

SAINIK SCHOOL BALACHADI
2018-19
SUMMER VACATION : HOLIDAY HOMEWORK
CLASS – XI



• **ENGLISH**

1. Practice everyday handwriting. (Mention date)
2. Make a project on the topic 'Khushwant Singh – A great Post Independence Indian Writer' highlighting his life and works in the field of literature.
3. Critically appreciate the poem 'A Photograph' by Shirley Toulson.
4. Solve the questions in the handouts provided.

In the numbered spaces, write F for fragment; R for run-on, or C for correct.

[10 points each; 100 points possible]

1 ___ I enjoy attending school. 2 ___ Because I enjoy meeting new people and

learning new things. 3 ___ I have always been curious, which has, I am sure, helped me be a successful student. 4 ___ When the teacher asks if there are any questions. 5 ___ I always seem to have at least one question, and I usually end up asking one more after the teacher has answered the first one. 6 ___ I know some of my classmates sometimes become impatient with me but I just cannot sit quietly if I do not understand something. 7 ___ Many times I have had other students and even teachers thank me for being so curious. 8 ___ Because they felt that the question needed to be asked and really helped make the idea or logic clearer. 9 ___ In addition to being curious, I find that I actually use my time better when I am taking classes because I must be organized in order to fit study time into my busy schedule. 10 ___ Which I am always able to do no matter how hectic things become at work or at home.

5. Explain the plight of the author in the chapter 'The Address' as depicted in the lesson you have studied.
6. "The two cousins stood for the hallmarks of their tribe!" explain with reference to the chapter 'The summer of a beautiful white horse'.
7. Make a list of words with Synonyms and Antonyms, using each of them in sentences of your own (100 words)

• **PHYSICS**

1. Write the dimensional formula of following physical quantities along with their SI units in a tabular form.
 - (a) Resistance
 - (b) Reynolds number
 - (c) Universal Gas constant
 - (d) Boltzman constant
 - (e) Avogadro number
 - (f) Moment of inertia
 - (g) Universal gas constant
 - (h) Impulse
 - (i) Light Energy
 - (j) Angular Momentum

2. The sides of a rectangular are (10.5 ± 0.2) cm and (5.2 ± 0.1) cm. Calculate its perimeter with error limits.
3. The dimensions of b^4 (where σ is stefan's constant and b is Wien's constant) are ML^4T^{-3} . Is it true? Explain by solution.
4. A Jet of water of cross sectional area A and velocity v impinges normally on a stationary flat plate. The mass per unit volume of water is ρ . Derive an expression by using dimensional analysis for the Force exerted by the jet against the plate.
5. The mass of a body is 2.5 kg. It is in motion and its velocity v after time t is $v = t^3/3 + t^2/2 + 1$. Calculate the force acting on the body at the time $t=3$ second.
6. If the displacement x of a particle (in metre) is related with time (in second) according to relation $x = 2t^3 - 3t^2 + 2t + 2$. Find the position, velocity and acceleration of a particle at the end of 2 seconds

• **CHEMISTRY**

1. Explain the Laws of Chemical combination with examples.
2. Commercially available conc.HCl contains 38%HCl by mass.
 - (a) What is the molarity of this solution if its density is 1.19 g/cm³.
 - (b) What volume of conc. HCl is required to make 1.0L of 0.10M HCl?
3. A compound containing Carbon, Hydrogen and Oxygen gave the following analytical data: Carbon=40.0% , Hydrogen =6.67% and the rest is Oxygen.Calculate the molecular formula of the compound if its molecular mass is180.
4. Calculate the molarity of a solution of ethanol in water in which the mole fraction of ethanol is 0.040(density of water is 1g/cm³).
5. Chlorine is prepared in the laboratory by treating Manganese dioxide with aqueous HCl according to the reaction.

$$4HCl(aq) + MnO_2(s) \rightarrow 2H_2O(l) + MnCl_2(aq) + Cl_2(g)$$
 How many grams of HCl reacts with 5.0g of MnO₂?
6. Write all the postulates of kinetic molecular theory of gases.
7. Derive the ideal gas equation and write the various units of R.
8. Write the Vanderwaal's equation of a real gas and explain the physical significance of Vanderwaal's parameters.
9. Calculate the volume occupied by 8.8g of CO₂ at 31.10c and 1bar pressure.(R is 0.083 bar L/k/mol).
10. Calculate the total pressure in a mixture of 8g of dioxygen and 4g of dihydrogen confined in a vessel of 1dm³ at 270c.(R=0.083 bar dm³/k/mol)

• **COMPUTER**

1. Define and distinguish between data and information
2. Briefly explain basic structure of a computer.
3. What is Von Neumann architecture?
4. Distinguish between internal and external memory.
5. Define each of the following.
 - a. Nibble
 - b. byte
 - c. kilobyte
 - d. megabyte
 - e. gigabyte
 - f. terabyte
6. What is operating system. Name the types of operating system.
7. Give examples of some of the preemptive scheduling techniques.
8. What is the difference between program and process.
9. What are main categories of operating system functions.

10. What are two main approaches to implement virtual storage in main memory.
11. Explain the difference between RAM and ROM?
12. Convert the following binary number to decimal:
i) 101.1001 ii) 11101.11
13. Convert the following decimal numbers to hexadecimal numbers
a. 2478 b. 314
14. Convert the following binary numbers to hexadecimal numbers
a. 11110000110 b. 111111100001110101
15. Convert the following octal numbers to decimal and hexadecimal numbers
a. 546.74 b. 241.54
16. Explain how characters are represented in memory.
17. Why memory is called nondestructive read and destructive write?
18. What is the difference between firmware and liveware?
19. What do you mean by system software? Explain different types of system softwares.
20. What are the different functions of operating system? Explain .

WORK SHEET

1. Write down the specification or configuration of a computer and explain the terms.
2. Collect the details of the companies that are making processors.
3. Collect images of different types of computers.
4. Collect the details of companies that are making operating system and give a brief narration about the companies.
5. Make a chart containing five famous personalities in the computer world with images.
6. Collect details of supercomputers made by India.
7. Give a brief description about Sofia Robot made by Hanson Robotics.
8. What is your opinion about the robotic invasion in different fields related to job sector, manufacturing sector etc.

• BIOLOGY

CLASS-XI (BIOLOGY) = 20 Questions

Page-15	QNo.- 6, 10
Page-28	QNo.- 3, 5, 6, 8, 9,10
Page-44	QNo. - 5, 6, 7,
Page-45	QNo.- 8, 9, 10, 11, 12
Page-62	QNo.- 4, 6, 10,14

• MATHEMATICS

1. A set is defined by $A = \{x: x=n+1 \text{ where } n \leq 3, n \in \mathbb{N}\}$. Find $A \times A$
- 2- Find the value of x and y if $(x^3-x, y^2-5y+6)=(0,0)$
- 3- If $A=\{1,2,3\}$ $B= \{3,4\}$ and $C= \{1,3,5\}$ then find $A \times (B \cup C)$ and $(A \times B) \cap (A \times C)$.
- 4- What is the domain and range of the following real valued function $f(x)= x^2+2$.
- 5- If $f(x) = 2x+5$ and $g(x) = x^2+x$ then find the image of -3 under the function $f+g$ and $f-g$.
- 6- If $f(x) = 4-3x^2$ and $g(x) = 2x-3$ then find the value of $f[g(-3)]$.
- 7- Let $U= \{1 \text{ to } 7\}$, $A=\{2,4,6\}$, $B=\{3,5\}$ and $C= \{1,2,4,7\}$ then find $A \cap (B \cup C)'$
- 8- If $[\frac{x}{3} + 1, y - \frac{2}{3}] = [\frac{5}{3}, \frac{1}{3}]$, find the values of x and y.
- 9- From the sets given below select equal sets: $A=\{x: x \in \mathbb{N}, x < 4\}$,
 $B= \{x: x \in \mathbb{N}, x \text{ is odd}, x < 8\}$, $C=\{1,3,7\}$, $D=\{1,3,5,7\}$ and $E=\{1,2,3\}$.

- 10- Represent $A-B$ by Venn diag if A and B are any sets.
- 11- If $A = \{1,2,3,4,5\}$ and $B = \{5,6,7,8\}$ then find $A \cup B$ and $A \cap B$.
- 12- What is the domain of $(2x-3)/(3-4x)$
- 13- Use the properties of sets to prove that for all the sets A and B
 $A - (A \cap B) = A - B$
- 14- Let A, B and C be sets. Then show that
 $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
- 15- Two finite sets have m and n elements respectively. The total number of subsets of first set is 56 more than the total number of subsets of the second set. The values of m and n respectively.
- 16- The set $(A \cup B \cup C) \cap (A \cap B' \cap C') \cap C$ is equal to-
- 17- Given $L = \{1, 2, 3, 4\}$, $M = \{3, 4, 5, 6\}$ and $N = \{1, 3, 5\}$
 Verify that $L - (M \cup N) = (L - M) \cap (L - N)$
- 18- Let U be the set of all boys and girls in a school, G be the set of all girls in the school, B be the set of all boys in the school, and S be the set of all students in the school who take swimming. Some, but not all, students in the school take swimming. Draw a Venn diagram showing one of the possible interrelationship among sets U, G, B and S .
- 19- Using properties of sets prove the statements given -
 For all sets A and $B, A \cup (B - A) = A \cup B$
 For all sets A and $B, A - (A - B) = A \cap B$
 For all sets A and $B, A - (A \cap B) = A - B$
 For all sets A and $B, (A \cup B) - B = A - B$
- 20- Two finite sets have m and n elements. The number of subsets of the first set is 112 more than that of the second set. The values of m and n are, respectively-
- 21- In a class of 60 students, 25 students play cricket and 20 students play tennis, and 10 students play both the games. Then, the number of students who play neither-
- 22- In a town of 840 persons, 450 persons read Hindi, 300 read English and 200 read both. Then the number of persons who read neither is-
- 23- If X and Y are two sets and X' denotes the complement of X , then $X \cap (X \cup Y)'$ is equal to-
- 24 - Let $A = \{1, 2, 3, 4\}$ and $B = \{5, 7, 9\}$. Determine
 (i) $A \times B$ (ii) $B \times A$
 (iii) Is $A \times B = B \times A$? (iv) Is $n(A \times B) = n(B \times A)$?
- 25- Find x and y if:
 (i) $(4x + 3, y) = (3x + 5, -2)$ (ii) $(x - y, x + y) = (6, 10)$
- 26- If $f(x) = x^3 + (1/x^3)$ then find the value of $f(x) + f(1/x)$.
- 27- Let A and B be any two sets such that $n(B) = p, n(A) = q$ then the total number of functions $f: A \rightarrow B$ is equal to _____.
- 28- Let f and g be two functions given by
 $f = \{(2, 4), (5, 6), (8, -1), (10, -3)\}$
 $g = \{(2, 5), (7, 1), (8, 4), (10, 13), (11, -5)\}$ then. Domain of $f + g$ is _____
- 29- In each of the following cases, find a and b .
 (i) $(2a + b, a - b) = (8, 3)$ (ii) $(a/4, a-2b) = (0, 6+b)$
- 30- Is the given relation a function? Give reasons for your answer.
 (i) $h = \{(4, 6), (3, 9), (-11, 6), (3, 11)\}$
 (ii) $f = \{(x, x) \mid x \text{ is a real number}\}$ (iii) $s = \{(n, n^2) \mid n \text{ is a positive integer}\}$
 (iv) $t = \{(x, 3) \mid x \text{ is a real number}\}$

- 31- In a survey of 60 people it was found that 25 people read Hindi newspaper, 26 read English newspaper, 26 read Tamil newspaper, 9 read both Hindi and English, 11 read both Hindi and Tamil, 8 read both Tamil and English and 3 read all newspapers. find i) The no. of people who read at least one of the newspaper. ii) The no. of people who read exactly one newspaper.
- 32- In a survey of 25 students, it was found that 15 had taken maths, 12 had taken physics and 11 had taken chemistry, 5 had taken maths and chemistry, 9 had taken maths and physics, 4 had taken physics and chemistry and 3 had taken all the three subjects find the number of students that had i) only chemistry ii) physics and chemistry but not maths iii) only one of the subjects iv) at least one of the three subjects.
- 33- In a survey it was found that 21 people liked product A, 26 people liked product B and 29 liked product C. If 14 people liked products A and B, 12 people liked C and A, 14 people liked B and C and 8 liked all three products. Find how many liked product C only?
For all sets A, B and C
- 34- Is $(A - B) \cap (C - B) = (A \cap C) - B$? Justify your answer?
- 35- Let P be the set of prime numbers and let $S = \{t \mid 2t - 1 \text{ is a prime}\}$.
Prove that $S \subset P$.
- 36- In a town of 10,000 families it was found that 40% families buy newspaper A, 20% families buy newspaper B, 10% families buy newspaper C, 5% families buy A and B, 3% buy B and C and 4% buy A and C. If 2% families buy all the three newspapers. Find
a- The number of families which buy newspaper A only.
b- The number of families which buy none of A, B and C
- 37- If $f(x) = \sqrt{x+1}$ and $g(x) = \sqrt{9-x^2}$ then find $5g(-1) + 3f(0)$ and $[f(-0.5)/g(0.5)]$,
- 38- If $A = \{2, 4, 6, 9\}$ and $B = \{4, 6, 18, 27, 54\}$, $a \in A$, $b \in B$, find the set of ordered pairs such that 'a' is factor of 'b' and $a < b$.
- 39- Find the domain and range of the relation R given by
 $R = \{(x, y) : y = x + 6/x ; \text{ where } x, y \in \mathbb{N} \text{ and } x < 6\}$.
- 40- Find the domain for which the functions
 $f(x) = 2x^2 - 1$ and $g(x) = 1 - 3x$ are equal.
- 41- Given $A = \{1, 2, 3, 4, 5\}$, $S = \{(x, y) : x \in A, y \in A\}$. Find the ordered pairs which satisfy the conditions given below:
(i) $x + y = 5$ (ii) $x + y < 5$ (iii) $x + y > 8$
- 42- If $R_3 = \{(x, |x|) \mid x \text{ is a real number}\}$ is a relation. Then find domain and range of R_3
- 43- If f and g are real functions defined by $f(x) = x^2 + 7$ and $g(x) = 3x + 5$, find each of the following
a- $f(3) + g(-5)$ b- $f(1/2) g(4)$ c- $f(-2) + g(-1)$ d- $f(t) - f(-2)$
- 44- Is $g = \{(1, 1), (2, 3), (3, 5), (4, 7)\}$ a function? Justify. If this is described by the relation, $g(x) = \square x + \square$, then what values should be assigned to \square and \square ?
- 45- If $f(x) = y = (ax + b)/(cx + a)$ then prove that $f(y) = x$.