SAINIK SCHOOL CHITTORGARH

SUMMER VACATION HOLIDAY HOMEWORK

CLASS XI

SUBJECT	SUBMITTED BY
ENGLISH	MRS POOJA
MATHS	MR MANISH JAIN
PHYSICS	MR ONKAR SINGH
CHEMISTRY	MR TONY A.
COMPUTER	MR ABHISHEK BHARDWAJ
BIOLOGY	MR MANJIT SINGH

GENERAL INSTRUCTIONS

INSTRUCTIONS:
1. The holiday homework will be considered as your project work.
2. The marks awarded for this will be counted towards Internal –assessment.
3. On page 1: write -Project Work, name, class, roll number, topic etc

PROJECT WORK

NAME:
CLASS: SECTION
SCHOOL NUMBER:
HOUSE:

4. Last page of the project will carry the following certificate

CERTIFICATE

This is to certify that I_____ OF Class _____. Have done the project work on my own. It is my own original work as per the guidelines provided by _____(Name of the teacher).

Signature

Name:

ENGLISH

ASSIGNMENT Assignment 1: Project topic - Memories delight us (With reference to the poem- The photograph)
Instructions- Cover the following aspects:

1. Cover page- Title of the project
2. Certificate
3. Acknowledgement
4. About the poets (with photograph)
5. Summary
6. Theme
7. Depict how time affects the relationship between children and their parents (Include facts, pictures, case studies etc.)
8. Describe your relationship with your parents (Paste related photographs).

Deadline: 1st July, 2024

Assignment 2: Prepare posters on any two of the following themes-

1. Climate change and the world in 2050
2. Importance and ways of rainwater harvesting
3. Significance of yoga in maintaining mental and physical fitness.
4. Science- The force behind everything in the world

Deadline: 1st July, 2024

PHYSICS

ASSIGNMENT CHAPTER1:**UNITS AND MEASUREMENT**
Content 1. Complete the follwing questions from the exercises NCERT PHYSICS BOOK.
Q.NO.1.3, 1.10,1.13,
CHAPTER1: **MOTION IN A PLANE**
3.9,3.11,3.12,3.13,3.14,3.17,3.22.
Content 2. Prepare at least one model/project from the following: -
1. What do you understand by 'stopping distance and reaction time? Write and perform simple experiment and check your reaction time.
How stopping distance is important in setting speed limit eg. In school zones.?
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.
(visit www.balesville.k12.in.us)

CHEMISTRY

ASSIGNMENT Unit 1: Some Basic Concepts In Chemistry
1.Explain law of multiple proportions with an example.
2. Give one example each of a molecule in which empirical formula
and molecular formula are (i) same (ii) Different.
3.How much potassium chlorate should be heated to produce 2.24L of oxygen at NTP?
4.Calculate the weight of lime (CaO) obtained by heating 2000 g of 95% pure lime stone $CaCO_3$
5. 4 litres of water are added to 2L of 6 molar HCl solutions.What is the molarity of resulting solution?
6. Calculate the mass percent of calcium, phosphorus and oxygen in calcium phosphate $Ca_3(PO_4)_2$
7. 45.4 L of dinitrogen reacted with 22.7 L of dioxygen and 45.4 L of nitrous oxide was formed. The reaction is : $2N_2(g) + O_2(g) \rightarrow 2N_2O(g)$
Which law is being obeyed in this experiment? Write the statement of the law.

8. Hydrogen gas is prepared in the laboratory by reacting dilute HCl with granulated zinc. The following reaction takes place. $Zn + 2HCl \rightarrow ZnCl_2 + H_2$ Calculate the volume of hydrogen gas liberated at STP when 32.65 g of zinc reacts with HCl. 1 mol of a gas occupies 22.7 L volume at STP; atomic mass of Zn = 65.3 u.
9. What is formula mass? Give examples
10. Calculate the number of molecules present in 0.5 moles of CO_2?
11. 1L of a gas at STP weighs 1.97g. What is molecular mass?
12. What would be the molality for the solution obtained containing 18.25 g of HCl gas in 500 g of water?

Unit 2: Structure of Atom
1. An atom that has atomic mass number 13 has seven neutrons. What is the atomic number of the given atom?
2. What experimental evidence supports the idea that an atom's electronic energies are quantized?
3. Which among the following will not show deflection from the path on passing through the electric field? Proton, cathode rays, electron, neutron
4. The Balmer series in the hydrogen spectrum corresponds to the transition from n1 = 2 to n2 = 3,4,……. This series lies in the visible region. Calculate the wave number of lines associated by the transition in the Balmer series if the electron moves to n = 4 orbit. (RH= 109677 cm-1)
5. The effect of the uncertainty principle is quite significant only for the motion of microscopic particles and is negligible for the given macroscopic particles. Explain the statement with the help of a suitable example.
6. Table-tennis ball has a mass of 10 g and a speed of 90 m/s. If speed could be measured with the accuracy of 4%, what will be the uncertainty in speed and position?
7. The bromine atom possesses 35 electrons that contain 6 electrons in 2p orbital, 6 electrons in 3p orbital and 5 electrons in 4p orbital. Which of these electrons experiences the lowest effective nuclear charge?
8. Indicate the number of unpaired electrons in: (a)P (b)Si (c)Cr (d)Fe (e)Kr
9. What is the difference between terms orbit and orbital?
10. Draw the structures of s, p, d and f – orbital.
Project: 1. Draw the figures of s, p and d orbitals in the note book
2. Draw the figure of Aufbau principle (showing energy of orbitals)

BIOLOGY

ASSIGNMENT CHAPTER : **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 ?
6. What is the composition of plasma membrane of human erythrocyte.
7. What are nuclear pores ? State their function.
8. State the cell theory.
9. Differentiate between active and passive transport.
10. Differentiate between RER and SER.
11. List the functions of Golgi apparatus.
12. List the functions of mesosome.
13. Explain the Fluid Mosaic Model. Also represent it diagrammatically.
14. Differentiate between a prokaryotic and eukaryotic cell.
15. Give the characteristic features of the genetic material of bacteria. What is plasmid ? What is its importance ?
16. Give the structural details of an eukaryotic nucleus along with its diagram.
17. Give the structural details of mitochondria. Draw its diagram. Why is it called 'powerhouse of the cell' ?
18. Diagrammatically represent the types of chromosomes based on the position of centromere.

CHAPTER: **BIOMOLECULES**

1.Why do generally oils remain in liquid state even in winters ?
2. Name an element found in proteins but not in lipids and carbohydrates.
3. What is the difference between RNA and DNA in terms of nitrogenous base ?
4. What does an enzyme do in terms of energy requirement of a reaction ?
5. What is the function of ATP in cell metabolism ?
6. Name the protein which form the intercellular ground substance.
7. Why are aminoacids also known as substituted methane ?
8. Amino acids exist as zwitter ions. Give its structure. Why is it formed ?
9. Why do starch give blue black colour with iodine ?
10. Why are starch and glycogen more suitable than glucose as a storage product?
11. What would happened when salivary amylase which acts on starch in mouth, enter stomach ?
12. Explain the structure of proteins.
13. What is an enzyme ? Give an example of co-enzyme. Distinguish between apoenzyme and co-enzyme.
14. Explain Watson-Crick model on DNA structure.
15. Explain peptide bond.
16. Explain competitive inhibition along with an example.
17. List the 6 classes of enzymes along with their functions.

CHAPTER: CELL CYCLE AND CELL DIVISION

1. What are kinetochores ?
2. What is interkinesis ?
3. Why is mitosis called equational division ?
4. Name the stage of meiosis during which synaptonemal complex is formed.
5. What is G0 phase of cell cycle ?
6. Differentiate between cytokinesis of plant and animal cell.
7. What is chaismata ? State its significance.
8. What happens during S phase of interphase ?
9. Distinguish between metaphase of mitosis and metaphase I of meiosis.
10. Differentiate between mitosis and meiosis.
11. List the significance of mitosis.
12. Describe the following :

(a) Synapase
(b) Bivalent
(c) Leptotene

13. With the help of labelled diagram, explain the following :

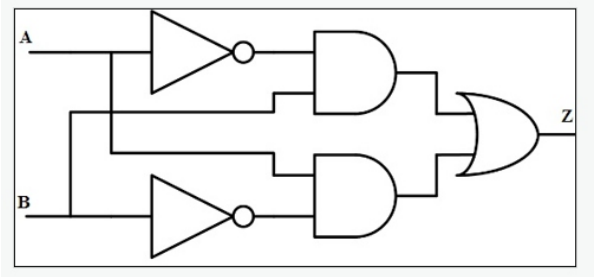
(a) Diplotene
(b) Anaphase of mitosis
(c) Prophase I

14. What is cell cycle ? Explain the events occurring in this cycle.

COMPUTER SCIENCE

ASSIGNMENT1. Identify the universal logic gate from the following:
i) AND ii) OR (iii) NAND (iv) XOR

2. Draw the logic diagram (using logic gates) for the following expression:
f(X,Y) = XY + X'Y'
3. State and prove the Demorgan's theorem in Boolean Algebra.
4. Explain X-NOR gate with the help of graphical symbol, function and Truth Table.
5. What do you mean by Operating System? Explain OS user interfaces.
6. Write the full forms of the following:
(i) RAM (ii) SIM (iii) EEPROM (iv) CPU
7. Find the output (z) for the following logic diagram.



8. Write down the differences between Customized software and Generic software with the help of examples.

MATHS

CHAPTER 1 : SETS

Q.1. List all the elements of the following sets:

$$b = \left\{x : x = \frac{1}{2n-1}, 1 \leq n \leq 5\right\}$$

Q.2. Write the set $\left\{\frac{1}{2}, \frac{2}{5}, \frac{3}{10}, \frac{4}{17}, \frac{5}{26}, \frac{6}{37}, \frac{7}{50}\right\}$ in the set-builder form.

Q.3. In a group of 950 persons, 750 can speak Hindi and 460 can speak English. Find:

i. How many can speak both Hindi and English.

ii. How many can speak Hindi only.

Iii how many can speak English only

Q.4. A survey of 500 television viewers produced the following information;285 watch football, 195 watch hockey, 115 watch basketball, 45 watch football and basketball, 70 watch football and hockey, 50 watch hockey and basketball, 50 do not watch any of the three games. How many watch all the three games? How many watch exactly one of the three games?

Q.5. For any two sets A and B, prove the following:

$A \cap (A \cup B') = \phi$

Q.6. Prove that:

$(A \cup B) \times C = (A \times C) = (A \times C) \cup (B \times C)$

Q.8. Let A and B be sets. If $A \cap X = B \cap X = \Phi$ and $A \cup X = B \cup X$ for some set X,show that A = B.

Q.9. Using properties of sets show that

(i) $A \cup (A \cap B) = A$ (ii) $A \cap (A \cup B) = A$.

CHAPTER 2: RELATIONS AND FUNCTIONS

Q.1. Determine the domain and range of the relation R defined by R= {(x, x3): x is a prime number less than 10}

Q.2. Let A= {1, 2, 3,….,14}. Define a relation on a set A by R= {(x, y): 3x – y = 0, where x, y A}. Depict this relationship using an arrow diagram. Write down its domain, co-domain and range.

Q.3. If $R = \{(x, y) : x, y \in Z, x^2 + y^2 \leq 4\}$ is a relation defined on the set Z of integers, then write domain of R.

Q.4. If R is a relation from set A = {11, 12, 13} to set B = {8, 10, 12} defined by y = x − 3, the write R^{-1}.

Q.5. If A = {1, 2}, form the set A x A x A.

Q.6. Find the domain and range of the following real function:

(i) $f(x) = -|x|$

(ii) $(x) = \sqrt{9 - x^2}$

Q.7. Define a relation R on the set **N** of natural numbers by R = {(*x*, *y*): *y* = *x*+ 5, *x* is a natural number less than 4; *x*, *y* ∈ **N**}. Depict this relationshipusing roster form. Write down the domain and the range.

Q.8. Let *f* be the subset of **Z** × **Z** defined by *f* = {(*ab*, *a* + *b*): *a*, *b* ∈ **Z**}. Is *f* afunction from **Z** to **Z**: justify your answer.

Q.9. Let A = {a, b}. List all relations on A and find their number.

CHAPTER 3 : TRIGONOMETRIC FUNCTIONS

Q.1. Convert 40° 20′ into radian measure.

Q.2. Find the radius of the circle in which a central angle of 60° intercepts an arc of length 37.4 cm. (use $\pi = 22/7$).

Q.3. If the arcs of the same lengths in two circles subtend angles 65°and 110° at the centre, find the ratio of their radii.

Q.4. If cos x = – 3/5 , x lies in the third quadrant, find the values of other five trigonometric functions.

Q.5. Find the value of cos (–1710°).

Q.6. Prove that :

$$\frac{\sin(x+y)}{\sin(x-y)} = \frac{tanx + tany}{\tan x - tany}$$

Q.7. Show that tan 3 x tan 2 x tan x = tan 3x – tan 2 x – tan x

Q.8. Prove that : $\cos\left(\frac{\pi}{4} + x\right) + \cos\left(\frac{\pi}{4} - x\right) = \sqrt{2}\, cosx$

Q.9. Prove that : $cos^2 x + \cos^2\left(x + \frac{\pi}{3}\right) + \cos^2\left(x + \frac{\pi}{3}\right) + \cos^2\left(x - \frac{\pi}{3}\right) = \frac{3}{2}$

Q.10. Prove that : $\cos 6x = 32\cos^6 x - 48\cos^4 x + 18\cos^2 x - 1$