



# Malpi International School

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**We wish you and your family a merry Christmas and Happy New Year 2021 and hope this New Year will bring more joy and happiness to you all**

## **Winter Holidays Assignment**

### **Grade XII (Science)**

#### **Subject: Physics**

1. State and explain Brewster Law.
2. What is Polarization? Describe the phenomena using the Polaroid.
3. Can sound waves be polarized? Explain
4. State and explain Kirchhoff law.
5. What is the condition of a Wheatstone bridge? Derive the condition for Wheatstone bridge.
6. What is EMF and Potential Difference? Establish a relationship between them. Is Emf always greater than terminal potential? Give reasons
7. How can a Galvanometer be converted into an ammeter using shunt?
8. How can a Galvanometer be converted into a voltmeter using a multiplier?
9. Verify experimentally the joules law of heating.
10. Why the ammeter is always connected in series?
11. Why the voltmeter is always connected in parallel?

**Feel free to contact Lekhraj Pandey (+977-9865055710) or text me in my mail at [pandeyekhraj4447@gmail.com](mailto:pandeyekhraj4447@gmail.com) if you have any concerns or queries.**

#### **Subject: Zoology**

**Prepare a PowerPoint presentation report on "Development of frog with different stages: Fertilization, cleavage, morulation, blastulation, gastrulation formation of**

germinal layers, coelom and tissue formation. (You may also include short video clips in your Power point presentation)

You can visit website: [www.kullalab.com](http://www.kullalab.com), [www.kullakitab.com](http://www.kullakitab.com) or Download NEB class 12 biology notes offline APPs. For more information.

**Teacher Facilitator: Yogeeta Chetry** [chetryyogeeta25@gmail.com](mailto:chetryyogeeta25@gmail.com)

**Phone: 9841132168**

## **Subject: Chemistry**

### **Group 'A'**

1. Define hybridization. Draw the orbital picture of any hydrocarbon showing tetrahedral structure.
2. Nitrogen of ammonia gets  $sp^3$ -hybridization but ammonia molecule has trigonal pyramidal geometry. Give reason.
3. Define the terms: a) acidimetry b) alkalimetry c) equivalence point
4. A sample of  $Na_2CO_3$  weighing 0.53 gm is added to 100 ml of 0.1 N  $H_2SO_4$  solution, will the resulting solution be acidic, basic or neutral?
5. Define the ionic product of water.
6. Calculate the pH of solution having  $10^{-9}$  M HCl solution.
7. Define the term state function.
8. State and explain first law of thermodynamics.
9. What is meant by order of a reaction? Calculate the order of reaction having rate constant  $2 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ .
10. A primary haloalkane (X) if allowed to react with KCN yields a compound (Y) which on acidic hydrolysis give propanoic acid. Identify X and Y.
11. Why is chloroform stored in dark coloured bottle?
12. Define Huckel rule with suitable example.
13. Why it is difficult to undergo nucleophilic substitution in haloarene?
14. What happens when sodium salt of benzoic acid is heated with sodalime?
15. How would you convert chlorobenzene into DDT.

### **Group 'B'**

16. How is chloroform prepared in laboratory? Starting from chloroform, how will you prepare a) acetylene b) ethyl isocyanide c) chloroform d) potassium formate
17. How would you prepare haloalkane from a) alcohols b) alkenes and c) alkanes ?
18. Write short note on a) Friedel Craft's reaction b) characteristics of aromatic hydrocarbon.
19. State Hess's law of constant heat summation. Heat of combustion of methane, carbon, and hydrogen are -210 Kcal, -94 Kcal, and -68 Kcal respectively. Calculate the heat of formation of methane.
20. Define Bronsted-Lowry concept of acid and base with an example of each and mention its limitations.
21. Write short note on solubility product principle and its applications.
22. The solubility product constant ( $K_{sp}$ ) of  $Ca(OH)_2$  at  $25^\circ C$  is  $4.42 \times 10^{-5}$ . A 500 ml of saturated solution of  $Ca(OH)_2$  is mixed with an equal volume of 0.4 M NaOH. What mass of  $Ca(OH)_2$  is precipitated out?

23. Define primary standard solution. List the requisite for the substance to be primary standard substance.

**If there is any queries fell free to contact me at [lamasanjiv029@gmail.com](mailto:lamasanjiv029@gmail.com)**

Subject: Mathematics

Please do all the problems from the topic Vector and Vector Geometry from the past paper, year 2074, 2075, 2076.

If you have any queries feel free to contact me at

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Email: [ranjan.ghimire2046@gmail.com](mailto:ranjan.ghimire2046@gmail.com)

**Subject: Nepali**

हृदयचन्द्र सिंहद्वारा लिखित उपन्यास, एक चिहानु पढेर उपन्यासकाे साराश, मुख्य पात्रहरुकाे परिचय लेखेर प्रस्तुत गर्नुहाेस्

Happy holidays!!!