SAINIK SCHOOL CHITTORGARH

SUMMER VACATION HOLIDAY HOMEWORK

SUBJECT NAME	
CLASS & SECTION: XI A & B	**SUBJECT TEACHER NAME: MANISH JAIN & RAKESH RAMPURIA**

INSTRUCTIONS:

1. Use separate Note book for Mathematics.

2. Writing should be very neat and clean.

3. Do all work with date & day.

4. Introduce yourself (Name of cadet, School No, Class & Section)

ASSIGNMENT

CHAPTER 1: SETS

Q 1. Express the set $D = \left\{ x \;\middle|\; x = \frac{n^2-1}{n^2+1},\ n \in N \text{ and } n < 4 \right\}$ in roster form.

Q 2. Write the following set as interval.

$$\{x : x \in R,\ -12 \leq x \leq -10\}$$

Also, find the length of interval and represent on number line.

Q 3. Let $A = \{x : x \in N\}$ $B = x : x = 2n,\ n \in N$, $C = \{x : x = 2n - 1, n \in \{N\}\}$,

$$D = \{x : x \{is\ a\ prime\ number\}\}$$

Find: (i) $A \cap B$ (ii)$A \cap C$ (iii) B $\cap C$ (iv) B $\cap D$

Q 4. In a group of 100 people, 65 like to play Cricket, 40 like to play Tennis and 55 like to play Volleyball. All of them like to play at least one of the three games. If 25 like to play both Cricket and Tennis, 24 like to play both Tennis and Volleyball and 22 like to play both Cricket and Volleyball, then

(i) How many like to play all the three games?

(ii) How many like to play Cricket only?

(iii) How many like to play Tennis only?

Represent above information in a Venn diagram.

Q 5. A college awarded 38 medals in Football, 15 in Basketball and 20 in Cricket. If these medals went to a total of 58 men and only three men got medals in all the three sports, then how many received medals in exactly two of the three sports?

Q.6 Let $S = \left\{ x \in [-6,3] - \{-2,2\} : \frac{|x+3|-1}{|x|-2} \geq 0 \right\}$ $T = \{x \in Z : x^2 - 7|x| + 9 \leq 0\}$

Then the number of elements in $S \cap T$ (i) 7 (ii) 5 (iii) 4 (iv) 3

Q.7 A group of 40 students appeared in an examination of 3 subjects - Mathematics, Physics and Chemistry. It was found that all students passed in at least one of the subjects, 20 students passed in Mathematics, 25 students passed in Physics, 16 students passed in Chemistry, atmost 11 students passed in both Mathematics and Physics, atmost 15 students passed in both Physics and Chemistry and atmost 15 students passed in both Mathematics and Chemistry. The maximum number of students passed in all the three subjects is ---------- .

CHAPTER 2: RELATIONS AND FUNCTIONS

Q 8. Suppose set A = {January, February, August) and set B = {28, 15, 30). Write a relation R given by: R = {(a, b): (a, b) ∈ A X B, where a is month and b is corresponding date). Also, find R^{-1}.

Q 9. Find the domain of the function $f(x) = \frac{x}{x^2+3x+2}$

Q 10. Find the domain and range of the following relations:

(i) $R = \{(x, y): x, y \in N,\ y = x^2 + 3 \text{ and } 0 < x < 5\}$

(ii) $R = \{(x, y): x, y \in N,\ y = \frac{1}{1+x} \text{ and } x \text{ is an odd natural number}\}$

Q 11. Find domain and range of $f(x) = \frac{1}{2\sin(3x)}$

Q 12. Let *A* = {2,3,6,7} and *B* = {4,5,6,8}. Let *R* be a relation defined on *A*×*B* by (a_1, b_1) *R* (a_2, b_2) if and only if $a_1+a_2 = b_1+b_2$. Then the number of elements in *R* is ---.

Q 13. Let *f* : R➔R be a function such that *f*(*x* + *y*) =*f*(*x*)+*f*(*y*) for all *x*, *y* ∈ R, and *g*: ➔ (, ∞) be a function such that *g*(*x* + *y*) = *g*(*x*) *g*(*y*) for all *x*, *y* ∈ R. If and $f\left(-\frac{3}{5}\right) = 12$ $g\left(-\frac{1}{3}\right) = 2$, then the value $\left(f\left(\frac{1}{4}\right) + g(-2) - 8\right) g(0)$ of is ------ .

CHAPTER 3: TRIGONOMETRIC FUNCTIONS

Q 15. The minute hand of a watch is 2.1 cm long. How far does its tip move in 30 minutes?

Q 16. Prove: tan 720°- cos 270°- sin 150° cos 120° = 1 /4

Q 17. If $2\alpha + 2\beta = 90°$find the maximum and minimum values of $\sin 2\alpha\ \sin 2\beta$.

Q 18. Prove: $4\cos\theta\cos\left(\frac{\pi}{3}+\theta\right)\cos\left(\frac{\pi}{3}-\theta\right) = \cos(3\theta)$

Q 19. Prove: cos 4A = 1-8 $\cos^2$ A + 8 $\cos^4$ A

Q 20. The value of tan 9° - tan 27°-tan 63° + tan 81° is:

(a) 1 (b) 2 (c) 3 (d) 4

Q 21. Find the value of $96\cos\left(\frac{\pi}{33}\right)\cos\left(\frac{2\pi}{33}\right)\cos\left(\frac{4\pi}{33}\right)\cdots\cos\left(\frac{16\pi}{33}\right)$

SAINIK SCHOOL CHITTORGARH

SUMMER VACATION HOLIDAY HOMEWORK

INFORMATION	
SUBJECT NAME: PHYSICS	**CLASS & SECTION: XI (A,B)**
SUBJECT TEACHER NAME: Mr Onkar Singh, Mr Bhandarkar C L(NEW)	
INSTRUCTIONS: Please prepare file in support of model. Use your own creativity. Marks for projects will be counted for subject PROJECT OF ANNUAL EXAM. internal marks.	

ASSIGNMENT

CHAPTER1:UNITS AND MEASUREMENT

Content 1. Find the dimension of a/b in the equation: F= $a\sqrt{x}$+bt^2 where F is force x is distance and t is time.

Content 2. The frequency 'f' of an oscillating drop may depend upon radius of the drop, density ρ of the liquid and surface tension 'S' of the liquid. Establish an expression for frequency 'f' dimensionally.

Content 3. If momentum[P],area[A] and time [T] are taken as fundamental quantities, then find the dimensional formula for coefficient of viscosity?

Content 4. Write the limitations of dimensional formula?

Content 5. 1barn=-------, 1fermi= -------, 1 shake =----------,1 Parsec = --------,

Content 6. State the number of significant figure in the following: (i) 2.000 m (ii) 5100 kg (iii) 0.050 cm

CHAPTER 2: MOTION IN A STRAIGHT LINE.

Content 1. By method of calculus derive an expression S= ut +0.5 at^2

Content 2. A stone is dropped from the top of a building when it crosses a point 5 m below the top, another stone to fall from a point 25 m below the top, . Both the stone reach the bottom of building simultaneously. Calculate the height of the building?

Content 3. The relation between 't' and distance 'x' is t= ax^2 + bx where 'a' and 'b' are constants. Express the instantaneous acceleration in terms of instantaneous velocity.

Content 4. A ball is released from the top of a tower of height 'h' meters. It takes 'T ' seconds to reach the ground. What is the position of the ball in T/3 second?

Content 5. If t = $\sqrt{x}$ + 4, Then instantaneous velocity at t= 4 second.

CHAPTER 3: MOTION IN A PLANE.

Content 1. Show that cross product of two vectors is equal to the area of the parallelogram.

Content 2. Show that the range of a projectile for two angles of projection α and β is same, α+β=90°.

Content 3. Calculate the sine of the angle between the vectors 3i+j+2k and 2i-2j+ 4k.

Content 4. State and prove law of parallelogram of vector addition,also find the resultant of two vectors analytically?

Content 5. Prove that (A + 2 B). (2A-3B) = 2 A^2 + AB COSθ – 6 B^2 here A and B are vectors.

Content 6. If R is the horizontal range for ' θ' inclination and 'h' is the maximum height reached by the projectile, Show that the maximum range is given by

R^2 /8h + 2h

Content 7. A cricketer can throw a ball to maximum horizontal distance of 160 m. Calculate the maximum vertical height to which he can through the ball?

(g=9.8 ms^{-2})

Content 4. Prepare at least one model/project from the following(Marks will be counted for your annual exam) : -

1. Prepare any model based on Pascal's law. eg: hydraulic breaks etc.
2. Prepare a model visualizing circular motion in a vertical plane. Eg. Bucket full of water whirled in vertical circle ,water doesn't spill out.
3. Prepare model showing relation between centripetal force and the speed.
4. Prepare any working model on center of mass.5.model on Kepler's laws.
5. OR Any project/model of your choice of class XI level.

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SUMMER VACATION HOLIDAY HOMEWORK

BIOLOGY	
CLASS & SECTION: XI B	**SUBJECT TEACHER NAME: Mr MANJIT SINGH**
INSTRUCTIONS:PLEASE PREPARE A SEPARATE NOTEBOOK FOR HOME ASSIGNMENT	

ASSIGNMENT

Chapter-8 :CELL : THE UNIT OF LIFE

1. Name the parts of bacterial flagella.
2. What do elaioplasts and aleuroplasts store ?
3. Who first saw and described a live cell ?
4. Which is the largest single cell ?
5. Who first explained that new cells arose from pre-existing cells ?

7. What are nuclear pores ? State their function.
8. List the functions of mesosome.
9. Differentiate between active and passive transport.
10. Differentiate between RER and SER.
11. List the functions of golgi apparatus.
12. What is plasmid ? What is its importance ?
13. Explain the Fluid Mosaic Model. Also represent it diagrammatically.
14. Differentiate between a prokaryotic and eukaryotic cell.
15. Diagrammatically represent the types of chromosomes based on the position of centromere.

Chapter 9 : BIOMOLECULES

1. Why are amino acids termed as alpha- amino acids?
2. What do you mean by Zwitter ion?
3. How does a peptide bond forms?
4. Describe the structure of Protein with diagram.
5. Name the abundant protein in animal and plant world
6. Why is starch showing blue black colour with iodine but cellulose does not ?
7. Describe the salient features of Double helix model of DNA.
8. What are the characteristic features of Enzyme.
9. Describe the induced fir mechanism of Enzyme action.
10. What do you mean by co factors? Differentiate between co enzyme and prosthetic group.

Chapter-10:CELL CYCLE AND CELL DIVISION

1. What is cell cycle ? Explain the events occurring in this cycle
2. Why is mitosis called Equational division ?
3. What happens during S phase of interphase ?
4. What is G_0 phase of cell cycle ?
5. Differentiate between cytokinesis of plant and animal cell.
6. What is chaismata ? State its significance.
7. Distinguish between metaphase of mitosis and metaphase I of meiosis

8. Describe the subphases of Prophase –I of Meiosis .
9. Differentiate between mitosis and meiosis.
10. List the significance of mitosis and Meiosis.

PROJECT WORK

1. Collect at least 15 plant specimens from your native place and prepare a herbarium.
2. Take at least 25 photographs of specific plants and animals found in your native place.

Note: Kindly allocate the required number of questions.*

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SUMMER VACATION HOLIDAY HOMEWORK

SUBJECT NAME	
CLASS & SECTION: XI A and B	**SUBJECT TEACHER NAME: GYANESHWAR SINGH**
INSTRUCTIONS: USE SEPARATE NOTEBOOK FOR SUMMER VACATION HOMEWORK	

ASSIGNMENT

CHAPTER 1: **SOME BASIC CONCEPTS OF CHEMISTRY**

1. A solution of unknown solute whose 12g is dissolved per litre has same molarity (isotonic) with 1L of 0.05M solution of glucose. Calculate molar mass of unknown solute.
2. 25% of 250g of sugar solution and 40% of 500g of sugar solutions are mixed, find out mass percentage of solution.
3. Calculate the mass of Ag_2S formed by reaction of 10g of Ag with 1g of sulphur.
4. Calculate the mole fraction of water in a mixture of 15g of water,18g acetic acid and 84g ethyl alcohol.
5. How many gram atoms (moles) are there in 8.0g of S?
6. The molarity of solution of sulphuric acid is 1.35M. Calculate its molality.(The density of solution is 1.02g cm^{-3})
7. If the density of a solution is 3.12g mL^{-1}, what is the mass of 1.5 mL solution in two significant figures.
8. A compound contains 21.6% sodium , 33.3% chlorine , 45.1% oxygen. Derive its empirical formula.
9. What will be the molality of the solution containing 18.25g of HCl gas in 500g of water?
10. How many grams of $KClO_3$ must be decomposed to prepare 3.36 litres of oxygen at STP?

CHAPTER 2: **STRUCTURE OF ATOM**

1. What are degenerate orbitals?
2. Why degenerate orbitals are first single filled then pairing of electron takes place?
3. State Heisenberg's uncertainty principle.
4. Derive de Broglie equation .
5. Calculate the mass of photon with wavelength 3.6 A^o.
6. Give quantum numbers for electrons with highest energy in sodium atom.
7. Calculate the kinetic energy of an electron in second Bohr orbit of hydrogen atom .
8. Which quantum number distinguishes the electron in the same orbital? Name the principle involved.
9. State Hund's Rule .
10. What is the main difference between electromagnetic waves theory and Planck's quantum theory.

PROJECT WORK:

SOLVE TEXT BOOK QUESTIONS OF CHAPTER 1 AND 2

Note: Kindly allocate the required number of questions.*

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SUMMER VACATION HOLIDAY HOMEWORK

SUBJECT: COMPUTER SCIENCE (083) | **CLASS & SECTION :** XI-A

SUBJECT TEACHER: MR ABHISHEK BHARDWAJ

INSTRUCTIONS

(i) Do your homework by yourself.
(ii) Use separate notebook for holiday homework.
(iii) Don't Google to find the answers.
(iv) Answers should be neat & clean with concepts.
(v) Do all work with date & day.
(vi) Try to do your written work regularly to enhance your writing power.
(vii) Pay special attention towards your health and caring.
(viii) Completed notebook to be submitted on **01 Jul 25** *positively.*
(ix) In case of any difficulty please mail me at **ssccomputerscience@gmail.com**

1. Identify the universal logic gates from the following:
   i) AND ii) NAND (iii) NOR (iv) XOR

2. Draw the logic diagram (using logic gates) for the following expression:
   f(X,Y) = X'Y + XY'

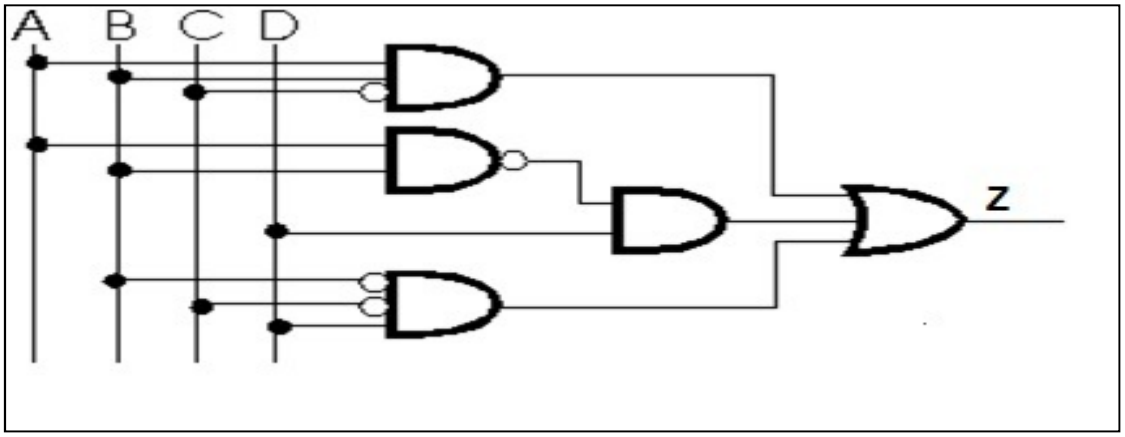
3. State and prove the Demorgan's theorem in Boolean Algebra.

4. Explain X-OR gate with the help of graphical symbol, function and Truth Table.

5. What do you mean by Operating System? Explain the types of Operating System.

6. Write the full forms of the following:
   (i) ROM (ii) HDMI (iii) EPROM (iv) CPU

7. Find the output (Z) for the following logic diagram.



8. Write down the differences between Compiler and Interpreter. Also explain Assembler.

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SUMMER VACATION HOLIDAY HOMEWORK

SUBJECT NAME	
CLASS & SECTION: XI A,B	**SUBJECT TEACHER NAME: DIVYA RAO**
INSTRUCTIONS: This project is a part of internal assessment and should be done in a file.	

ASSIGNMENT

Content 1. Prepare a project on the topic Parenting Styles:Then and Now. Ensure that the following sub-headings are included :

a) Index
b) Acknowledgement
c) Introduction
d) Changing Family Values
e) Tradition versus modernity
f) Communication gap and digital age
g) Evolving concept of freedom and independence
h) My relationship with my family(include a picture with your parents)
I) Conclusion (express your personal views on the generation gap)
j) Bibliography

Notebook Assignment: Complete the work up to the chapters that have been taught.

Note: Kindly allocate the required number of questions.*