THE JAIN INTERNATIONAL SCHOOL, KANPUR

Quality Education in a disciplined environment

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Summer

HOLIDAY

HOMEWORK

CLASS:- XI S (2024-25)

The Jain International School, Kanpur

Class XI

SUBJECT	HOMEWORK ASSIGNED
ENGLISH	**Question 1.** The lesson 'The Portrait of a Lady' suggests a growing distance between the younger and older generation. Write a speech in about 150-200 words to be delivered in the morning assembly of the school on the above topic, on the basis of your reading of the text. **Question 2.** Read the Newspaper daily and write only one news article under the given headings like- National, International, Sports, Glamour, Business and express your views on it.
MATHS	**Do the worksheet and plan for working model**
PHYSICS	Do the worksheet in class note book.
CHEMISTRY	Do the given worksheet
BIOLOGY	1.Prepare a working model of Bacteriophage and HIV. Write about your project on chart paper. 2. Do the given worksheet in your biology notebook.
P.ED	Make a project in lab manual Practical 1: fitness test administration (SAI Khelo India test) Practical 2 procedure for asana benefits and contraindication for any tu asanas for each lifestyle disease Practical 3 anyone one IOA recognised sports games of choice level diagram field and equipment also mention rules and regulation skills Make a project on your choice games (individual games) draw a diagram of your sports field or court in chart paper
CS/IP	Make a working model of Arnav Katiyar i) Aditya L1 Japneet ii) Robotics Vacuum Cleaner Jayati iii)Drone Vasundhara iv)Home Security System Kartikey v)Smart Bridge

SHRINATHJI Group of Institutions

THE JAIN INTERNATIONAL SCHOOL, KANPUR

CLASS – XI **CHEMISTRY (HOLIDAY HOMEWORK)**

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1. What will be the molarity of a solution, which contains 5.85g of NaCl(s) per 500 mL?
   (a) 4 mol L^{-1} (b) 20 mol L^{-1} (c) 0.2 mol L^{-1} (d) 2 mol L^{-1}
2. A measured temperature on Fahrenheit scale is 200°F. What will this reading be on Celsius scale?
   (a) 40°C (b) 94°C (c) 93.3°C (d) 30°C
3. What will be the molality of the solution containing 18.25 g of HCl gas in 500 g of water?
   (a) 0.1 m (b) 1 M (c) 0.5 m (d) 1 m
4. What is the mass percent of carbon in carbon dioxide?
   (a) 0.034 % (b) 27.27 % (c) 3.4 % (d) 28.7%
5. The empirical formula and molecular mass of a compound are CH_2O and 180 g respectively. What will be the molecular formula of the compound?
   (a) $C_9H_{18}O_9$ (b) CH_2O (c) $C_6H_{12}O_6$ (d) $C_2H_4O_2$
6. 16 g of oxygen has same number of molecules as in
   (a) 16 g of CO (b) 28 g of N_2 (c) 14 g of N_2 (d) 1.0 g of H_2
7. How many atoms and molecules are present in 64 g of sulphur? (At. Mass of S =32)
   Ans- 1.506×10^{23} molecules, 1.2048×10^{24} atoms.
8. Chlorophyll the green coloring matter of plants responsible for the photosynthesis contains 2.68 % of magnesium by weight. Calculate the number of Mg atoms in 2.0 g of chlorophyll.
   (At mass of Mg = 24) Ans- 1.345×10^{21}
9. Calcium carbonate reacts with aqueous HCl to give $CaCl_2$ and CO_2 according to the reaction,
   $CaCO_3$ (s) + 2 HCl (aq) → $CaCl_2$ (aq) + CO_2(g) + H_2O(l)
   What mass of $CaCO_3$ is required to react completely with 25 mL of 0.75 M HCl?
   (At. Mass of Ca =40,Cl=35.5,C=12,O=16, H=1) Ans- 0.938g
10. Chlorine is prepared in the laboratory by treating manganese dioxide (MnO_2) with aqueous hydrochloric acid according to the reaction
    4 HCl (aq) + MnO_2(s) → $2H_2O$ (l) + $MnCl_2$(aq) + Cl_2 (g)
    How many grams of HCl react with 5.0 g of manganese dioxide?
    (At. Mass of Mn =55 ,Cl=35.5,O=16, H=1) Ans- 8.40 g
11. 50.0 kg of N_2 (g) and 10.0 kg of H_2 (g) are mixed to produce NH_3 (g). Calculate the NH_3 (g) formed. Identify the limiting reagent in the production of NH_3 in this situation.
    Ans- hydrogen is limiting reagent, 56.21 kg NH_3
12. An organic compound on analysis gave the following percentage composition C = 57.8%, H= 3.6 % and rest is oxygen. The Vapour density of the compound was found to be 83. Find out the molecular formula of the compound. [Atomic mass of H=1, C=12 & O =16]
13. Calculate the molality, molarity and normality of 15 % H_2SO_4 solution (density 1.10 g/ ml).
    Ans- 1.8m, 1.68M, 3.36N
14. The density of 3 M solution of NaCl is 1.25 g mL^{-1}. Calculate the molality of the solution.
    Ans- 2.79
15. Mixture of ethyl alcohol and water contains 54 % of water by weight. What will be the mole fraction of ethyl alcohol? Ans- 0.25

The Jain International School

Class- XI

Subject- Mathematics (Holiday Assignment)

2024-25

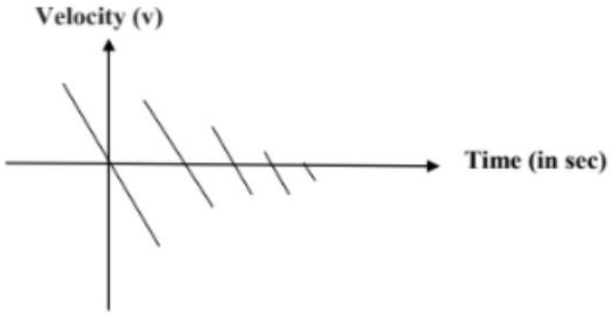
1) Given U = {x: x≤ -5}$\cap$ {$x \in Z: x \geq -5$}. List the elements of the given set.
2) Given U = {x : x≤ 15} $and\ B = \{x: 10 < x < 25\}: list$
   i) A' ii) B' iii) $A' \cup B'$ $iv)\ A' \cap B'$
3) Draw Venn-diagrams to represent:
   i) $A \cup B'$ $ii)\ A \cap B'$ $iii)\ A' \cap B'$
4) The combined membership of the Mathematics Association and Science Club is 122. What is the membership of Science Club if 50 are known to be members of the Mathematics Association and 28 are members of both the organizations ?
5) In a group of 28 persons , 9 take tea but not coffee and 16 take tea. How many take coffee but not tea ?
6) Out of a group of 120 students, 90 take Mathematics and 72 take History. If 10 students take neither of the two, how many take both ?
7) Of the members of three athletic teams in a certain school, 21 are on the basketball team, 26 on the hockey team and 29 on the football team, 14 play hockey and basketball, 15 play hockey and football, and 12 play football and basketball, 8 are on all the three teams. How many members are there altogether ?
8) A survey shows that 80% of the Indians like apples, whereas 53% like oranges. What percentage of Indian like both apples and oranges.
9) Prove that:
   $\frac{\tan 5x+\tan 3x}{\tan 5x-\tan 3x} = 4\cos 2x \cos 4x$
10) Prove that: $\tan 75^\circ + \cot 75^\circ = 4$
11) Prove that :
   $\frac{\cos x+cox\, y}{\cos x-cosy} = \cot\left(\frac{x+y}{2}\right)\cot(\frac{x-y}{2})$.
12) Prove that: $\frac{\sec 8x-1}{sec\ 4x-1} = \frac{\tan 8x}{\tan 2x}$
13) Prove that: $\frac{(\cos x-\cos 3x)(\sin 8x+\sin 2x)}{(\sin 5x-\sin x)(\cos 4x-\cos 6x)} = 1.$
14) If sin x = $\frac{15}{17}$, cos y = $\frac{12}{13}$, find the value of cos
   (x$-y$), tan$(x+y)$, sin$(x+y)$, $[x\ and\ y\ are\ positive\ acute\ angle]$.
15) Find the general solution for each of the following equations :
   i) sin 5x = sin x ii) tan 3x + cot $(\frac{\pi}{6}+x)$ = 0.
16) Find the general solution: $\sqrt{3}cot^2x - 4\cot x + \sqrt{3} = 0.$
17) Find sin 2x, cos 2x and tan 2x :
   If sin 2x = $\frac{\sqrt{3}}{2}$, $A\ lies\ in\ quardrant\ I.$
18) If 0 < x < π and cos x + sin x = $\frac{1}{2}$, then find the value of tan x.
19) If sin A = n sin B, then prove that: $\frac{n-1}{n+1}tan\frac{A+B}{2} = \tan(\frac{A-B}{2})$.
20) If cos x + $cos^2x = 1, then\ the\ value\ of\ sin^2x + 3sin^{10}x + 3sin^8x + sin^6x - 1.$
21) If $\frac{1+\cos x}{1-cox\,x} = \frac{m^2}{n^2}, then\ prove:\ tan\ x = \pm\frac{2mn}{m^2-n^2}$.
22) If cot x + cosec x = $\sqrt{3}, then\ find\ the\ principal\ value\ of\ (x - \frac{\pi}{6})$.

Physics by- Mohit Sir-The Jain International School-Unit and Dimension and motion in straight line.

1. **Derive equations of motion using velocity –time graph**
2. **Derive kinematicequations of motion using method of calculus where acceleration of body is constant.**
3. **A car is moving along a straight line, say OP in Fig. 3.1. It moves from O to P in 18 s and returns from P to Q in 6.0 s. What are the average velocity and average speed of the car in going (a) from O to P? and (b) from O to P and back to Q ?**
4. **car covers first half of the total distance with a speed of 36 kmh^{-1} and the second half with speed of 54 km h^{-1}. Find the average speed of the car.**
5. **A bus at rest accelerates uniformly to a velocity of 54 kmh^{-1} in 20 s. How much distance is travelled by the bus in 20 s?**
6. **The displacement of a particle starting from rest (at t= 0) is given by $x= 6t^2 –t^3$. Calculate the time at which the particle will attain zero velocity again.**
7. **Displacement of a particle is given by the expression $x = 3t^2+ 7t – 9$, where x is inmeter and t is in seconds. What is acceleration?**
8. **A particle is moving along x- axis. The position of the particle at any instant is given by $x= a+bt^2$, where a = 6m and b= 3.5 ms^{-2}, t is measured in second.**
   Find (i) the velocity of the particle at t =0 and t= 3 s.
   (ii) the average velocity between t= 3s and t= 6 s.
9. **A ball is thrown vertically upwards with a velocity of 20 m s^{-1} from the top of a multistorey building. The height of the point from where the ball is thrown is 25.0 m from the ground. (a) How high will the ball rise ?and (b) how long will it be before the ball hits the ground? Take g = 10 m s^{-2}.**
10. **The displacement x of a particle moving in one dimension under the action of constant force is related to time t by the relation**
    $t = \sqrt{x+3}$ **, where x is in meters and t in seconds.**
11. **Two parallel rail tracks run north-south. Train A moves north with a speed of 54 km h^{-1}, and train B moves south with a speed of 90 km h^{-1}. What is the**
(a) velocity of B with respect to A ?,
(b) velocity of ground with respect to B ?,
(c) velocity of a monkey running on the roof of the train A against its motion (with a velocity of 18 km h^{-1} with respect to the train A) as observed by a man standing on the ground ?
12. **A particle is moving along x- axis. The position of the particle at any instant is given by $x= 20+0.1t^2$, where x is measured in meter and time t is measured in second.**
    Find (i) the average acceleration of the particle between t =2 and t= 3 s.
    (ii) show that acceleration of the particle is constant.
13. **A police van moving on a highway with a speed of 30 kmh^{-1} fires a bullet at a thief's car speeding away in the same direction with a speed of192 kmh^{-1} . If the muzzle speed of the bullet is 150 ms^{-1}, with what speed does the bullet hit the thief'scar ? (Note: Obtain that speed which is relevant for damaging the thief's car).**

Physics by- Mohit Sir-The Jain International School-Unit and Dimension and motion in straight line.

1. **Suggest a suitable physical situation for the following graph.**



2. **Can a body be said to be at rest as well as in motion at the same time? Explain.**

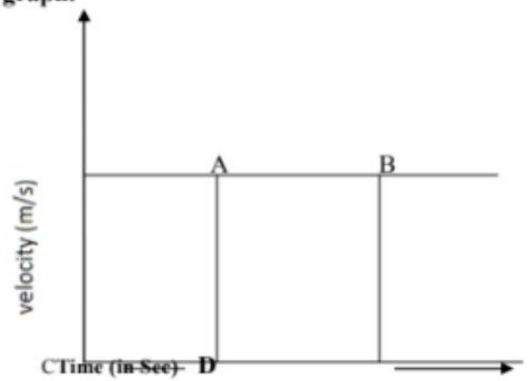
3. **Write the characteristics of displacement?**

4. **What are positive and negative acceleration in straight line motion?**
5. **Define instantaneous speed and instantaneous velocity of a body. What does speedometer in a vehicle measure?**

6. **Draw displacement time graph for uniformly accelerated motion. What is its shape?**

7. **The displacement of a body is proportional to t^3, where t is time elapsed. What is the nature of acceleration- time graph of the body?**

8. **Show that displacement covered by a body is equal to the area under velocity- time graph.**



WORKSHEET-1

CLASS-XI

BIOLOGY

CHAPTER-LIVING ORGANISMS

Q1There are millions of plants and animals in the world and they have local names which vary place to place and country to country, in different languages. In a need to standardize the naming of living organisms such that a particular organism is known by the same name all over the world , the scientists have established procedures and principles to assign scientific names.

a) What is nomenclature ?
b) Expand ICBN and ICZN.
c) Indicate the value learnt from this concept.

Q2 If you look around you see large varieties of living organisms with naked eyes and microbes with the help of microscopes. Classification of all these is not a single step process, but involve a hierarchy of steps where each step represent a rank or category.

a) What is taxonomic hierarchy ?
b) Name the lowest category and highest category in the hierarchy.
c) What is the value shown by arranging the organisms in these categories ?

Q3 Taxonomists have developed a variety of taxonomic aids to facilitate identification and naming of organisms. These studies are carried out from the actual specimens collected from the field or those preserved as referrals.

a) Name any four forms of taxonomic aids. Of these, where can you find live specimens?
b) What are taxonomic keys ?
c) Indicate the value learnt from such aids.

Q4 When we try to define 'living' we look for certain distinctive characters exhibited by living organisms ; they include, growth reproduction , ability to sense the environment and respond , interact, metabolism.

a) Certain properties like reproduction and growth cannot be taken as overall defining characters of living organisms. Give reasons
b) Mention two characters that can be defining properties of life forms.
c) What value you attach to living ?

Q5 Taxonomy is not something new, human beings are interested in knowing more and more about the various kinds of organisms, especially with reference to their own use; hence the earliest classification were based on the uses of various organisms.

a) What is syatematics ?
b) What is scope of syatematics as of today ?
c) What forms the basis of modern taxonomy ?
d) Indicate the value shown by this branch of biology.

WORKSHEET-2

CLASS-XI

BIOLOGY

CHAPTER-BIOLOGICAL CLASSIFICATION

Q1 In five kingdom system of Whitteker how many kingdoms are eukaryotes ?

Q2 Though bacteria have the simplest structure , they are very complex in behavior. Bacteria as a group shows extensive metabolic diverdity.

a) Give two points to substantiate that bacteria show extensive metabolic diversity.
b) Which of the two – autotrophs or heterotrophs are abundant in nature.

Q3 The boundaries of kingdom protista are not well defined. The kingdom forms link with other kingdoms of Fungi, plantate and animalia.

a) Why is kingdom protista considered an artificial assemblage of organisms.
b) How do slime mould resemble fungi on one hand and Amoeba like organisms on the other hand.

Q4 Differentiate between Virus and viriods.

Q5 Why is the need for classifying organisms ?

Q6 How did Aristotle classify plants and animals?

Q7 Why is two kingdom classification was found to be insufficient ?

Q8 What is two kingdom classification ? Who proposed it ?

Q9 Give two examples where fungi are found as symbionts .

Q10 What is the major difference between conidia and sporangiophore ?

WORKSHEET-3

CLASS-XI

BIOLOGY

CHAPTER- PLANT KINGDOM

Q1Fill in the blank A and B. Besides chlorophyll the pigment present in red algae is (A) and in brown algae is (B).

Q2 Why are bryophytes called amphibians of plant kingdom ?

Q3 In bryophytes male and female sex organs are called _____ and _____ respectively .

Q4 Most algal genera show haplontic life cycle . Name an alga which is (a) haplodiplontic b) Diplontic

Q5 What do you understand by alternation of generation. Briefly describe a) Haplontic b) Diplontic and c) Haplodiplontic type of life cycle.

Q6 Mention two criteria used for classification of algae.

Q7 What are the ecosystem services carried out by algae?

Q8How are algae commercially useful to mankind ?

Q9 What are the two conditions that are considered as precursor of seed habits ?

Q10 Name two pteridophytes that are heterosporous.

Q11 How is gametophyte of bryophyte different from that of gymnosperms ?