

ASCENT INTERNATIONAL SCHOOL, GR. NOIDA
HOLIDAY HOMEWORK (2017 - 18)
CLASS - XI (SCIENCE)

ENGLISH

I. Answer the following questions in 100-120 words.

- a) Talk with your family about elderly people who have been intimately connected with you and are not there with you now . Write a short description of someone you liked at great deal
- b) Why do you think people undertake such adventurous expeditions in spite of the risk involved ?
- c) Did the boys return the horse because they were conscience-stricken or because they were afraid?
- d) 'The Address' is a story of human predicament that follows war. Comment.

II. Draft the following short composition in 50 words.

- a) You are the manager of the sunrise industries , Delhi Road, Bahadurgarh . You need two typist for your office . Write an advertisement in not more 50 words to be published in the 'situation vacant' column of a local newspaper .
- b) You are the manager of a leading industrial concern . You need a chartered accountant for your office. Draft an advertisement in not more than 50 words to be published in The Times Of India , New Delhi , under the classified column .
- c) Your family is moving out of Delhi since your father has been transferred . You want to sell off some household items at a reasonable rate . Draft an advertisement in not more than 50 words to be published in the classified column of a local daily giving necessary details .
- d) You are an industrial interested in purchasing new independent guest house in a very good locality of your city . Draft an advertisement in not more than 50 words to be published in a local daily .

III. Long composition

- a) As the sports instructor of APL Public school write a letter to your local dealer placing an orders for certain sports good .
- b) Lack of job opportunities in the rural areas is forcing people to migrate to cities. Every big city thus has a number of slums in it. Life in these slums is miserable. Write a letter in 120-150 words to the editor of a newspaper on how we can improve the living conditions in these slums . you are Karan/Karuna , M-114, Mall Road, Delhi.

PHYSICS

1. What is the percentage error in volume of a sphere, when error in measuring its radius is 2%?
2. What is the error in density of a cube when its mass is uncertain by $\pm 2\%$ and length of its edge is uncertain by $\pm 1\%$?

3. The resistance R is the ratio of potential difference V and current I ? What is the percentage error in R if V (100 ± 5) Volt and $I = (10 \pm 0.2)$ A ?
4. The angle subtended by moon at a point on earth is $0^\circ 31'$. If the distance of moon from earth is 3.34×10^8 m. find the diameter of the moon?
5. The moon is observed from two diametrically opposite points A and B on earth. The angle subtended at the moon by the two directions of observation is $1^\circ 54'$. Given the diameter of earth to be about 1.276×10^7 m, calculate the distance of moon from earth?
6. Write the dimensions formula of the following quantities: Energy, Work, and Impulse. Potential energy.
7. Convert an energy of one joule into eV
8. Write the dimensions of a and b in the relation $E = b - x^2 / at$. Where E is the energy. x is the distance and t is the time.
9. The frequency (n) of an oscillating drop may depend upon radius (r) of the drop, density (d) of liquid and the surface tension (S) of the liquid. Deduce the formula dimensionally.
10. The refractive index of water is found to have the values 1.29, 1.33, 1.34, 1.35, 1.32, 1.36, 1.30, 1.33, Calculate the mean value, absolute error, mean absolute error, relative error, percentage error.
11. One mole of an ideal gas at NTP occupies 22.4 litres (molar volume). What is the ratio of volume to atomic volume of a mole of hydrogen? Take size of hydrogen molecule to be 1 \AA .
12. The mass of a box measured by a grocer balance is 2.3 kg. Two gold pieces of masses 20.15 g and 20.17 g are added to the box. What is the (a) total mass of the box (b) the difference in the masses of gold pieces to correct significant figures?
13. a) Young's modulus of steel is $19 \times 10^{10} \text{ Nm}^{-2}$. Express it in c.g.s units.
b) Convert one atmospheric pressure (10^5 nm^{-2}) into dyne cm^{-2} .
14. a) What is the difference between 4.0 and 4.000? (b) What is the difference between nm, mN, Nm.
15. If P represents radiation pressure, C represents the speed of light and q represents the radiation energy per unit area per unit time, then calculate non-zero integers such that $p^x q^y c^z$ is dimensionless. 11 A body of mass m hung at one end of a spring executes simple harmonic motion. The force constant of the spring is K , while the period of vibration is T . By the method of dimensions, show that the equation $T = 2\pi m/K$ is incorrect. Find the correct formula dimensionally.
16. Show dimensionally that the relation $t = 2\pi (l/g)$ is incorrect, where l is the length and t is the time period of a simple pendulum. g is acc. Due to gravity. Find correct form of the relation, dimensionally.

17. A new unit of length is chosen such that the speed of light in vacuum is unity. What is the distance between the sun and the earth in terms of the new unit, if light takes 8 min and 20 sec. to cover the distance?
18. The farthest objects in our universe discovered by modern astronomers are so distant that light emitted by them takes billions of years to reach to earth. These objects have many puzzling features, which have yet not been satisfactory explained? What is the distance in kilometer of a quasar from which light takes 3.0 billion years to reach us?
19. Define error in measurement, types of error, explain absolute error, relative error and percentage error, also write the formula?
20. Reynold number (R) determines whether or not the flow of a liquid through a pipe is streamline . This constant is a combination of velocity (V) , density (d) and coefficient of viscosity η . Given that R varies directly as diameter D of the pipe , derive the formula for R using the method of dimensions .
21. The heat produced in a wire carrying an electric current depends on the current , the resistance and the time . Assuming that the dependence is of the product of powers type , guess an equation . between these quantities using dimensions analysis . The dimensional formula of resistance is $ML^2A^{-3}T^{-3}$ and heat is a form of energy .
22. A LASER is a source of very intense , monochromatic , and unidirectional beam of light . these properties of a laser light can be exploited to measure long distances. The distance of the moon from the earth has been already determined very precisely using a laser as a source of light . A laser light beamed at the moon takes 2.56s to return after reflection at moon surface . How much is the radius of the lunar orbit around the earth ?.
23. If the velocity of light C, the constant of gravitation G and plank constant h be chosen as fundamental units , find the value of a gram , a centimeter and a second in terms of new units of mass, length and time respectively , Given $c=3 \times 10^{10} \text{ cm}^{-1}$, $G= 6.67 \times 10^{-8} \text{ dyne cm}^2 \text{ g}^{-2}$, $h= 6.6 \times 10^{-27} \text{ earg}$.
24. A voltmeter having least count 0.1 and an ammeter having least count 0.2 are used to measure the potential difference across the ends of a wire and current flowing through the wire respectively If the reading of voltmeter is 4.4 V and reading of ammeter is 2.2A , then find (I) the resistance of wire with maximum permissible error and (II) maximum percentage error .
25. The dimensions of Boltzmann constant are the same as that of (I) pressure density (II) Stefan constant (III) planks constant (IV) entropy .
26. The dimensions of quantities in one or more of the following pairs are the same . Identify the pairs (S) (I) Torque and work (II) angular momentum and work .(III) energy and Young's modulus (IV) Light year and wavelength .
27. Five litres of benzene will weigh more in summer or winter , comment .

28. Calculate the percentage error in specific resistance $p = \pi r^2 R / I$, where r = radius of wire = (0.26 ± 0.02) cm.

BIOLOGY

(Worksheet)

Topic-Plant kingdom & Animal kingdom

1. What is the importance of epizoic alga to tree dwelling sloth?
2. Name the different pigments found in algae.
3. How is bony fish different from cartilaginous fish?
4. Explain the general characteristics of Reptilia with respect to respiration, excretion and reproduction.
5. Justify the statement 'mammals are the most successful and dominant animals today'.
6. List any two differences between gymnosperms and angiosperms? What is the role of capsule in life history of moss?
7. What is the difference between syngamy and triple fusion?
8. Give the difference between natural and phylogenetic system of classification.
9. How are vascular plants able to dominate the planet?
10. Give the special features of phylum Echinodermata. What are the similarities between phylum echinodermata and phylum chordate?
11. Name the three sub- phyla of phylum chordate. Write the characteristics and examples of protochordates.
12. Name three groups of plants that bear archegonia. Briefly describe the life cycle of any one of them.
13. What characters of seed plants make them specially adapted to life on land?
14. Describe the similarities and differences in the sexual reproduction of moss and fern.
15. Explain the terms:
 - a) Gametophyte
 - b) Sporophyte
 - c) Kelps
 - d) Alternations of generations
 - e) Moss
16. Distinguish between :
 - a) Megasporophylls and microsporophylls
 - b) Antheridia and archegonia
 - c) Liverworts and mosses
17. Describe the important characteristics of gymnosperms.
18. Give a one word scientific term of the following:
 - a) Blood filled cavity in anthropods
 - b) Excretory organ of an annelid
 - c) Free floating form of Cnidaria
 - d) Stringing organs of jellyfishes
 - e) Molluscans with two hinged shells.
19. PROJECT WORK- Topic as assigned in the class.

CHEMISTRY

1. Define law of multiple proportions with example.
2. Calculate the molecular mass of $C_{12}H_{22}O_{11}$
3. Calculate the no. of atoms present in 11.5 litres of H_2 at N.T.P.
4. Calculate the no. of moles of 5.68 gm. of iron.
5. What is the effect of temp. on molality and molarity?
6. An atom of an element is 10.1 times heavier than the mass of a carbon atom. What is its mass in a.m.u.?
7. Explain with example, limiting reagent. $7 \times 1 = 7$
8. Differentiate between molarity and molality.
9. 1.82 g. of glucose (molar mass-180) is dissolved in 25g of water. Calculate (a) the molality (b) mole fraction of glucose and water.
10. The molecular mass of an organic compound is 90 and its %age composition is C-26.6%; O=71.1% and H=2.2%. Determine the molecular formula of the compound.
11. How chemical equations are made more informative?
12. How Avogadro's hypothesis used to deduce atomicity of elementary gases?
13. Verify law of Reciprocal proportions or law of equivalent proportions, with example.
14. Define formula mass and how does it differs from molecular mass? $7 \times 2 = 14$
15. Discuss Dalton's Atomic theory and its limitations?
16. Discuss Modern Atomic theory. Why it is better than Dalton's Atomic theory?
17. Commercially available sulphuric acid contains 91% acid by mass and has a density of 1.83 g mL^{-1} (i) Calculate the molarity of the solution (ii) volume of concentrated acid required to prepare 3.5L of 0.50 M H_2SO_4 .
18. A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% of chlorine. Its molar mass is 98.96g. What are its empirical and molecular formulas?
19. How much copper can be obtained from 110gm of $CuSO_4$?
20. What is Gay Lussac's law? Explain with two examples.
21. What are empirical and molecular formulae? How are they related to each other?
22. Differentiate between normality and molarity?
23. Why molality is preferred over molarity in expressing the concentration of a solution?

24. Explain with the help of an example law of conservation of mass and energy and also the law of constant proportions. 3
25. Discuss Avogadro's hypothesis.

Structure of atom

1. What is Zeeman effect and Stark effect?
2. Write electronic configurations, of Cr, Cu, Zn?
3. Define Aufbau's Principle. Which of the following orbitals are possible. 1 s, 1 p, 2 s, 3 d, 3 f
4. Explain Hund's rule of maximum multiplicity by taking an example of phosphorous.
5. Why are Bohr's orbits called Stationary States?
6. What is the difference between atomic mass and mass number?
7. Explain why the uncertainty principle is significant only for the microscopic particles and not for the macroscopic particles?
8. Why half-filled and fully filled orbitals are extra stable?
9. Why config of 'Cr' is $3d^5 4s^1$ and not $3d^4 4s^2$ and 'Cu' is $3d^{10} 4s^1$ and not $3d^9 4s^2$?
10. Give differences between orbit and orbital.
11. What is photoelectric effect? What is the effect of frequency and intensity on photoelectric effect? 13. Why large no. of lines appear in the spectrum of hydrogen although it contains only one electron? 14. Derive de Broglie relationship and give its significance.
12. Give important postulates of Bohr's model of an atom.
13. Discuss Planck's Quantum theory of Radiation.
14. Using the s, p, d, f, notations describe the following quantum no. (a) $n=1, l=0$ (c) $n=4, l=3$ (d) $n=4, l=2$ (b) $n=3, l=2$ (d) $n=5, l=4$ (e) $n=6, l=4$ Some more questions.
15. Discuss important facts about photoelectric effect.
16. Discuss black body radiation. Also explain its reason.
17. What are emission and absorption spectra? Why dark lines appear in the absorption spectra? 4
18. What is the frequency and wavelength of a photon emitted during a transition from $n=5$ state to $n=2$ state in the hydrogen atom.
19. Discuss drawbacks of Rutherford's Model.
20. Explain Heisenberg's uncertainty Principle.
21. What do you understand by an atomic orbital? Briefly describe the shapes of s, p & 'd' orbitals?
22. State and explain Aufbau's principle, Pauli's exclusion principle.
23. Explain the properties of cathode rays.
24. How are anode rays produced?

MATHEMATICS

1. If $A \times B = \{(a, x), (a, y), (b, x), (b, y)\}$. Find A and B.
2. Determine the domain and range of relation R defined by $R = \{(x, x + 5) : x \in \{0, 1, 2, 3, 4, 5\}\}$.
3. Of the members of three athletic teams in a certain school, 21 are in the basketball team, 26 in hockey team and 20 in football team. 14 play hockey and basketball, 15 play hockey and football, 12 play football and basketball and 8 play all the three games. How many members are there in all ?
4. Find the domain and range of the function : $f(x) = \sqrt{9 - x^2}$.
5. Find the range of $f(x) = \frac{x^2 - 3x + 2}{x^2 + x - 6}$.
6. If X and Y are two set such that X has 40 elements, $X \cup Y$ has 60 elements and $X \cap Y$ has 10 elements, how many elements does have?
7. In a committee, 50 people speak French, 20 speak Spanish and 10 speak both. How many speak at least one of these two languages ?
8. List all the subsets of the set $\{-1, 0, 1\}$
9. Write all possible relations on the set $\{a, b\}$.
10. Let f be the subset of $Z \times Z$ defined by $f = \{(ab, a + b) : a, b \in Z\}$. Is f a function from Z to Z ? Justify your answer.
11. Find the domain and range of $f(x) = -|x|$.
12. In a group of 65 people, 40 like cricket, 10 like both cricket and tennis. How many like tennis only and not cricket? How many like tennis ?
13. If $A = \{-1, 1\}$, find $A \times A \times A$.
14. Write the Set $\{x : x \text{ is a two - digit natural number such that the sum of its digits is } 8\}$
15. Write down all the subsets of the set $A = \{1, 2, \{3, 4\}, 5\}$.
16. In a group of 70 people, 37 like coffee, 52 like tea and each person likes at least one of the two drinks. How many people like both coffee and tea ? How many people like tea only and not coffee.
17. For any two sets A and B prove that $P(A \cap B) = P(A) \cap P(B)$.
18. Write set $A = \{2, 5, 10, 17, \dots\}$ in roster form.
19. 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 number of people who read at least one of the newspapers.
 - (ii) The number of people who read exactly one newspaper.
20. The angles of a triangle are in A.P. The number of degrees in the least is to the number of radians in the greatest as $60 : \pi$. Find the angles in degrees.

21. The moon's distance from the earth is 360000 kms and its diameter subtends an angle of $30'$ at the eye of the observer. Find the diameter of the moon.
22. In a circle of diameter 40 cm the length of a chord is 20 cm. find the length of minor arc corresponding to the chord.
23. Find in degrees the angle through which a pendulum swings if its length is 50 cm and the tip describes an arc of length 10 cm.
24. A circular wire of radius 7.5 cm is cut and bent so as to lie along the circumference of a hoop whose radius is 120 cm. Find in degrees the angle which is subtended at the centre of the hoop.
25. The difference between the two acute angles of a right angle triangle is $\frac{2\pi}{5}$ radians. Express the angles in degrees.
26. Find in degrees and radians the angle between the hour hand and the minute hand of a clock at half past three.
27. Prove that (i) $\tan 225^\circ \cot 405^\circ + \tan 765^\circ \cot 675^\circ = 0$ (ii) $\sin \frac{8\pi}{3} \cos \frac{23\pi}{6} + \cos \frac{13\pi}{3} \sin \frac{35\pi}{6} = \frac{1}{2}$ (iii) $\frac{\cos 9^\circ + \sin 9^\circ}{\cos 9^\circ - \sin 9^\circ} = \tan 54^\circ$ (iv) $\frac{\cos 8^\circ - \sin 8^\circ}{\cos 8^\circ + \sin 8^\circ} = \tan 37^\circ$.
28. If $\sin(A + B) = 1$ and $\sin(A - B) = \frac{1}{2}$, where $0 \leq A, B \leq \frac{\pi}{2}$, then find the values of $\tan(A + 2B)$ and $\tan(2A + B)$.
29. Prove that : $\frac{\sin A + \sin 3A + \sin 5A + \sin 7A}{\cos A + \cos 3A + \cos 5A + \cos 7A} = \tan 4A$.
30. If three angles A, B, C are in A.P., prove that $\cot B = \frac{\sin A - \sin C}{\cos C - \cos A}$.
31. Show that (i) $\cos 6x = 32 \cos^6 x - 48 \cos^4 x + 18 \cos^2 x - 1$ (ii) $\frac{\sin x - \sin 3x}{\sin^2 x - \cos^2 x} = 2 \sin x$
32. Prove that $(\sin 3x + \sin 5x + \sin 7x + \sin 9x)/(\cos 3x + \cos 5x + \cos 7x + \cos 9x) = \tan 6x$
33. Find $\sin \frac{x}{2}, \cos \frac{x}{2}, \tan \frac{x}{2}$ if $\cos x = -\frac{1}{3}$, x in quadrant III.
34. Show that $\tan 3x \tan 2x \tan x = \tan 3x - \tan 2x - \tan x$.
35. Find value of (i) $\cos(-1710^\circ)$ (ii) $\cot(-\frac{15\pi}{4})$.
36. Prove the following
 (i) $(\sin^8 \theta - \cos^8 \theta) = (\sin^2 \theta - \cos^2 \theta)(1 - 2 \sin^2 \theta \cos^2 \theta)$
 (ii) $(\sin \theta + \operatorname{cosec} \theta)^2 + (\cos \theta + \sec \theta)^2 = \tan^2 \theta + \cot^2 \theta + 7$
 (iii) $\sec^2 \theta + \operatorname{cosec}^2 \theta \geq 4$
37. If $\cos \theta + \sin \theta = \sqrt{2} \cos \theta$, Prove that $\cos \theta - \sin \theta = \sqrt{2} \sin \theta$
38. If $\sec \theta + \tan \theta = p$, obtain the value of 6 trigonometric ratios in terms of p.
39. Find all other trigonometric ratios if $\sin \theta = -2\sqrt{6}/5$ and θ lies in quadrant III.
40. Find the values of the following (i) $\cos(-480^\circ)$ (ii) $\sin(-1125^\circ)$.
41. If $\sin A = \frac{3}{5}$ and $\cos B = -\frac{12}{13}$, where A is in 1st qd. And B is in 3rd qd., find following
 (i) $\sin(A - B)$ (ii) $\cos(A + B)$ (iii) $\tan(A - B)$

42. Find following (i) $\tan 15^\circ$ (ii) $\tan 105^\circ$ (iii) $\cos 75^\circ$
43. If $A + B = \frac{\pi}{4}$, prove that: $(1 + \tan A)(1 + \tan B) = 2$
44. Prove that $\sin 10^\circ \sin 30^\circ \sin 50^\circ \sin 70^\circ = \frac{1}{16}$ and $4 \cos 12^\circ \cos 48^\circ \cos 72^\circ = \cos 36^\circ$
45. Solve following for general solutions (i) $\cos\left(\frac{3\theta}{2}\right) = \frac{1}{2}$ (ii) $\tan\left(\frac{2\theta}{3}\right) = \sqrt{3}$ (iii) $\sin 2\theta + \sin 4\theta + \sin 6\theta = 0$ (iv) $\tan \theta + \tan 2\theta + \tan \theta \tan 2\theta = 1$ (v) $\sin \theta + \sin 3\theta + \sin 5\theta = 0$.
46. Prove that $\sin 2x + 2 \sin 4x + \sin 6x = 4 \cos^2 x \sin 4x$.
47. Prove that $\sin 3x + \sin 2x - \sin x = 4 \sin x \cos \frac{x}{2} \cos \frac{3x}{2}$
48. Find $\sin \frac{x}{2}, \cos \frac{x}{2}, \tan \frac{x}{2}$ if $\cos x = -\frac{1}{3}$, x in quadrant III.
49. Find the general solution for $\cos 3x + \cos x - \cos 2x = 0$.
50. Find the degree measure corresponding to the following radian measures :
 (i) $\left(\frac{2\pi}{15}\right)^c$ (ii) $\left(\frac{\pi}{8}\right)^c$ (iii) $\left(\frac{1}{4}\right)^c$ (iv) -2^c .
51. Find the radian measures corresponding to the following degree measures :
 (i) 340° (ii) 75° (iii) $-37^\circ 30'$ (iv) $5^\circ 37' 30''$.

COMPUTER SCIENCE

1. Prepare a notes and Power point presentation on the given topic according to following schedule and send to rksirascent@gmail.com :

- | | | |
|----|---|--------------------------------------|
| a) | Generation of Computer | : Arun Kumar & Anuj Yadav |
| b) | Operating System And Its classification | : Aditya Tripathi & Salvi Singh |
| c) | CPU and CPU Scheduling | : Chandan Shukla & Sonali Singh |
| d) | Memory and its classification | : Pallavi Chauhan & Kuldeep Rawat |
| e) | Software and its classification | : Shashi Shukla & Garvit Ch. |
| f) | Types of Computer | : Vivek Ch., Jayvrat & Harshit Aayan |
| g) | Functions of Operating System | : Nishant K Sagar & Rohit Mittal |

2. Create my channel on YouTube using following steps and perform the following task.

a) **STEPS TO CREATE MY CHANNEL:**

First just create your gmail account using www.gmail.com then follow the following steps:

- Access www.youtube.com and sign in using your Google account username and password. The main YouTube home screen will be displayed.
- Near the upper-right corner of the screen, you'll see your account profile picture. Click on it to reveal the Google Account Menu, which will also be displayed near the top-right corner of the screen.
- Click on the "My Channel" link in the upper-right portion of the screen. The "Create Your YouTube channel" screen will be displayed. From this initial screen, you'll see your profile

photo, as well as your username and/or first and last name displayed. Click on the "Edit" link that's associated with the "From Your Google Profile" option to customize your Google profile, which will be your identity containing public information about you that people will see online.

- Under the "**Activities you'll share on your channel**" heading, you'll see four options, labelled "**Like a video,**" "**Comment on a video,**" "**Favourite a video,**" and "**Subscribe to a channel.**" Add a checkmark to the checkbox that's associated with each activity you want people who visit your YouTube channel's page to be able to do.
 - Click on the "OK, I'm Ready to Continue" button. Your YouTube Channel has now been created. The next step is to start populating your channel by uploading videos to it.
- b) AFTER CREATING YOUR CHANNEL, Install ADOBE CAPTIVATE in your computer system for recording of your computer monitor while you will be working.**
- c) Now do the following program on your system and record your voice and monitor work.**
- 2-program based on Introduction of C-programming Language.
 - 5-Programs based on Data type and Operator.
 - 5-Programs based on Branching Statements.
 - 5-Programs based on Looping Statements.

PHYSICAL EDUCATION

1. Prepare any one game project work
 - a) Reo Olympic games
 - b) Common wealth game
 - c) Asian games
2. Complete worksheet and revise chapter 1 to 2 for unit test
3. What is physical education
4. What do you mean by integrated physical education
6. What is the schemes of sports authority of india
7. Write short on following
 - a) Career in book writing
 - b) Sports broad costing
 - c) sports journalism
8. Define the following points
 - a) physical fitness
 - b) physical wellness
 - c) life style
9. Describe the importance of healthy/positive life style
10. How can health threat be prevented through life style change? Discus in detail?
11. How many type of wellness? Explain? Write shortnote onfollowing-
 - a) Maintaining a healthy weight
 - b) Personal hygiene