VASISHTHA GENESIS SCHOOL, BABEN, BARDOLI

12 Science

DIWALI HOLIDAY ASSIGNMENT

1) MATHEMATICS

Prepare a brief overview of the following chapters –

Integrals, Vector Algebra, Three-Dimensional Geometry.

The Overview should include:

- Relevant formulas that are essential for understanding and solving problems.
- Identify key concepts, definitions or principles related to the topic.
- Include examples / diagrams / mind maps to clarify concepts.

Present your homework in a clear and organized manner in your Class Notebook using headings, bullet points are numbered lists to structure your content.

This practice will help you understand the concepts better and prepare you for upcoming lessons and examination.

2) BIOLOGY

Instructions:

a. Write a note on the following topics in about 150-200 words

b. This task is to be completed in your Class Biology Notebook.

Noble prize in Medicine 2024: Discovery of microRNA and its role in post-transcriptional gene regulation.

NexCAR19 CAR T-cell therapy country's first 'Made in India' CAR T-cell therapy for treatment of cancer.

Bio-pesticides consumption in India: insights to the current trend.

What is patent? Mention the patent procedure in India with steps, timeline and cost.

3) PHYSICS

Complete the given set of questions in the worksheet provided in the class and answer in your Physics note book.

For reference :

https://drive.google.com/file/d/1RuYdsuEPZ3Cfo764JmEyIh19kLwR_vHY/view?usp=drivesdk

4) CHEMISTRY

Complete the given set of questions in your chemistry note book.

(Questions are attached hereby:-)

5) ENGLISH

The **CBSE ALS Project-Portfolio/Project Report** as given in the class. Kindly make the project on the basis of Guidelines provided by your subject teacher. Submit your projects by 20th November 2024 to your respective subject teacher.

Solve sample and Board papers of the year 2022, 2023 and the sample paper of 2024 given by Board.

Same shall be shared in official Wats-app VGS group.

IMPORTANT NOTE:

- The project is to be prepared on A4 size Coloured Project Papers (hand written) / Colour Print out (Digital) and put into a Spring File before submission.
- The project should be completed within 20-25 pages.
- Photos are to be attested as evidence and references – Related to findings during research, Pie Charts, Graphs.

6) INFORMATICS PRACTICES

Project Work (using concepts learned in class XI and XII)

- The aim of the class project is to create tangible and useful IT application. *The learner may identify a real-world problem by exploring the environment. e.g. Students can visit shops/business places, communities or other organizations in their localities and enquire about the functioning of the organization, and how data are generated, stored, and managed.
- The learner can take data stored in csv or database file and analyze using Python libraries and generate appropriate charts to visualize.
- Learners can use Python libraries of their choice to develop software for their school or any other social good.
- Learners should be sensitized to avoid plagiarism and violation of copyright issues while working on projects. Teachers should take necessary measures for this. Any resources (data, image etc.) used in the project must be suitably referenced.
- The project can be done individually or in groups of 2 to 3 students. The project should be started by students as per discussion in computer lab.
- Student(s) was/were already assigned his/her project in computer lab.

Sample Internet : link1 https://sultan-chand.com/ws/ipp12/#p=41 || link 2 : Informatics_Practices_SrSec_2024-25.pdf

OR

If project Work Completed then complete CBSE Papers
1. 2024-25 Sample Paper
2. 2023-24 Sample Paper
3. 2023-24 Board Exam Paper
4. 2023-24 Board Compartment Paper

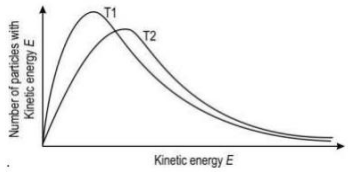
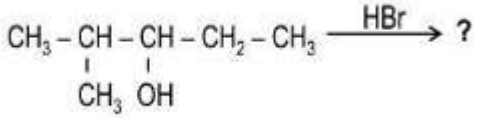
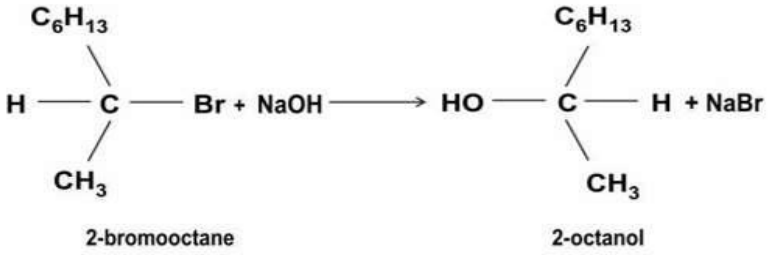
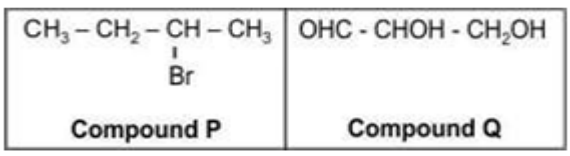
link1 : link2 :

7) PHYSICAL EDUCATION

Practical 1: Sai Khelo India Test to be attempted as instructed.

Practical 2: Procedure for Asanas. Also state benefits and contraindication for any two Asana for each lifestyle diseases.

	CHEMISTRY ASSIGNMENT **Write Answers of following questions -**	
1	Some countries use the colligative property of solutions to remove the snow from the roads. The snow is salted with NaCl or CaCl2, lowering its freezing point and causing it to melt and clear the space. Assuming that NaCl dissolves completely in ice and forms an ideal solution, what mass of NaCl must be dissolved in 5.5 kg of ice on the road to decrease the melting point of water to -10°C? (Kf = 1.86 °C kg/mole; atomic mass of sodium = 23 g/mol, atomic mass of chlorine = 35.44 g/mol)	1
2	Rakesh took 20 g of solute A to prepare a 50 ml solution. This solution is isotonic to another solution of the same volume with a weight of 40 g of a different solute B. (i) If both the solution is prepared at the same temperature, then what is the ratio of molecular mass of solute A to that of B? (ii) If the two solutions are placed at different temperatures, keeping all other variables constant, and separated by SPM, will the osmosis happen, and why?	1
3	One of the key ingredients in some toothpastes is Sodium Fluoride. However, the concentration of this chemical compound is very low. This concentration can be expressed in ppm (parts per million) that is 1 ppm represents a concentration of 1 mg of sodium fluoride in 1 kg of the toothpaste. (i) A 1.00 g sample of toothpaste was found to contain 2.88 x 10–5 mol of sodium fluoride. What is the concentration of sodium fluoride, in ppm, for this sample of toothpaste? (ii) Sodium fluoride is toxic in high concentrations. Major health problems can occur if concentrations of sodium fluoride are greater than 3.19 x 10–2 g per kilogram of body mass. Deduce the maximum mass ofsodium fluoride, in mg, that a 75 kg person could swallow without reaching the toxic concentration. (iii) The concentration of sodium fluoride in a prescription toothpaste is 2800 ppm. Use your answer to Question (ii) to deduce the mass of toothpaste, in kg, that a 75.0 kg person could swallow without reaching the toxic concentration.	1
4	The osmotic pressure of a protein solution is 0.6 atm at 283 K. If the temperature of the solution is increased to room temperature (298 K) and a few glasses of water are added to it to make it more dilute, the osmotic pressure becomes 0.3 atm. Find the volume of the final solution in terms of the initial volume of the solution?	1
5	During a titration, 240 ml of NaOH reacted completely with 100 ml of H2SO4 solution. The weight of H2SO4 taken was 9.8 g. i) What is the molarity of the NaOH used? ii) Calculate the amount of NaOH dissolved in solution. iii) How many grams of NaOH should be added to the original NaOH solution to make one litre of 0.5M NaOH solution? (Molecular mass of NaOH is 40g/mol and molecular mass of H2SO4 is 98 g/mol.)	1
6	Imagine you are in a chemistry lab and the teacher is explaining the electrolysis of CuSO4 solution and the products liberated after electrolysis. The teacher made two Setups for the electrolysis process. In Set up-i electrolysis of CuSO4 solution is done by using Pt electrodes and in Set up-II electrolysis of CuSO4 solution is done by using Cu electrodes. Answer the following questions based on this: i) In which Set up I or II will the colour of CuSO4 solution fades away and why? ii) Write the chemical reaction taking place at the Cu anode in Set up II. iii) Name the product obtained at the anode in Set up I. iv) Which out of Set up I or II depict refining of crude copper	1
7	One Faraday of electric charge is passed through the electrolytic cells placed in a series containing solution of Ag+ , Cu2+and Al3+respectively.Find out the simple mass ratio of the metals deposited at the respective electrodes. (Given - Atomic mass Ag=108g, Cu=63.5g. Al=27g)	1
8	The manufacturers of canned food use anti-microbial compounds as preservatives to control the concentration of	1

	microbes, maintaining the quality of food. The food corporation of India mandates that the concentration of a microbe in any particular canned food would be unacceptable (and the food will be expired) with a maximum +40% change from the initial concentration value of the microbe. Mitra bought canned food. She noted that the manufacturing date on the can was 1 st April 2022. Based on this, what should be the expiry date of this food? (Note: The average rate constant of microbial decay is 4 day)	
9	Carbon dating is used by archaeologists to date trees, plants, and animal remains as well as human artefacts made from wood and leather. If an archaeologist found that the percentage of carbon-14 in the remains of an animal was 10% of what carbon-14 was in the animal's body when the animal died, find the age of this sample. (Given the half-life of carbon-14= 5730 years)	1
10	The graph below shows the Maxwell-Boltzmann curve for a sample of nitrogen gas at temperatures T1 and T2 (i) Between T1 and T2, which is the higher temperature? (ii) Based on your answer to part (i), explain the reason behind the two curves at different temperatures. 	1
11	Tushar has a mixture of two powders one of which is an aldehyde and the other an alkane. Both the powders are insoluble in water. The two powders can be separated by a method based on a chemical property of aldehydes. Describe the steps in this method to separate the two powders.	1
12	(a) Predict the main product of the following reaction. (b) Write the reaction mechanism to explain why this isomer (the main product in the above reaction) predominates. 	1
13	(a) Write the chemical equation for the Haloform reaction of acetone with sodium hypochlorite solution. (b) Will 3-pentanone undergo the Haloform reaction with sodium hypochlorite? Justify your answer.	1
14	Both aldehydes and ketones produce carboxylic acids on oxidation. (a) With respect to the number of carbon atoms, state the difference in the carboxylic acids formed when: (i) an aldehyde is used as a reactant (ii) a ketone is used as a reactant. (b) Give one reason for this difference in each case.	
15	Between 4-nitrobenzaldehyde and benzaldehyde, which will be more reactive to nucleophilic addition reactions? Explain why	
16	Esterification of a carboxylic acid with an alcohol in the presence of mineral acid as catalyst is a reversible reaction. Suggest two things that can be done with the products formed to push the reaction in the forward direction.	
17	2-bromooctane reacts with alcoholic NaOH to give 2-octanol as shown (a) Identify the type of substitution reaction mechanism. Justify your answer. (b) What effect will it have on the rate of the reaction if: (i) the concentration of NaOH is reduced by half? (ii) the concentration of 2-bromooctane is reduced by half? 	
18	(a) Which of the following two compounds has a chiral centre? (b) Two compounds X and Y are enantiomers of each other. Name one physical property that: (i) is the same for X and Y. (ii) is different for X and Y. 	
19	A mixture of 0.5 moles acetaldehyde and 0.5 moles diethyl ketone is treated with 1 mole of sodium cyanide (NaCN). What will be the major product in this reaction? Give two reasons for your answer	
20	Write the structure of the intermediate and the final product formed by the self aldol condensation of cyclohexanone.	