

**THE ASIAN SCHOOL, DEHRADUN**  
**HOLIDAY HOMEWORK OF WINTER VACATION 2018 FOR CLASS XI**

**English: Instructions:**

The home work has to be done in the English Homework notebook. No print out please. Everything should be hand written. Write in legible hand writing.

1. Read newspaper everyday (The Hindu/ Indian Express) select two interesting news reports from the front page and two articles from the editorial page and paste them in your notebook.
2. Find five new words every day and look up their meaning in the dictionary. Write them in your notebook; learn their spellings and their meanings.
3. Prepare a speech to be given in the morning assembly- Example is better than precept.
4. Read Novel – "Judgment Detox" by Gabriel Bernstein Write its book review in 150 words.

**Hindi:** 1. निम्नलिखित विषयों पर 300 शब्दों का निबन्ध लिखिए-

1. तनाव- आधुनिक जीवन शैली की देन
2. कामकाजी महिलाओं की समस्याएँ

2. पत्र-लेखन

क) अस्पताल के प्रबन्धक पर असंतोष व्यक्त करते हुए चिकित्सक अधीक्षक को पत्र लिखिए।

ख) केन्द्रीय माध्यमिक शिक्षा बोर्ड के परीक्षा नियंत्रक की ओर से बारहवी कक्षा के परीक्षार्थी के लिए एक पत्र लिखिए, कि उसने अपनी जन्मतिथि का प्रमाणपत्र नहीं भेजा है।

3. फीचर-लेखन लिखिए-150 शब्दों में

क) मोबाइल के सुख-दुख

ख) महानगरों में बढ़ते अपराध

ग) कृषकों पर कर्ज का बढ़ता बोझ

**Mathematics:**

Q1. Find values of : a)  $\sin 17\pi$       b)  $\cos \frac{39\pi}{4}$       c)  $\operatorname{cosec} \left( \frac{-20\pi}{3} \right)$       d)  $\tan \frac{7\pi}{4}$       e)  $\cos \left( \frac{-8\pi}{3} \right)$       f)  $\cot \left( \frac{-15\pi}{4} \right)$

Q2. Prove  $\sin(-420) \cos(390) + \cos(-660) \sin(330) = -1$

Q3. Prove  $2 \sin^2 \frac{3\pi}{4} + 2 \cos^2 \frac{\pi}{4} + 2 \sec^2 \pi/3 = 10$ .

Q4. If  $\sin A = \frac{3}{5}$ ,  $\cos B = \frac{9}{41}$ ,  $0 < A < \pi/2$ ,  $0 < B < \pi/2$  find  $\sin(A-B)$ ,  $\sin(A+B)$ ,  $\cos(A-B)$  &  $\cos(A+B)$

Q5. Find value of  $\tan \frac{7\pi}{12}$ ,  $\cos \frac{\pi}{12}$

Q6. Prove that :  $\cos \frac{7\pi}{12} + \cos \frac{\pi}{12} = \sin \frac{5\pi}{12} - \sin \frac{\pi}{12}$

Q7. Prove that : a)  $\frac{\cos 11^\circ + \sin 11^\circ}{\cos 11^\circ - \sin 11^\circ} = \tan 56^\circ$

b)  $\frac{\cos 9^\circ + \sin 9^\circ}{\cos 9^\circ - \sin 9^\circ} = \tan 54^\circ$

c)  $\frac{\cos 8^\circ - \sin 8^\circ}{\cos 8^\circ + \sin 8^\circ} = \tan 37^\circ$

Q8. Prove that : a)  $\cos^2 \frac{\pi}{4} - \sin^2 \frac{\pi}{12} = \frac{\sqrt{3}}{4}$

b)  $\sin^2(n+1)A - \sin^2 nA = \sin(2n+1)A \sin A$

Q9. If  $\frac{\sin(x+y)}{\sin(x-y)} = \frac{a+b}{a-b}$ , show that  $\frac{\tan x}{\tan y} = \frac{a}{b}$

Q10. Prove that :  $\sin 10^\circ \sin 30^\circ \sin 50^\circ \sin 70^\circ = \frac{1}{16}$

Q11. Show that :  $\sin 50^\circ \cos 85^\circ = \frac{1 - \sqrt{2} \sin 35^\circ}{2\sqrt{2}}$

Q12.  $\frac{\sin 5A - \sin 7A + \sin 8A - \sin 4A}{\cos 4A + \cos 7A - \cos 5A - \cos 8A} = \cot 6A$

Q13. Prove that :  $\cot \frac{\pi}{8} = \sqrt{2} + 1$

Q14.  $4 \left( bc \cos^2 \frac{A}{2} + ca \cos^2 \frac{B}{2} + ab \cos^2 \frac{C}{2} \right) = (a+b+c)^2$

Q15.  $\sin 3x - \sin x = 4 \cos^2 x - 2$

Q16. Which term of sequence  $12+8i, 11+6i, 10+4i, \dots$  is a) Purely real

b) Purely Imaginary

Q17. The sum of three terms of an A.P. is 21 and the product of the first and the third terms exceeds the second term by 6, find three terms.

Q18. If  $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$  are in A.P, prove  $a(b+c), b(c+a), c(a+b)$  are in AP.

Q19. The seventh term of a G.P is 8 times the fourth term and 5<sup>th</sup> term is 48. Find the G.P.

Q20. The sum of three numbers in G.P is 14. If the first two terms are each increased by 1 and the third term decreased by 1, the resulting numbers are in A.P. find the numbers.

Q21. Find the sum of the series :  $9 + 99 + 999 + \dots$  to n terms.

Q22. The ratio of the sum of first three terms is to that of first 6 terms of a G.P is 125: 152. Find the common ratio.

Q23. The 4<sup>th</sup> and 7<sup>th</sup> terms of a G.P are  $1/27$  and  $1/729$  respectively. Find the sum of n terms of the G.P.

Q24. The fifth term of a G.P. is 81 whereas its second term is 24. Find the series and sum of its first eight terms.

Q25. Prove that  $(9^{1/3} \cdot 9^{1/9} \cdot 9^{1/27} \dots \infty) = 3$ .

Q26. If  $S_p$  denotes the sum of the series  $1 + r^p + r^{2p} + \dots$  to  $\infty$  and  $s_p$  the sum of the series  $1 - r^p + r^{2p} \dots$  to  $\infty$ , prove that  $S_p + s_p = 2 S_{2p}$ .

Q27. Find the rational number whose decimal expansion is  $0.4\overline{23}$ .

Q28. If the A.M., A and two positive numbers a and b ( $a > b$ ) is twice their geometric mean. Prove that :  $a:b = (2 + \sqrt{3}) : (2 - \sqrt{3})$ .

Q29. If one A.M., A and two geometric means  $G_1$  and  $G_2$  inserted between any two positive numbers, show that  $\frac{G_1^2}{a^2} + \frac{G_2^2}{a^2} = 2A$ .

Q30.  $1.2.5 + 2.3.6 + 3.4.7 + \dots$  Find sum to n terms.

Q31. If A and B are two events associated with a random experiment such that  $P(A \cup B) = 0.8$ ,  $P(A \cap B) = 0.3$  and  $P(\bar{A}) = 0.5$ , find  $P(B)$ .

- Q32. In a single throw of two dice, find the probability that neither a doublet nor a total of 9 will appear.
- Q33. The probability that a person will travel by plane is  $\frac{3}{5}$  and that he will travel by train is  $\frac{1}{4}$ . What is the probability that he (she) will travel by plane or train?
- Q34. A box contains 30 bolts and 40 nuts. Half of the bolts and half of the nuts are rusted. If two items are drawn at random, what is the probability that either both are rusted or both are bolts?
- Q35. Find the probability of getting 2 or 3 tails when a coin is tossed four times.
- Q36. If A and B are mutually exclusive events such that  $P(A) = 0.35$  and  $P(B) = 0.45$ , find a)  $P(A \cup B)$  b)  $P(A \cap B)$  c)  $P(A \cap \bar{B})$  d)  $P(\bar{A} \cap \bar{B})$
- Q37. A box contains 10 good articles and 6 with defects. One item is drawn at random. The probability that it is either good or has a defect is :  
 a)  $\frac{64}{64}$  b)  $\frac{49}{64}$  c)  $\frac{40}{64}$  d)  $\frac{24}{64}$
- Q38. A box contains 6 nails and 10 nuts. Half of the nails and half of the nuts are rusted. If one item is chosen at random, the probability that it is rusted or is a nail is :  
 a)  $\frac{3}{16}$  b)  $\frac{5}{16}$  c)  $\frac{11}{16}$  d)  $\frac{14}{16}$
- Q39. A bag contains 5 black balls, 4 white balls and 3 red balls. If a ball is selected random wise, the probability that it is black or red ball is :  
 a)  $\frac{1}{3}$  b)  $\frac{1}{4}$  c)  $\frac{5}{12}$  d)  $\frac{2}{3}$
- Q40. An urn contains 9 balls two of which are red, three blue and four black. Three balls are drawn at random. The probability that they are of the same colour is :  
 a)  $\frac{5}{84}$  b)  $\frac{3}{9}$  c)  $\frac{3}{7}$  d)  $\frac{7}{17}$
- Q41. If the coefficients of  $(2r+4)$ th and  $(r-2)$ th terms in the expansion of  $(1+x)^{18}$  are equal, find r.
- Q42. Prove that the coefficient of  $(r+1)$ th term in the expansion of  $(1+x)^{n-1}$  is equal to the sum of the coefficients of rth and  $(r+1)$ th terms in the expansion of  $(1+x)^n$ .
- Q43. Prove that the term independent of x in the expansion of  $(x + \frac{1}{x})^{2n}$  is  $\frac{1 \cdot 3 \cdot 5 \cdots (2n-1)}{n!} \cdot 2^n$ .
- Q44. If the coefficients of  $2^{\text{nd}}$ ,  $3^{\text{rd}}$  and  $4^{\text{th}}$  terms in the expansion of  $(1+x)^{2n}$  are in A.P., show that  $2n^2 - 9n + 7 = 0$ .
- Q45. If the coefficients of  $2^{\text{nd}}$ ,  $3^{\text{rd}}$  and  $4^{\text{th}}$  terms in the expansion  $(1+x)^n$  are in A.P., then find the value of n.
- Q46. If the term free from x in the expansion of  $(\sqrt{x} - \frac{k}{x^2})^{10}$  is 405, find the value of k.
- Q47. Find n in the binomial  $(\sqrt[3]{2} + \frac{1}{\sqrt[3]{3}})^n$ , if the ratio of 7<sup>th</sup> term from the beginning to the 7<sup>th</sup> term from the end is  $\frac{1}{6}$ .
- Q48. Find the middle term in the expansion of :  $(\frac{2}{3}x - \frac{3}{2x})^{20}$
- Q49. Show that the three points A (2,3,4), B(-1,2,-3) and C (-4,-1,-10) are collinear and find the ratio in which C divides AB.
- Q50. Find the ratio in which the line joining (2,4,5) and (2,5,6) is divided by the yz-plane.
- Q51. Find the ratio in which the line segment joining the points (2,-1,3) and (-1,2,1) is divided by the plane  $x+y+z=5$ .
- Q52. Find the centroid of a triangle, mid points of whose sides are (1,2,-3), (3,0,1) and (-1,1,-4).
- Q53. The mid points of the sides of a triangle ABC are given by (-2,3,5), (4,-1,7) and (6,5,3). Find the coordinators of A,B and C.
- Q54. Show that the points (3,2,2), (-1,4,2), (0,5,6), (2,1,2) lie on a sphere whose centre is (1,3,4). Find also its radius.
- Q55. If A (-2,2,3) and B (13,-3,13) are two points. Find the locus of a point P which moves in such a way that  $9PA = 2PB$ .
- Q56. Show that the point A (3,3,3), B(0,6,3), C(1,7,7) and D (4,4,7) are the vertices of a square.
- Q57. X-axis :  $\sqrt{34}$ ; y-axis :  $\sqrt{41}$ ; z-axis : 5.
- Q58. If the origin is the centroid of a triangle ABC having vertices A (a,1,3), B(-2,b-5) and C (4,7,c), find the values of a,b,c.
- Q59. Find term independent of x in the expansion of  $(\sqrt{\frac{x}{3}} + \frac{\sqrt{3}}{2x^2})^{10}$
- Q60. Show that the expansion of  $(x^2 + \frac{1}{x})^{12}$  does not contain any term involving  $x^{-1}$ .

**Note : The following questions to be done in Maths Homework Note book .**

**Physics :** Prepare a project report on any of the following topics : (Cover 5 numerical from each topic)

- Gravitation** : Topic to be covered : (Kepler's Law, escape and orbital velocity, satellite)
- System of particles and rotational motion** : Topic to be covered : (Moment of inertia torque, Angular momentum and Rolling Motion)
- Thermodynamics** : Topic to be covered (Different types of system and process, Specific and molar heat capacity, Heat Engine, Carnot Cycle, Refrigerator)
- Flow of Fluids** : Topic to be covered : (Bernoulli's Principle and its application, Pascal's Law, Viscosity)

**Instructions:**

- The project report should be handwritten in A-4 size sheets.
- It should be of minimum 15 pages excluding Acknowledgement, Index and Bibliography.
- The project report should be presented in the following order: (a) Cover page showing title page of the project, student information, name of school and academic session. (b) Acknowledgement (c) Index (d) Chapters with relevant headings (e) Summary and conclusion based on findings (f) Bibliography.
- All photographs and sketches should be labelled and acknowledged.
- Numerical to be done in Physics Homework Note book.

**Chemistry :**

**Attempt the following questions. Answers to be descriptive and structures to be drawn with pencil**

- Give structures, chemical properties of : a) Heavy Water b) Hydrogen Peroxide ( $H_2O_2$ )
- Give chemistry of removal of permanent hardness of water.
- Highlight anomalous behavior of Lithium, Beryllium and Boron:



4. Give preparation reactions, major properties and uses of the following :
  - a) Sodium Carbonate
  - b) Sodium Hydroxide
  - c) Slaked Lime
  - d) Gypsum
5. Explain the structure and properties of diborane, boric acid, silica, silicones, zeolite, and silicates.
6. Write atomic, physical and chemical properties of group 13 and group 14 elements.
7. Prepare a flow chart on types of pollutants and their chemical and health hazards.
8. Differentiate between classical and photochemical smog, add the latest weather report of northern Indian region in the months of December and January. Write the various preventive measures taken to curb the seasonal pollution problem.

**Bio :** Make an investigatory project report on "Human Physiology" emphasizing the following points:

- a) Introduction to physical and anatomical organization of human body.
- b) Types of Organ Systems present in human body.
- c) Structure and function of any one organ system in detail.
- d) Disorders of the organ system and its symptoms.
- e) Diagnosis of disease/ disorder of a particular organ system.
- f) Treatment/ procedures done to cure the disorder.
- g) Post treatment preventive measures taken to recover completely from the disease.
- h) Practices to be followed in order to maintain good health and proper functioning of organ systems of human body.
- i) A case study – "On any disorder or disease of human body".

**Instructions:**

- The project report should be handwritten in A-4 size sheets.
- The project report should be presented in the following order -
  - (a) Cover page showing title page of the project, student information, name of school and academic session.
  - (b) Acknowledgement
  - (c) Chapters with relevant headings
  - (d) Summary and conclusion based on findings
  - (e) Bibliography.
- The project must contain 18-22 pages.
- Credit will be awarded to the original drawings, pictures, illustrations and creative use of materials.
- All photographs and sketches should be labelled and acknowledged.

**Computer:**

- Q1: Explain different data types of python
- Q2: Differentiate between list and variable
- Q3 Write program in python in order to accomplish following tasks
- a) Check whether a number is prime or coprime
  - b) Check a number is Armstrong or not
  - c) Find square root of a number
  - d) To sort a list in descending order
  - e) To count no of vowels, consonants and words from a String
  - f) Encode a string by replacing its every character by its consecutive character
- Q4: Solve question paper of UNIT -2

**History :** Do project work on the following topics in homework notebook :

- a) Incas Civilization
- b) Maya Civilization
- c) Aztec Civilization

**Geography :** Explain in detail major minerals found from the oceans. Write the names of important ocean routes and also explain use and impact of these route on the international trade.

**Note :** Home work to be done in the Homework note book.

**Economics :** Prepare a project on "Forms of Market". It must show the market structure, taking into account a product and relating different characteristics of the market applicable to it and its implications.

**Format :** a) Acknowledgment    b) Certificate    c) Index    d) Content of the given topic    e) Conclusion    f) Bibliography

**Guidelines :** \* A students can collect the information from books, internet, newspaper, magazines and Journals.

\* Students must conduct a survey in the market, purchase a product and collect the details of the product.

**The following questions to be answered in the homework notebook.**

- Q1. Why does demand curve slopes downward?
- Q2. Explain one commodity case of consumer equilibrium using cardinal approach.
- Q3. Explain two commodity case of consumer equilibrium using cardinal approach.
- Q4. Explain how consumer attains equilibrium through IC analysis.
- Q5. Explain any three properties of IC
- Q6. Explain diminishing MRS with help of numerical example. Also explain why it diminishes
- Q7. Why is budget line a straight line? Use numerical example to explain.
- Q8. Differentiate between movement and shift in demand curve.
- Q9. How do following affect demand for a good :
  - a) Income of Consumer.
  - b) Price of related goods
- Q10. How do following affect elasticity of demand:
  - a) Availability of substitute goods
  - b) Number of uses of a good.

**Accounts :** Students are required to assume at least 30 transactions related to an imaginary sole proprietorship form of business for which proper Journal, Ledger and Trial Balance needs to be prepared.

**Note :** This Project should be done in a separate stick file and should be completely handwritten.

- Psychology :** **Project :** A detailed case study of unique and rare genetic and psychological disorders.
- The project should include both written as well as pictorial representation of the case.
  - The project needs to be done in a thin inter leaf notebook.  
For example – Down Syndrome, Autism, Goldinhar Syndrome, Pfeiffer Syndrome, ADHD, Pitt – Hopkins Syndrome are amongst few topics.
  - The students are requested to do some research and explore vast dimension of disability and psychological deficits.

**Physical Education (Group 2 & Group 3)**

1. Make a detailed study on Doping including following points :
  - \* Meaning and type of Doping
  - \* Prohibited substances and methods
  - \* Testing in competition and out of competition
  - \* Side effects of prohibited substances
2. Prepare a write up along with picture on the following :
  - \* Winter Olympic Games
  - \* Paralympics
  - \* Common Wealth Games
  - \* SAARC Nation Games
  - \* Asian Games
3. Prepare a detailed study on Adventure Sports with a specific illustration of following :
  - \* Objectives of Adventure Sports
  - \* Rock Climbing
  - \* Trekking
  - \* River Rafting
  - \* Mountaineering
  - \* Surfing
  - \* Paragliding
  - \* Safety Measures to be adopted while participating in Adventure Sports Activity

**Business Studies : Topic :** The students to make a project on "Insurance" as aid to trade. The project should take into account the following aspects of Insurances.

- a) History of Insurance    b) Development of regulatory mechanism    c) Insurance companies in India    d) Principles of Insurance
- e) Anecdotes and interesting cases    f) Careers in Insurance.

The information can be collected by the students from :

- a) Books    b) Journals    c) Magazines & Newspapers    d) Internet    e) Interviews and surveys

The project should be a hand written one and it should have 20-25 pages in proper format.

- Music : Tabla**
1. Write down the description and the theka of the following Taals with dugun, tigan and chaugun laykari with formula :  
a) Teentaal    b) Ektaal    c) Chartaal    d) Kehervataal    e) Jhaptaal    f) Rupaktaal    g) Dhamartaal    h) Sooltaal    i) Dadrataal
  2. Give the description of the following Gharana's of Tabla :  
a) Delhi Gharana    b) Lucknow Gharana    c) Banaras Gharana    d) Ajrada Gharana    e) Farrukhabad Gharana    f) Punjab Gharana

- Music Vocal**
1. Write down the description and theka of the following taals with dugun laykari :  
a) Teentaal    b) Jahp Taal    c) Rupak Taal    d) Ek Taal    e) Dadra Taal    f) Keherwa Taal    g) Chaar Taal    h) Sool Taal    i) Dhamar Taal
  2. Give detailed description of the following Vocal Gharanas :  
a) Gwalior Gharana    b) Agra Gharana    c) Kirana Gharana    d) Bhendi Bazar Gharana    e) Jaipur- Atrauli Gharana    f) Patiala Gharana  
g) Rampur-Seheswan Gharana    h) Indore Gharana    i) Mewati Gharana    j) Banaras Gharana

**Painting :**

- \* Make 10 sketches with the help of black pen

**Note :** Size- A3

**Sheet-** Cartridge Sheet (Drawing sheet)

Principal

Vice-Principal