



Mount Abu Public School

SUMMER HOLIDAYS HOMEWORK

CLASS – XI (SCIENCE)



Dear Parent

Should we judge a dolphin by its ability to climb a tree?

We do not wear the Board exam marks on our sleeves? Right. But ... they do signify a simple thing: it quantifies the level of sincerity and sense of responsibility of a student as per the level of the complexity of the subjects each one studies. This sense of sincerity and responsibility should begin from the time the student steps in XI.

With mercury rising to unprecedented heights, it is that time of the year where Summer Vacations provide us a little respite from the scorching heat. At the same time it also allows students enough time for introspection, reviewing past performances, learning from mistakes, goal setting, planning strategically and tactically, identifying obstacles to success. Gearing up for this wonderful period of rejuvenation, let us prepare ourselves to utilize our time in many constructive ways. So, with the idea of fostering new learning experiences and to enhance individual inquisitiveness, the school has planned some to channelize the energies of the young MAPIANS.

Here are some guidelines for you to invigorate your ward while giving him the chance to enjoy this period of unrestrained fun.

- Learning doesn't stop when school is out.
- Work smart, not hard.
- For every hour of electronics time, you owe an hour of outside playtime.
- Reading is a must.
- Before you ask for a favor, do a chore.
- There's no sleeping all day or staying up all night.
- Be honest to a fault.
- Question every fact
- Do better today than you did yesterday.

Holiday Homework (for all subjects) must be submitted as per the mentioned dates.

- 5th July, Physics / Accountancy
- 8th July, B.Studies / Chemistry
- 10th July, English
- 12th July, Mathematics/ I.P
- 15th July, Optional/ Economics



ENGLISH

❖ *The following titles are to be read under the reading programme initiated by the school and must be done on A4 size sheets and to be submitted in a transparent folder*

1. Read the tale 'The Little Match Girl' by Hans Christian Andersen, modify and twist the conclusion to come up with a more favourable ending.
2. Read the prose 'An Angel in Disguise' by T.S. Arthur and critically analyze the character of Mrs. And Mr. Joe Thompson in not more than 100 words.
3. Read the following poem and write down the message that the poem tries to put forth in not more than 100 words.

Nine Gold Medals

- (David Roth)

The athletes had come from so many the countries
To run for the gold and the silver and bronze
Many weeks and months in training
All building up to the games

All round the field spectators were gathered
Cheering on all the young women and men
Then the final event of the day was approaching
The last race about to begin

The loudspeakers called out the names of the runners
The one hundred metres the race to be run
And nine young athletes stood there determined
And poised for the sound of the gun

The signal was given, the pistol exploded
And so did the runners on hearing the sound
But the youngest among them stumbled and staggered
And he fell on his knees to the ground

He gave out a cry of frustration and anguish
His dreams and his efforts dashed in the dirt
But as sure as I'm standing here telling the story
Now it's a strange one, but here's what occurred

The eight other athletes stopped in their tracks
The ones who had trained for so long to compete
One by one they turned round and came back to help him
And lifted the lad to his feet

Then all nine runners joined hands and continued
The one hundred metres reduced to a walk

And the banner above that said "Special Olympics"
Could not have been nearer the mark

That's how the race ended, nine gold medals
They came to the finish line holding hands still
And the banner above and nine smiling faces
Said more than these words ever will
Said more than these words ever will

❖ **The following homework to be done in your CLASS WORK REGISTER itself**

1. Write down the notes and summary of the chapter '**BIRTH**'.
2. **ARTICLE:** Hard Work and Punctuality are essential for a happy and successful life. They help in meeting the desired targets of life. You are Kavya/Kanha. Write an article in 150-200 words highlighting the importance of hard work and punctuality in a student's life.
3. **LETTER:** You have realized the necessity of education and financial independence of women for their family, society and in turn for the nation. Write a letter to the editor, The National Times, highlighting your ideas on the importance of education of women leading to a better status for them. You are Tarun/Taruna B-7/9, Mall Road Delhi. You are Sreeja/Thomas.
4. Draw a **POSTER** on the conservation of Water and Saving our Sparrows
5. Indulge in **COMMUNITY SERVICE** under the school Community initiative '**Ek Aase ek Prayas**' and write your experience in about 150 words along with your **photograph** as a proof.

SUGGESTIONS

- visiting old age homes
- visiting an orphanage
- service at a religious place,
- tutor poor children
- Participate in the cleanup of a local river, park, or any area

PHYSICS

1. Complete all the given practical in physics practical file
2. Prepare one mark twenty questions and two marks 10 questions from chapter: Physical world, unit and dimensions, mechanical properties of solids & thermal properties of matter.

CHEMISTRY

1. Experiments provide insight into cause-and-effect by demonstrating what outcome occurs when a particular factor is manipulated. Prepare a **CHEMISTRY INVESTIGATORY PROJECT** on the topic assigned to you by the subject teacher in the class. Use A4 size sheets for the project including various newspaper clippings, images, latest discoveries and inventions relevant to the topic. Follow the given headings in the project:
 - a) INTRODUCTORY PAGE
 - b) CERTIFICATE
 - c) ACKNOWLEDGEMENT
 - d) INDEX/CONTENTS
 - e) INTRODUCTION
 - f) AIM
 - g) CHEMICALS REQUIRED
 - h) PROCEDURE/EXPERIMENT(S)
 - i) OBSERVATIONS
 - j) RESULT
 - k) CONCLUSION
 - l) BIBLIOGRAPHY
2. To inculcate scientific temperament and for understanding the conceptual knowledge of chemistry, students have to prepare a **GLOSSARY OF CHEMISTRY**. Add relevant pictures, diagrams and related to these discoveries. Use A-4 size sheets and write in neat handwriting. Glossary must comprise of 10 Chemistry terms (with their definitions) of each alphabet including Laws, formulas, principles and microscale chemistry apparatus.
3. Complete the assignment questions of Chapter - 1,2,3 (Practice Manual Questions) to be done in test notebook.

CHAPTER - 1 : SOME BASIC CONCEPTS OF CHEMISTRY

1. How many moles of NaOH are contained in 27 ml of 0.15 M?
2. Calculate the number of atoms in each of the following:
 - a - 52 moles of He
 - b - 52 u of He
3. Calculate the molarity of 1 L of solution of ethanol in water in which the mole fraction of ethanol is 0.040.
4. If ten volumes of dihydrogen gas reacts with five volumes of dioxygen gas, how many volumes of water vapour could be produced?

5. Calculate the molarity of NaOH in the solution prepared by dissolving its 4gms in enough water to form 250mL of the solution.
6. The density of 2 molal solution of NaOH is 1.10 g per ml. Calculate the molarity of the solution.
7. How many atoms and molecules of phosphorous are present in 124gms of phosphorous (P_4)?
8. A 6.9M solution of KOH in water contains 20% by weight of KOH. Calculate the density of solution.
9. Calculate the molality and molarity of 1 L solution of 93% H_2SO_4 (Wt. /Vol). The density of solution is 1.84g/ml.
10. Chlorophyll the green coloring matter of plants responsible for photosynthesis contains 2.68% of magnesium by weight. Calculate the number of magnesium atoms in 2.0 g of chlorophyll.
11. Calculate molality, Molarity and mole fraction of KI if the density of 20% aqueous KI solution is 1.202 g/ml.
12. What volume of O_2 at N.T.P is needed to cause the complete combustion of 200 ml of acetylene? Also calculate the volume of CO_2 formed.
13. Butyric acid contains only C, H and O. A 4.24 mg sample of butyric acid is completely burned. It gives 8.45mg of CO_2 and 3.46 mg of H_2O .The molecular mass of butyric acid was determined by experiment to be 88amu.What is its molecular formula?
14. The density of water at room temperature is 1.0 g/ml. How many molecules are there in a drop of water if its volume is 0.05 ml?
15. Potassium Bromide contains 32.9% by mass of potassium. If 6.40 gm of bromine reacts with 3.60 gm of Potassium. Calculate the no. of moles of potassium which combines with bromine to form KBr.

CHAPTER - 2 : STRUCTURE OF ATOM

1. How can you show using Pauli's exclusion principle that p sub shell can have only 6 electrons?
2. What are the values of 'n' and 'l' for 6g?
3. How many number of unpaired electrons are present in Fe^{2+} ($Z=26$)?
4. What is the ratio of the energy of a photon of $\lambda = 100pm$ to that of one of $\lambda = 200pm$?
5. How many radial nodes are present in 2p and 3s orbital?
6. Out of Fe^{2+} , Fe^{3+} , which is more stable and why?

7. Calculate the uncertainty in the position of an electron if uncertainty in its velocity is 0.001%.
The mass of electron = 9.11×10^{-31} kg and velocity of electron = 300m/s.
8. Account for the following.
- The expected electronic configuration of copper is $[\text{Ar}] 3d^9 4s^2$ but actually it is $[\text{Ar}] 3d^{10} 4s^1$
 - In building up of atoms the filling of 4s orbitals occur before 3d orbitals
 - Spin quantum number can have only 2 values $+1/2$ and $-1/2$
9. Write short note on the following
- Aufbau principle.
 - Heisenberg's uncertainty principle.
 - Hund's rule.
 - Photo electric effect.
 - Black body radiation
10. Derive a relationship between the wavelength associated with a moving particle and its kinetic energy.
11. Write down electronic configuration of Fe^{3+} ion and answer the following questions
- What is the number of unpaired electrons in it?
 - How many electrons in it have $n = 3$ and $m = 0$?
 - How many electrons in it have $l = 1$?
 - What is the number of electron in M-shell?
12. A bulb emits light of wavelength 4500 \AA . The bulb is rated as 150 watt and 8% of the energy is emitted as light. How many photons are emitted by the bulb per second?
13. Identify and arrange the orbitals represented by the following in decreasing order of energy
- $n = 4, l = 0$
 - $n = 3, l = 1$
 - $n = 3, l = 2$
 - $n = 3, l = 0$
14. When a certain metal was irradiated with light of frequency $4.5 \times 10^{16} \text{ s}^{-1}$, the photo electrons emitted had 3 times the kinetic energy as the kinetic energy of photo electrons emitted when same metal was irradiated with light of frequency $2.5 \times 10^{16} \text{ s}^{-1}$. Calculate threshold frequency of the metal.

15. Light of wavelength 400 nm strikes a certain metal which has a photoelectric work function of 2.13 eV. Find out the maximum Kinetic energy of the photoelectrons. ($1\text{eV} = 1.6 \times 10^{-19}\text{J}$)

CHAPTER - 3 : CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES

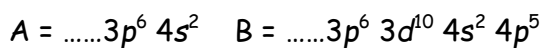
1. Assign the position of the element having outer electronic configuration (i) ns^2np^4 for $n=3$, (ii) $(n-1)d^2ns^2$ for $n=4$ and (iii) $(n-2)f^7(n-1)d^1ns^2$ for $n=6$.
2. Which of the following species has the largest and the smallest size : Mg^{2+} , Al , Al^{3+} ?
3. Arrange the given ions in order of decreasing radii ; Li^{2+} , Be^{2+} , B^{3+} giving the reason.
4. Why is the second ionisation enthalpy always higher than the first ionisation enthalpy?
5. Why is the first ionisation enthalpy of ${}^7\text{N}$ exceptionally higher?
6. Give the order of the first ionisation enthalpies of Na, Mg, Al and Si. Explain your choice.
7. Noble gases have larger size than halogens. Explain.
8. Write the IUPAC name and symbol for the element having 119 as the mass number. On the basis of the periodic table, predict the electronic configuration of this element and also the formula of its most stable chloride and oxide.
9. The formation of $\text{F}^-(\text{g})$ from $\text{F}(\text{g})$ is exothermic whereas that of O^{2-} is endothermic. Explain.
10. First and second ionisation enthalpies (IE_1 and IE_2) in kJ mol^{-1} for a few elements are given below :

Element	IE_1	IE_2
A	419	3051
B	1251	2297
C	2372	5250
D	738	1451

Which of the above elements is likely to be

- (a) a reactive metal
 - (b) a reactive non-metal
 - (c) a noble gas
 - (d) a metal that forms a stable oxide of the formula MO ?
11. Why is F_2 more reactive than Cl_2 ?
 12. Negative electron gain enthalpy of fluorine is less than that of chlorine. Why?
 13. Which element has the electronic configuration $(\text{Ar}) 3d^6$?

14. Answer the following questions about the elements with the electronic configurations below :



- (a) Is element A metal, metalloid or non-metal?
- (b) Is element B metal, metalloid or non-metal?
- (c) Which element has the highest ionization enthalpy?
- (d) Which element has the electron gain enthalpy?
- (e) Which element should be smaller of the two?

15. Follow the periodic trends and give a brief explanation for each answer :

- (a) Which has the highest first ionization enthalpy : B, Al, C and Si?
- (b) Which has the highest electron gain enthalpy: F, Cl, I or Br?
- (c) Which has the lowest first ionization enthalpy: B, C, N or O?
- (d) Which has the largest radius: O^{2-} , F^- or F ?

MATHEMATICS

Q1. Assignment (Chapters 1,3,4 and 5)

Chapter 1(Sets)

1. If $n(U) = 15$, A and B are two sets such that $n(A) = 8$ and $n(B) = 12$, use Venn diagram to find the following:
i) $n(A')$ ii) $n(B')$ iii) $n(A \cap B')$ iv) $n(A' \cap B)$
2. Write the set $A = \{x: x \in \mathbb{Z}, x^3 < 27\}$ in the roster form.
3. Write the set $X = \left\{1, \frac{1}{4}, \frac{1}{9}, \frac{1}{16}, \frac{1}{25}, \dots\right\}$ in the set-builder form.
4. What is the total number of proper subsets of a set consisting of 10 elements?
5. How many elements has $P(B)$, if $B = \emptyset$?
6. Write the following in set builder form:
i) $(-7, 0)$ ii) $(2, 5]$ iii) $[4, 8]$ iv) $[1, 6)$
7. A college awarded 38 medals in Football, 15 in Basketball and 20 to Cricket. If these medals went to a total of 58 men and only three men got medals in all the three sports, how many received medals in exactly two of the three sports?
8. If A and B are two sets such that $n(A \cup B) = 50$, $n(A) = 28$ and $n(B) = 32$, find $n(A \cap B)$

9. In a group of 50 people, 35 speak Hindi, 25 speak both English and Hindi and all the people speak at least one of the two languages. How many people speak only English and not Hindi? How many people speak English?

10. Let $A = \{a,b,c,d,e\}$, $B = \{b,d,f,h\}$, $C = \{d,i,k\}$. Verify the following identities :

(i) $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

(ii) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

(iii) $A \cap (B - C) = (A \cap B) - (A \cap C)$

(iv) $A - (B \cup C) = (A - B) \cap (A - C)$

(v) $A - (B \cap C) = (A - B) \cup (A - C)$

(vi) $A \cap (B \Delta C) = (A \cap B) \Delta (A \cap C)$.

11. In a survey of 700 students in a college, 180 were listed as drinking Limca, 275 as drinking Miranda and 95 were listed as both drinking. Limca as well Miranda. Find how many students were drinking neither Limca nor Miranda.

12. There are 200 individuals with a skin disorder, 120 has been exposed to chemical C_1 , 50 to chemical C_2 and 30 to both the chemicals C_1 and C_2 . Find the number of individuals exposed to

- (i) chemical C_1 or chemical C_2
- (ii) chemical C_1 but not chemical C_2
- (iii) chemical C_2 but not chemical C_1 .

13. There are 40 students in a chemistry class and 60 students in a physics class. Find the number of students which are either in physics class or chemistry class in the following cases :

- (i) the two classes meet at the same hour.
- (ii) the two classes meet at different hours and 20 students are enrolled in both the subjects.

14. In a survey it was found that 21 persons liked product P_1 , 26 liked product P_2 and 29 liked product P_3 . if 14 persons liked products P_1 and P_2 ; 12 persons liked products P_3 and P_1 ; 14 persons liked products P_2 and P_3 and 8 liked all the three products. Find how many liked products P_3 only.

15. In a survey of 60 people, it was found that 25 people read newspaper H, 26 read newspaper T, 26 read newspaper I, 9 read both H and I, 11 read both H and T, 8 read both T and I, 3 read all three newspapers. Find:

(i) The numbers of people who read at least one of the newspapers.

(ii) The numbers of people who read exactly one newspaper.

Chapter 3 (Trigonometric functions)

16. Find the values of:

i) $\cos 3060^\circ$

ii) $\cot(-1315^\circ)$

iii) $\tan(-315^\circ)$

iv) $\sec(855^\circ)$

v) $\operatorname{cosec}(1845^\circ)$

vi) $\sin\left(-\frac{11\pi}{6}\right)$

17. If A, B, C, D are angles of a cyclic quadrilateral, prove that : $\cos A + \cos B + \cos C + \cos D = 0$.

18. If $\tan^2 \theta = 2 \tan^2 \phi + 1$, prove that $\cos 2\theta + \sin^2 \phi = 0$

19. Prove that : $\frac{\tan\left(\frac{\pi}{4}+x\right)}{\tan\left(\frac{\pi}{4}-x\right)} = \left(\frac{1+\tan x}{1-\tan x}\right)^2$

20. Prove that $\frac{\cos \theta}{1+\sin \theta} = \tan\left(\frac{\pi}{4} - \frac{\theta}{2}\right)$

21. Find the maximum and minimum values of $7 \cos \theta + 24 \sin \theta$.

22. If $10 \sin^4 \alpha + 15 \cos^4 \alpha = 6$, find the value of $27 \operatorname{cosec}^6 \alpha + 8 \sec^6 \alpha$.

23. If α and β are acute angles such that $\tan \alpha = \frac{m}{m+1}$ and $\tan \beta = \frac{1}{2m+1}$, prove that $\alpha + \beta = \frac{\pi}{4}$.

24. Prove that : $\cos 20^\circ \cos 40^\circ \cos 60^\circ \cos 80^\circ = \frac{1}{16}$.

25. Prove that : $\sin 10^\circ \sin 30^\circ \sin 50^\circ \sin 70^\circ = \frac{1}{16}$.

26. Prove that : $\sin 20^\circ \sin 40^\circ \sin 60^\circ \sin 80^\circ = \frac{3}{16}$.

27. Prove that : $1 + \cos 2x + \cos 4x + \cos 6x = 4 \cos x \cos 2x \cos 3x$.

28. Prove that : $\frac{\cos 6\theta + 6 \cos 4\theta + 15 \cos 2\theta + 10}{\cos 5\theta + 5 \cos 3\theta + 10 \cos \theta} = 2 \cos \theta$

29. Show that : $\sqrt{2 + \sqrt{2 + \sqrt{2 + 2 \cos 8\theta}}} = 2 \cos \theta$.

30. Prove that : $\frac{\sec 8\theta - 1}{\sec 4\theta - 1} = \frac{\tan 8\theta}{\tan 2\theta}$

31. Prove that $\tan 4\theta = \frac{4 \tan \theta (1 - \tan^2 \theta)}{1 - 6 \tan^2 \theta + \tan^4 \theta}$.

32. Prove that : $\left(1 + \cos \frac{\pi}{8}\right) \left(1 + \cos \frac{3\pi}{8}\right) \left(1 + \cos \frac{5\pi}{8}\right) \left(1 + \cos \frac{7\pi}{8}\right) = \frac{1}{8}$.

33. Prove that : $(\cos \alpha - \cos \beta)^2 + (\sin \alpha - \sin \beta)^2 = 4 \sin^2 \left(\frac{\alpha - \beta}{2}\right)$

34. Prove that : $\sin 18^\circ = \frac{\sqrt{5}-1}{4}$.

35. Prove that : $\cos 18^\circ = \frac{\sqrt{10+2\sqrt{5}}}{4}$.

36. Prove that: $(\sin 3A + \sin A) \sin A + (\cos 3A - \cos A) \cos A = 0$

37. Prove that: $\cos 2\theta \cos \frac{\theta}{2} - \cos 3\theta \cos \frac{9\theta}{2} = \sin 5\theta \sin \frac{5\theta}{2}$

38. Prove that: $\frac{1+\cos 4x}{\cot x - \tan x} = \frac{1}{2} \sin 4x$

39. Prove that: $\cos \alpha + \cos \beta + \cos \gamma + \cos(\alpha + \beta + \gamma) = 4 \cos \frac{\alpha+\beta}{2} \cos \frac{\beta+\gamma}{2} \cos \frac{\gamma+\alpha}{2}$

40. Solve the equation: $\cos \theta + \cos 3\theta - 2 \cos 2\theta = 0$.

41. Solve: $7 \cos^2 \theta + 3 \sin^2 \theta = 4$.

42. Solve: $\sqrt{3} \cos \theta + \sin \theta = \sqrt{2}$.

43. Solve: $\sqrt{2} \sec \theta + \tan \theta = 1$.

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

45. Prove that: $\cos^2 2x - \cos^2 6x = \sin 4x \sin 8x$.

46. Prove that: $\sin(n+1)A \sin(n+2)A + \cos(n+1)A \cos(n+2)A = \cos A$

Chapter 4 (Mathematical induction)

47. Prove by the principal of mathematical induction that for all $n \in \mathbb{N}$:

$$1 + 4 + 7 + \dots + (3n - 2) = \frac{1}{2} n (3n - 1).$$

48. Using the principal of mathematical induction prove that: $1^3 + 2^3 + 3^3 + \dots + n^3 = \left\{ \frac{n(n+1)}{2} \right\}^2$ for all $n \in \mathbb{N}$

49. If x and y are any two distinct integers, then prove by mathematical induction that $(x^n - y^n)$ is divisible by $(x - y)$ for all $n \in \mathbb{N}$.

50. Using the principal of mathematical induction prove that:

$$1 + \frac{1}{1+2} + \frac{1}{1+2+3} + \dots + \frac{1}{1+2+3+\dots+n} = \frac{2n}{n+1} \text{ for all } n \in \mathbb{N}$$

51. Prove by the principal of induction that for all $n \in \mathbb{N}$, $(10^{2n-1} + 1)$ is divisible by 11.

52. Prove by the principal of induction that for all $n \in \mathbb{N}$.

(i) $\frac{1}{1.4} + \frac{1}{4.7} + \frac{1}{7.10} + \dots + \frac{1}{(3n-2)(3n+1)} = \frac{n}{3n+1}$

(ii) $\frac{1}{3.7} + \frac{1}{7.11} + \frac{1}{11.15} + \dots + \frac{1}{(4n-1)(4n+3)} = \frac{n}{3(4n+3)}$

(iii) $1.2 + 2.3 + 3.4 + \dots + n(n+1) = \frac{n(n+1)(n+2)}{3}$

(iv) $3^{2n} + 7$ is divisible by 8 for all $n \in \mathbb{N}$.

(v) $n(n+1)(n+5)$ is a multiple of 3 for all $n \in \mathbb{N}$.

Chapter 5 (Complex Number)

53. Evaluate the following:

54. Express $(1 - 2i)^{-3}$ in the standard form $a + bi$.

55. Find the multiplication inverse of $z = 3 - 2i$.

56. Perform the indicated operation and find the result in the form $a + bi$: $\frac{2-\sqrt{-25}}{1-\sqrt{-16}}$.

57. Find the real values of x and y , if $(3x - 7) + 2iy = -5y + (5 + x)i$

58. If $a + bi = \frac{c+i}{c-i}$, where c is real , prove that : $a^2 + b^2 = 1$ and $\frac{b}{a} = \frac{2c}{c^2-1}$

59. If $(x + iy)^{1/3} = a + ib$, $x, y, a, b \in \mathbb{R}$. Show that $\frac{x}{a} + \frac{y}{b} = 4(a^2 - b^2)$.

60. Find the real numbers x and y if $(x - iy)(3 + 5i)$ is the conjugate of $-6 - 24i$.

61. If $\frac{a+ib}{c+id} = x + iy$, prove that $\frac{a-ib}{c-id} = x - iy$ and $\frac{a^2+b^2}{c^2+d^2} = x^2 + y^2$.

62. If $\frac{(a+i)^2}{(2a-i)} = p + iq$, show that : $p^2 + q^2 = \frac{(a^2+1)^2}{(4a^2+1)}$.

63. If $x + iy = \sqrt{\frac{a+ib}{c+id}}$, prove that : $(x^2 + y^2)^2 = \frac{a^2+b^2}{c^2+d^2}$.

64. Find the least positive value of n , if $\left(\frac{1+i}{1-i}\right)^n = 1$.

65. Find real θ such that $\frac{3+2i \sin \theta}{1-2i \sin \theta}$ is purely real.

66. If α and β are different complex numbers with $|\beta| = 1$, find $\left|\frac{\beta-\alpha}{1-\bar{\alpha}\beta}\right|$.

67. Find non - zero integral solutions of $|1 - i|^x = 2^x$.

68. Find the square roots of the following : $7 - 24i$.

69. Find the square roots of the following : $-15 - 8i$.

70. Find the square root of i .

71. Solve the following quadratic equations by factorization method : $x^2 - 5ix - 6 = 0$

72. Solve : $2x^2 - (3 + 7i)x - (3 - 9i) = 0$

73. Write $\frac{i-1}{\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}}$ in polar form.

Q2. Make 10 multiple choice questions for each chapter (1,2,4,5)

Q3. Do all these activities in practical file

Activity 1: To find the number of subsets of a given set and verify that if a set has n number of elements, then the total number of subsets is 2^n .

Activity 2: To represent set theoretic operations using Venn diagrams.

Activity 3: To distinguish between a Relation and a Function.

Activity 4: To verify the relation between the degree measure and the radian measure of an angle.

Activity 5: To find the values of sine and cosine functions in second, third and fourth quadrants using their given values in first quadrant.

Activity 6: To interpret geometrically the meaning of $i = \sqrt{-1}$ and its integral powers.

Note:

- Do all the questions neatly in practice notebook.
- Do all activities in practical file neatly .
- Learn and write trigonometry identities in the same notebook

BIOLOGY

1. To prepare project of 35-40 pages on the topic already discussed It should include:
 - Cover page
 - Index
 - Acknowledgement
 - Certificate
 - Introduction
 - Details about the project
 - Annexure
 - Bibliography
2. Prepare 1 mark 20 questions from each chapter 1, 2, 5, 12,16. Submit in the form of typed hard copy.

COMPUTER SCIENCE

- Q1. Prepare a presentation in SWAY on any one of the topics listed below and share the link with poonam.chopra7@mountabuschool.com**
- Wi-Fi Networking Concepts
 - Social Networking effects
 - Cyber Laws / Security
 - What makes a country developed?
 - Cyber Crimes
 - Internet Vs Newspapers
 - Technologies that will disappear in next 5 years
- Q2. Visit the website "Code.org" Complete at least two online courses available on the website. Submit the completion certificate of the same**
- Q3. Complete an 'Android development Course' from any website like Coursera, Edx etc. and deposit print of screenshot of the completion of course.**

ASSIGNMENT

1. Write Python command/instruction/statement to display your name.
2. Write Python command to display your school name, class, and section, separated by "-".
3. 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.

4. Identify invalid variable names from the following, give reason for each:

int, total marks, S.I., volume, tot_strength, #tag, tag\$, 9a

5. Find the output of the following code:

(1) $x=3$

$y=x+2$ $x+=y$ $\text{print}(x,y)$

(2) $x=-2$

$y=2$ $x+=y$ $y-=x$ $\text{print}(x,y)$

(3) $a=5$

$b=2*a$ $a+=a+b$ $b*=a+b$ $\text{print}(a,b)$

(4) $p=10$ $q=20$ $p*=q/3$ $q+=p+q*2$ $\text{print}(p,q)$

(5) $p=5\%2$

$q=p**4$ $r=p//q$ $p+=p+q+r$ $r+=p+q+r$ $q-=p+q*r$ $\text{print}(p,q,r)$

(6) $p=21//5$

$q=p\%4$ $r=p*q$ $p+=p+q-r$ $r*=p-q+r$ $q+=p+q$ $\text{print}(p,q,r)$

6. Write Python expressions to represent the following situations:

- Add remainder of 10/7 to the product of 10 and 7.
- Find the square root of the sum of 8 and 43.
- Find the sum of the square roots of 8 and 43.
- Find the integral part of the quotient when 63 is divided by 29.

PHYSICAL EDUCATION

- Write 3 practical's in Physical Education Practical File (Samar Publication).
Practical 1. Any one individual game (Badminton, Table -Tennis and Taekwondo)
Practical 2. Any one team game (Football, Basketball and Cricket)
Practical 3. American Alliance for Health, Physical Education, Recreation & Dance (AAHPERD)