ARMY PUBLIC SCHOOL BIRPUR, DEHRADUN

SUMMER HOLIDAY HOMEWORK

CLASS XI

MATHS

GENERAL INSTRUCTIONS:

1. Do extra questions in your class notebook.

2. Do the activities in the lab manual.

3. Project will be in inter- leaf pages.

(i) 20 extra questions of the chapters covered in the classroom.

(ii) Lab manual activities from 1 to 6 have to be done in the lab manual.

(iii) Project Work/ Case studies:

Class will be divided into different groups with four / five students in each group.

TOPIC ALLOTTED: Sets, Relation and function

Note: Students can use any one of below mentioned sub topics or any sub topic of their choice to make a project on sets, relation and function

Sub topics:

Integration with other subjects.

The concept of sets, relations and functions can be integrated into various other disciplines such as physics, computer science, and economics. Students can be courage to explore the connections and apply their understanding of sets, relations and functions in the contexts. Science Students will learn about the applications of sets, functions and relations in various scientific fields, such as physics, biology, and chemistry.

Real-Life Linkage:

The concept of sets relations and functions can be linked to real-life situations such as income and expenditure, population growth, and demand and supply in economics. Students will explore these connections and apply their understanding of sets, relations and functions in the contexts.

Art Integration:

The concept of sets, relations and functions can be integrated with art by exploring the graphical representation of functions. Students will create their own graphs and identify the characteristics of different types of functions. This can help them develop their creativity and Visualization skills

Sustainable Development Goals:

The concept of sets, relations and functions can be linked to Sustainable Development Goals such as Goal8: Decent Work and Economic Growth, Goal 10: Reduced Inequalities and Goal 16: Peace, Justice, and Strong Institutions. Students will explore these connections and apply their understanding of sets, relations and functions in the contexts.

GENERAL GUIDELINES:

- The project is to be done on inter-leaf sheets.
- The total length of the project will be 15-20 pages.
- Students have to preserve the initial drafts of the project as well as any research papers that they may have used.
- Students have to be prepared to give a presentation of the project in the class.
- A summary/synopsis (one page) of the project has to be prepared covering:

The objective statement, their observations and findings the learning outcomes

- Any other learning from this exercise such as skills of team work, problem solving, time management, information collection, processing, analyzing and synthesizing relevant information to derive meaningful conclusions;
- The projects must be neat and well-presented and must be completely hand-written.
- No whiteners to be used or written matter to be crossed out. In case of any mistakes, redo the sheet.
- Do not number sheets or write dates unless so instructed.
- Colour illustrations, graphs may be hand drawn or printed (if it is relevant for any aspect of your project) are welcome to make them look attractive

BIOLOGY

1. Prepare PowerPoint presentation on - Cell Cycle and Cell Division
2. Make a herbarium file pasting the dried specimens of flowers and their leaves belonging to different families giving their classification including Botanical name, Vernacular name and family. Write down two points of their importance too.
3. Complete your Practical and Project file.
4. Revise the syllabus covered and prepare well for the test.
5. Make the Project file on the given topic.

PHYSICS

(A) Prepare a slide show /PPT with audio (minimum 20 Slides) . The topic can be chosen from the mentioned list .

Topics (any one)

(1) Laws of motion
(2) Work , Energy and Power
(3) Gravitation
(4) System of Particles and Rotational motion
(5) Mechanical Properties of fluids
(6) Behaviour of Perfect Gases and Kinetic Theory of Gases
(7) Oscillations
(8) Waves

(B) Do following questions in physics holiday homework notebook.

Ques 1) Find the value of 100 J on a system which has 20cm , 250 g , and half minute as fundamental units of length , mass and time .

Ques 2) Convert a power of one mega watt on a system whose fundamental units are 10 kg,1 dm and 1 $minute$.

Ques 3) If the unit of force is kN ,the length is 1 km and time 100s ,then what will be the unit of mass ?

Ques 4) When one metre, one kg and one minute are taken as fundamental units, the magnitude of a force is 36 units. What is the value of this force on CGS system

Ques 5)A small spherical ball of radius r falls with velocity υ through a liquid having

coeffiecinet of viscosity η. find viscous darg F on the wall if it depends

or $r,\upsilon,\eta.TakeK$=6π

Ques 6) The frequency (n) of a tuning fork depends upon the length (L) of its prongs, the density (d)

and Young's modulus (Y) of its material. On the basis of dimension analysis , derive an

expression for frequency of tunning fork.

Ques 7) Find the dimensions of a / b in the equation: F=a √x +bt^2, where F is force, x is

distance and t is time.

Ques 8) The energy E of a photon of light is related to its frequency f as E = hf. Here, h is Planck's constant. The value of Planck's constant is h = 6.62 x 10^{-34} J-s. Covert it into the CGS system of units.

Ques 9) The frequency (n) of a tuning fork depends upon the length (L) of its prongs, the density (d) and Young's modulus (Y) of its material. It is given as n∝LadbYc. The values of a,b and c are :

Ques 10) The air bubble formed by explosion inside water perform oscillations with time period T which depends on pressure (*p*), density (*ρ*) and on energy due to explosion (*E*). Establish relation between T, *p, E* and *ρ.*

Ques 11) State the number of significant figures in the following :

(i) 0.0070300m (ii) 2.73 X 10^{-7} kg (iii) 1.0850 m (iv) 5.097 x 10^3 s

Ques 12) The period of vibration of a tuning fork depends on the length l of its prong, density ρ and Young's modulus 'Y' of its material. Then, the expression for the period of vibration will be use method of dimensions.

Ques 13) Convert 1 J to erg.

Ques 14) In vander Waal's gas equation (P+a/V^2)(V−b)=RT . Determine the dimension of a and b.

ENGLISH

1. Design a poster on Diversity.

2. Write a speech on Media-A pillar of Democracy.

3. Prepare a Thankyou card for your grandparents and in it mention one of their characteristic traits that inspires you the most.

Do all the above work in a separate thin notebook.

4. Watch the assigned movie:-A Plastic Ocean

Compile the following in a file.

- Introduction
- Plot construction
- Characters
- Objective/ message
- Review

INFORMMATIC PRACTICES

Complete the following questions in IP practical file.

1) What does a cross platform language mean?

2) Following set of commands are executed in shell, what will be the output?

```
>>>str=”hello python”
>>>str *2
```

3) Which of the following identifiers are invalid? Give reason for its invalidity.

a) 90_a = 1

b) a-6 = 1

c) break = 7

4) Write the purpose of id( ) and type ( ) functions in Python.

5) What is the difference between keywords and identifiers?

6) What are the advantages and disadvantages of working in the interactive mode in Python?

7) Evaluate the following expressions manually:

(i) (2 + 3) ** 3 - 6 / 2

(ii) (2 + 3) * 5//4+(4 + 6)/ 2

(iii) 12 + (3 * 4 – 6) / 3

(iv) 12 + (3 * *4 – 6)// 2

(v) 12 * 3 % 5 + 2 * 6//4

(vi) 12 % 5 *3 +(2*6)//4

Evaluate the above expressions by using IDLE as a calculator and verify the results that you got manually.

8) Write Python expressions to represent the following situations:

a. Add remainder of 10/7 to the product of 10 and 7.

b. Find the square root of the sum of 8 and 43.

c. Find the sum of the square roots of 8 and 43.

d. Find the integral part of the quotient when 63 is divided by 29

9) Write a program to read a number n and print n2 , n3 , n4

10) Write a program to convert minutes given by user into hours and minutes and display the same.

PAINTING

Make 10 paintings in your big Art file (A3 slze) or bigger (having good quality art pages)

1) TWO - landscapes

2) TWO -Alekhan (design - square, rectangular,circle ,rombas)

3) THREE- Picture composition (festival,mela ,market,circus ,playing games,farmers working ,vegetable /balloon seller etc)

4) TWO -Still life sketch (object drawing)

5) ONE - folk art (Folk art of any state, Aipan art , Kolam design ,Madhubani art, Warli art etc)

Craft :- Make ONE paper mache craft of your choice (statue, peacock ,showpiece, swan ,lamp etc)

Note :- 20 marks of craft will be added in the half yearly practical exam so it is mandatory to prepare it.

HINDUSTANI CLASSICAL VOCAL (034)

1. Make a practical file.
2. Write 10 Alankar in a systematic way.
3. Write the biography of any two Hindustani classical bocalist who are still alive.
4. Write a complete introduction of any two talas along with thaa, dugun , tigun , chaugun .(teen Taal, Ek taal, chautal)
5. Describe all the professions that are related to music.
6. What is the scope of music in the future? share your views.
7. Write life sketch and contribution of Tansen ,Pt VN bhatkhande and Pt VD Puraskar.

PHYSICAL EDUCATION

1. Take part in any form of physical activity for one week (the activity can be any sports, simple jogging/walking, recreational activity, adventure sports etc.). After a week write down the following details.

a. Name of the Activity.

b. What motivated you to choose this activity?

c. How do you feel after participating in this activity?

d. Would you like to continue participation in this activity?

e. If your response to the above question is 'Yes' or 'No' give a plausible reason.

2. Visit any search engine on internet and fill the information in table

Course	Name of Institution	Duration of course	Eligiblity criteria for admission	Career options of the course

NOTE: Work should be done in hand written form.

Work should be done in the fair notebook.

Homework is to be submitted on 5 th of July 2024.

ENJOY YOUR HOLIDAYS UTMOST. TRY TO LEARN SOME NEW LIFESKILLS.

YOGA

 Visit any nearest Yoga Center and describe all the positive points and submit the report in 150 words.

 Complete the project file for board examination as per the format discuss in class. (XII class)

 Describe any 12 Aasan in other separate notebook with clean and neat diagram.

PSYCHOLOGY

1. Prepare a case study using interview and observation method with the help of self-report questionnaire on " Mobile Phone Addiction and its effect on adolescence in India".
2. Prepare one PowerPoint presentation on "Music and Dance as a therapy to overcome stress, anxiety and depression". (minimum 15 slides)

HINDI

1- विद्यालय पत्रिका हेतु अपनी रुचि के किसी विषय पर लेख/कविता/तथ्य/हास्य मौलिक लेख word या docs पर लिखिए और अध्यापिका को मेल कीजिए!

2 - वितान पुस्तक का पहला पाठ पढ़िए एवं लता मंगेशकर के जीवन पर लेख लिख कर उनके प्रसिद्ध गीतों के बोल एवं उनके जीवन से जुड़े प्रसंगों के चित्र चिपकाइए।(यह कार्य project paper के 4 पृष्ठों पर करें)

3- पर्यावरण एवं महिला सशक्तिकरण पर अभिव्यक्ति एवं माध्यम कॉपी में निबंध लिखिए।

CHEMISTRY

Q1. Write the formulae and colours of the following salts:

1. Potassium chromate
2. Potassium dichromate
3. Nickel chloride
4. Aluminium sulphate
5. Manganese sulphate
6. Lead acetate
7. Copper sulphate
8. Ferrous sulphate
9. Potassium permanganate
10. Ferrous ammonium sulphate

Q2. Write symbols, name, atomic number and atomic masses of elements of periodic table from atomic number 1 to atomic number 30 in your chemistry notebook.

Q3. Write chemical names and chemical formulas of the following compounds

1. Borax
2. Blue vitriol
3. Plaster of Paris
4. Baking Soda
5. Chile saltpeter
6. Cream of Tartar
7. Dolomite
8. Epsom Salt
9. Mohr's salt
10. Galena
11. Laughing Gas
12. Limestone
13. Lye
14. Slaked Lime
15. Washing Soda
16. Marsh Gas
17. Potash Alum
18. Sugar
19. TNT
20. Chalk

Q4. Do the following exercises/ work sheet in your chemistry note book.

BASIC CONCEPTS OF CHEMISTRY
CHEMISTRY - 11

Section A

● **Write the answer of the following questions.**

1. 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

2. 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}

3. If 500 mL of a 5M solution is diluted to 1500 mL, what will be the molarity of the solution obtained ?
(A) 1.5M (B) 1.66M (C) 0.017M (D) 1.59M

4. The number of atoms present in one mole of an element is equal to Avogadro number. Which of the following element contains the greatest number of atoms ?
(A) 4g He (B) 49g Na (C) 0.40g Ca (D) 12g He

5. If the concentration of glucose ($C_6H_{12}O_6$) in blood is 0.9 g L^{-1}, what will be the molarity of glucose in blood ?
(A) 5 M (B) 50 M (C) 0.005 M (D) 0.5 M

6. 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

7. What is the mass per cent of carbon in carbon dioxide ?
(A) 0.034% (B) 27.27% (C) 3.4% (D) 28.7%

8. 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) $C_2H_4O_2$

9. If the density of a solution is 3.12g mL^{-1}, the mass of 1.5 mL solution in significant figures is .....
(A) 4.7 g (B) 4680×10^{-3} g (C) 4.68 g (D) 46.80 g

10. Which of the following statements is correct about the reaction given below ?
$4Fe_{(s)} + 3O_{2(g)} \rightarrow 2Fe_2O_{3(g)}$
(A) Total mass of iron and oxygen in reactants = total mass of iron and oxygen in product therefore it follows law of conservation of mass.
(B) Total mass of reactants = total mass of product, therefore, law of multiple proportions is followed.
(C) Amount of Fe_2O_3 can be increased by taking any one of the reactants (iron or oxygen) in excess.
(D) Amount of Fe_2O_3 will decrease if the amount of any one of the reactants (iron or oxygen) is taken in excess.

11. One mole of oxygen gas at STP is equal to .....
(A) 6.022×10^{23} molecules of oxygen (B) 6.022×10^{23} atoms of oxygen
(C) 16 g of oxygen (D) 32 g of oxygen

12. Which of the following pairs have the same number of atoms ?
(A) 16 g of $O_{2(g)}$ and 4 g of $H_{2(g)}$ (B) 16 g of O_2 and 44 g of CO
(C) 28 g of N_2 and 32 g of O_2 (D) 12 g of $C_{(s)}$ and 23 g of $Na_{(s)}$

13. One of the statements of Dalton's atomic theory is given below : "Compounds are formed when atoms of different elements combine in a fixed ratio"

Which of the following laws is not related to this statement ?

(A) Law of conservation of mass (B) Law of definite proportions

(C) Law of multiple proportions (D) Avogadro law

14. Assertion (A) : One atomic mass unit is defined as one twelfth of the mass of one carbon-12 atom.

Reason (R) : Carbon-12 isotope is the most abundant isotope of carbon and has been chosen as standard.

(A) Both A and R are true and R is the correct explanation of A.

(B) Both A and R true but R is not the correct explanation of A.

(C) A is true but R is false.

(D) Both A and R are false.

15. ..... is used in treatment of cancer.

(A) Paracctamol (B) Taxol (C) Aspirine (D) Peniciline

16. Which one used instead of CFC in refrigerator ?

(A) 1, 1, 2, 2 Tetrafloroethane (B) Chloroform

(C) 1, 1, 1, 2 Tetrachloroethane (D) CCl_4

17. Which one is not element ?

(A) Diamond (B) Graphite (C) Silica (D) Oxygen

18. 293 K = ... ^oF.

(A) 273 (B) 68 (C) 293 (D) 77

19. At the same condition of temperature, pressure and volume the ratio of mass of O_2, O_3 and SO_2 is .....

(A) 2 : 1.3 : 1 (B) 2 : 3 : 4 (C) 4 : 2 : 1 (D) 1 : 2 : 2

20. The mass of one atom of C^{12} = ...

(A) 1.992648×10^{23} gm (B) 6.022×10^{23} gm (C) 1.992648×10^{-23} gm (D) None of these

21. The empirical formula of compound is CH. It molecular mass is 78 gm/mol^{-1}. Its molecular formula .....

(A) C_2H_2 (B) C_6H_6 (C) C_2H_4 (D) C_2H_6

22. The molarity of 2 mole HCl in 5 lit aq. solution is .....

(A) 10 (B) 2.5 (C) 0.4 (D) 4

23. 100 ml 0.1 M urea solution is diluted upto 200 ml than the molarity is ..... M.

(A) 0.2 (B) 0.1 (C) 0.05 (D) 0.025

24. The formula for calculation of percentage of nitrogen in NH_3 is .....

(A) $\frac{7\times100}{14}$ (B) $\frac{7\times100}{17}$ (C) $\frac{3\times100}{14}$ (D) $\frac{14\times100}{17}$

25. 2 mole solute dissolve in 500 gm solvent molality of solution is .....

(A) 2.5 (B) 1 (C) 4 (D) 0.4

26. 4.9 gm/lit of H_2SO_4 is given ..... is normality

(A) 0.2 (B) 20 (C) 10 (D) 0.1

27. At what temperature $^\circ C = ^\circ F$

(A) $-30°$ (B) $-40°$ (C) $-20°$ (D) Not possible

28. In H_2O and H_2O_2 mass oxygen

(A) 1 : 2 (B) 2 : 1 (C) 32 : 16 (D) 1 : 8

29. Molality is for .....

(A) 1 litre solution (B) 1 kg solution (C) 1 kg solvent (D) 1 kg solute

30. The percentage of nitrogen in urea

(A) 46% (B) 28% (C) 85% (D) 64%

31. In which state matters have definite volume and definite shape ?

(A) Solid (B) Liquid (C) Gaseous (D) All of the above

32. In which substance the constituents retains their own characteristic properties ?

(A) Brass (B) Glucose (C) Rusting of iron (D) Water

33. 6.048 g H_2 and 28 g N_2 react with each other and produce 34.048 g NH_3. This reaction is explained by which law ?

(A) Constant proportion (B) Multiple proportion (C) Combining weights (D) Charles law

34. One organic compound has empirical formula C_2H_4O. If its molecular mass is 88 g $mole^{-1}$ then what will be molecular formula ?

(A) C_4H_8O (B) C_2H_4O (C) $C_4H_8O_2$ (D) $C_4H_2O_8$

Section B

● **Write the answer of the following questions.**

35. What is the difference between molality and molarity ?

36. Calculate the average atomic mass of hydrogen using the following data :

Isotope	% Natural abundance	Molar mass
^1H	99.985	1
^2H	0.015	2

37. The density of 3 molal solution of NaOH is 1.110 g mL^{-1}. Calculate the molarity of the solution.

38. The reactant which is entirely consumed in reaction is known as limiting reagent. In the reaction $2A + 4B \rightarrow 3C + 4D$, when 5 moles of A react with 6 moles of B, then

(i) which is the limiting reagent ?

(ii) calculate the amount of C formed ?

$2A + 4B \rightarrow 3C + 4D$

39. Match the following :

(A) 88 g of CO_2	(1) 0.25 mol
(B) 6.022×10^{23} molecules of H_2O	(2) 2 mol
(C) 5.6 litres of O_2 at STP	(3) 1 mol
(D) 96 g of O_2	(4) 6.022×10^{23} molecules
(E) 1 mole of any gas	(5) 3 mol

40. Match the following physical quantities with units.

Physical quantity	Unit
(A) Molarity	(1) gm L^{-1}
(B) Mole fraction	(2) mol
(C) Mole	(3) Pascal
(D) Molality	(4) Unitless
(E) Pressure	(5) mol L^{-1}
(F) Luminous intensity	(6) Candela
(G) Density	(7) mol kg^{-1}
(H) Mass	(8) Nm^{-1}
	(9) kg