

Winter Vacation Projects

Sainik School Imphal

Subject: Biology

Class : XI

1. To study the effect of gravity on plant movement (Geotropism) using a clinostat.
XI A (3759 to 3785) ; XI B (3760 to 3774)
2. Study of Locomotion and Role of Different Fins in Fishes.
XI A (3786 to 3805) ; XI B (3777 to 3800)
3. To study competition between weeds and crops.
XI A (3806 to 3832) ; XI B (3803 to 3823)
4. Study of the effect of a Herbicide on Lawn weeds
XI A (3834 to D- 263) ; XI B (3827 to D- 266)

WINTER VACATION ASSIGNMENTS (2021-22)

CLASS XI (A & B)

SUBJECT: MATHEMATICS

1. DRAW GRAPHS OF THE FOLLOWING REAL FUNCTIONS

(Compulsory for all cadets of both SEC-A and B)

(i) $f(x) = x^2$

(ii) $f(x) = ax^2 + bx + c$, $a \neq 0$

(iii) $f(x) = x^3$

(iv) $f(x) = a^x$, $a > 0$ and $a \neq 1$

(v) $f(x) = e^x$

(vi) $f(x) = |x|$

(vii) $f(x) = [x]$,where $[\]$ denotes greatest integer function.

(viii) $f(x) = \frac{1}{x}$, $x \neq 0$

a. DISCUSS DOMAINS AND RANGES OF EACH FUNCTION.

b. DISCUSS IF LIMIT EXISTS TO THESE FUNCTIONS FOR ALL REAL VALUES OF x .

c. WHAT HAPPENS TO THE GRAPH IF LIMIT DOES NOT EXISTS AT A POINT?

NOTE: FOR PRESENTATION OF EX- 1 USE A4 SIZE PAPER FOR DETAILS ASKED ABOUT EACH FUNCTION AND FOR EVERY FUNCTION USE ONE A4 SIZE PAPER.

EX-2. PROJECT WORK (FOR CLASS XI -SEC-A)

EXPLAIN THE CONCEPT OF PARABOLA AND SOME OF ITS APPLICATIONS:

YOUR PROJECT WORK FILE MUST INCLUDES

(i) Students declaration/Abstracts

(ii) Introduction- which includes- the problem which you are going to solve ,goal of the problem, give some motivations to the problem.

(iii) Main Body –it should cover :how the problem will be approach, clearly label diagrams, table, graphs or any visual representation of the mathematics, define all variables.

(iv) Results and discussions –it will includes major results in summary form.

(v) Conclusion :here explain how your work meets the objectives set out in the introduction.

EX-3. PROJECT WORK (FOR CLASS XI -SEC-B)

EXPLAIN THE CONCEPT OF LIMIT OF A FUNCTION AT A POINT AND
GEOMETRICALLY VERIFY $\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 1$

YOUR PROJECT WORK FILE MUST INCLUDES

(i) Students declaration/Abstracts

(ii) Introduction- which includes- the problem which you are going to solve ,goal of the problem, give some motivations to the problem.

(iii) Main Body –it should cover :how the problem will be approach, clearly label diagrams, table, graphs or any visual representation of the mathematics, define all variables.

(iv) Results and discussions –it will includes major results in summary form.

(v) Conclusion :here explain how your work meets the objectives set out in the introduction.

SAINIK SCHOOL IMPHAL

(Session: 2021-22)

Class: XI (English)

Home assignments to be completed by cadets during winter vacation.

(Following question No. 1 and 2 are for both section **A** and **B**)

1. Write an essay on the following topic:

My dream of joining NDA (series of action plan).

(In about 500 words)

2. Define **ADJECTIVE** and each of its kinds with examples.

(In about 500 words)

Following question No. 3 and 4 are for **section - A**

Make videos of yourself speaking on each of the following topics in about 500 words:

3. *Taliban – good or bad for India.*

4. *Role of women in Indian Armed Forces.*

Following question No. 5 and 6 are for **section - B**

Make videos of yourself speaking on each of the following topics in about 500 words:

5. *New Education Policy-2020*

6. *Covid 19 and India's healthcare system*

(Answer to question No. 1 and 2 should be submitted to me personally **after** the winter vacation. However, the videos of question No. 3, 4, 5, and 6 should be sent to me **before** you report back to School. In case of any doubt, feel free to give me a call: **8414880669**).

SAINIK SCHOOL IMPHAL
WINTER VACATION ASSIGNMENT
CLASS: XI (2021-22)

A detail project report written in A4 size paper on the project assigned should be submitted on reporting back to the school after winter vacation or when you're ask to submit. List of projects along with adm. no of cadets to which the project is assigned is given below:-

Sr. No	Project Name	Adm. No
1	<u>PROJ-1:</u> Design an experimental setup to compare the strength and elasticity of soldering wires of 03 different brands by analysing their stress-strain graphs.	3759, 3761, 3762, 3765, 3775, 3776, 3778, 3779, 3781, 3785 & D-263
2	<u>PROJ-2:</u> Built a model to demonstrate Bernoulli's Principle. Explain in detail where this principle is applied taking 05 (five) different applications in day today's life.	3786, 3787, 3790, 3791, 3792, 3795, 3796, 3798, 3801 & 3805
3	<u>PROJ-3:</u> Measure of pressure exerted by a solid iron cuboid on sand	3806, 3807, 3808, 3812, 3813, 3815, 3819, 3822, 3824 & 3825
4	<u>PROJ-4:</u> Design an experimental set up to compare the buoyant force acting on an object by water, kerosene and diesel oil and to verify Archimedes' principle.	3828, 3829, 3832, 3834, 3836, 3838, 3840, 3841 3845 & 3847
5	<u>PROJ-5:</u> Design an experimental set up compare the thermal conductivity of aluminum, copper and iron wires of same dimensions.	3849, 3851, 3852, 3855 3856, 3858, 3859, 3861 4126 & 4146
6	<u>PROJ-6:</u> Design an experimental set up to observe change of state and plot a cooling curve for molten wax.	3760, 3763, 3766, 3767 3769, 3770, 3771, 3772 3773 & 3774
7	<u>PROJ-7:</u> Design an experimental set up to observe and explain the effect of heating on a bi-metallic strip.	3777, 3780, 3782, 3783 3784, 3789, 3793, 3794 3797 & 3800
8	<u>PROJ-8:</u> Design an experimental set up to study the effect of detergent on surface tension of water by observing capillary rise.	3803, 3804, 3809, 3810 3811, 3814, 3816, 3820 3821 & 3823
9	<u>PROJ-9:</u> Design an experimental set up to study the effect of load on depression of a suitably clamped metre scale loaded at (i) its end (ii) in the middle.	3827, 3831, 3833, 3835 3837, 3839, 3842, 3844 3846 & 3848
10	<u>PROJ-10 :</u> Design an experimental set up to observe the decrease in pressure with increase in velocity of a fluid.	3850, 3853, 3854, 3857 3860, 4127, D-261, D-262, D-265 & D-266

SAINIK SCHOOL IMPHAL

Winter Vacation Home Work

Subject: Chemistry

Class : XI

1. Report about the cleansing action of soaps and detergents. How would you classified soaps and detergents.

Write about the impact of soaps and detergents on environment particularly on aquatic biodiversity.

XI A (3759 to 3779); XI B (3760 to 3772)

2. Collect and report about the various medicinal plants found in Manipur. Report about the chemical values of these medicinal plants and uses.

XI A (3781 to 3795); XI B (3773 to 3789)

3. Write a note about petroleum fuels. How different petroleum fuels are abstracted from crude oil and write the processes involved. Write about the future source of energy.

XI A (3796 to 3815); XI B (3793 to 3810)

4. Write a note on hydrogen economy and about its manufacturing and transportation. Importance of Hydrogen gas as future source of energy.

XI A (3819 to 3836); XI B (3811 to 3831)

5. Report about the Green House effect caused by CO₂ gas. Merits and demerits of Green House effect. Main contributor of CO₂ gas and techniques to reduced CO₂ gas from atmosphere.

XI A (3838 to 3852); XI B (3833 to 3848)

6. Write a note on pollution. Explain about different types of pollution and its preventive measures.

XI A (3855 to D-263); XI B (3853 to D-266)