUP (II) PERIOD? (A) ATOMIC SIZE (B) ELECTRONEGATIVITY (C) IONISATION ENERGY.

Holiday Home Work (Autumn Break) / Biology / XI 2020-21

1. Observe at least five different flowering plants and find out :

- a. Scientific Name
- b. Type of inflorescence

Click the photograph with your mobile and save the photograph with the name of inflorescence & Plant.

Upload the photographs on the home work submission link with two comments of each type.

2. Observe at least five different animals and plant species around you and Place them in their taxonomic categories. Write the observations on a paper and submit as PDF in the link provided.

Autumn Holiday HW Comp. Sc

- 1. Prepare a chart for ASCII and UNICODE character code with its values.
- 2. Convert a paragraph into coded form using UNICODE or ASCII.
- 3. Prepare a chart for ISCII character code for Hindi with its respective values.
- 4. Draw the truth table for the following expressions
 - a. $A'BC + AB'C + A(BC)' + A'B'$
 - b. $x'yz + xyz' + (xy)'+z'y$

PHYSICS

Holiday Homework- Autumn Break

- 1. Find the name and distance of the nearest star to our solar system. How much is this distance in parsec? How much parallax would this star show when viewed from two locations of the Earth six months apart in its orbit around the Sun?
- 2. Distinguish between average speed and magnitude of average velocity. Give two numerical examples in support of your answer (hint- there are two examples related to this in your NCERT textbook). No such distinction is necessary when we consider instantaneous speed and magnitude of instantaneous velocity. The instantaneous speed is always equal to the magnitude of instantaneous velocity. Why?
- 3. Search about physical significance of differentiation and integration and explain how they play an important role in the study of physics.