THE ASIAN SCHOOL, DEHRADUN
HOLIDAY HOMEWORK FOR SUMMER VACATION 2016 FOR CLASS XII

English: General Instructions : Attempt the following questions in 150 words each.

PART- A

Q1. What different moral values of M. Hamel's character are highlighted in his last lesson?

Q2. Slums are the ugly underbelly of all big cities in the world over. Describe the contrasting world of Haves and HaveNots inhabiting these two worlds.

Q3. Politicians exploit all people and to their own benefit. Comment keeping in view the situation of refugees in Seemapuri.

Q4. Through the Whimsical behaviour of the King and the subservient attitude adopted by his officials and subjects, the writer makes a dig at the political setup devoid of the essential noble values in the contemporary times. Discuss.

PART- B

Q5. Read the Novel 'The Invisible Man' By H.G. Wells and write its review.

Hindi : 1- fuEufyf[kr fo'k;ksaij yxHkx 300 "kCnksadk fucU/k fyf[k, & d½ ft;ks vk§ thusnk§ [k½ dkedkth efgyk,a

    2- fuEufyf[kr fo'k;ksaij vky{k fyf[k, %d½ gM+rksnsk dh ixfr esdk/kd gSA [k½ QSku ifjoru dk nil jk uke gSA

    3- fuEufyf[kr fo'k;ksaij Qhpj fyf[k, & d½ ixfr"khy lekt esaofj'B ukxfjdksadh leL;kA

    [k½fdlku tc vkRegR;k djrk gS rksnsk'k dh vkRek% vkigr gksrh gSA

    4- fuEufyf[kr fo'k;ksaij i= fyf[k, &

    d½vki ftl eksgYys& dkWyksuh esajgrs gS] mldsvkl&ikl l§ djus;ksa [kyu&dmusdsfy, dkbZ ikdZ ugha gS$viusuxj dslEcfU/kr vf/kdkjh dksi= fyf[k, ftl es ikdZ dh 0;oLFkk grqdne mBkus dh ikFkkZuk dh xbZ gksA

    [k½;d iflkk½ lekpkj i= lE[; dksxhakekodk"k esa?kj&?kj tkdj dN vkdMs+,d= djusdsfy, ;qpd&;pfr;ksadh vko";drk gS$viuh :fp] ;kX;rk vkSj dks'kykadk mYys[k djrsgq lEiknu dsekuo&lalk/ku icU/kd dksvkonu i= fyf[k,A

Mathematics:

1. Solve the following equation for X & Y.

$$2x - y = \begin{pmatrix} 6 & -6 & 0 \\ -4 & 2 & 1 \end{pmatrix} \quad \text{and} \quad x + 2y = \begin{pmatrix} 3 & 2 & 5 \\ 2 & 1 & -7 \end{pmatrix}$$

2. IF $A = \begin{pmatrix} 4 & 3 \\ 2 & 5 \end{pmatrix}$, find x & y such that $A^2 - xA + yI = O$.

3. If $A = \begin{pmatrix} 0 & 1 & 0 \\ 0 & 0 & I \\ P & q & r \end{pmatrix}$, show that $A^3 = pI + qA + rA^2$

4. Find the inverse of the matrix $A = \begin{pmatrix} a & b \\ c & \frac{1+bc}{a} \end{pmatrix}$

and show that $aA^{-1} = (a^2 + b\,c+1)\,I - aA$.

5. Use the product $\begin{pmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{pmatrix}$ and $\begin{pmatrix} 1 & -1 & 1 \\ 1 & -2 & -2 \\ 2 & 1 & 3 \end{pmatrix}$

Solve the equation, $x-y +z = 4, \ x -2y - 2z = 9, \ 2x + y + 3z = 1$.

6. Prove that $\begin{vmatrix} a & b & c \\ a-b & b-c & c-a \\ b+c & c+a & a+b \end{vmatrix} = a^3 + b^3 + c^3 - 3abc$

7. Prove that Prove that $\begin{vmatrix} (a + 1)(a + 2) & a + 2 & 1 \\ (a + 2)(a + 3) & a + 3 & 1 \\ (a + 3)(a + 4) & a + 4 & 1 \end{vmatrix} = -2$

8. Solve for x , $\begin{vmatrix} a + x & a - x & a - x \\ a - x & a + x & a - x \\ a - x & a - x & a + x \end{vmatrix} = 0$

9. Prove that : $\begin{vmatrix} (b + c)^2 & a^2 & bc \\ (c + a)^2 & b^2 & ca \\ (a + b)^2 & c^2 & ab \end{vmatrix} = (a-b)\,(b-c)\,(c-a)\,(a+b+c)\,(a^2 + b^2+c^2)$.

10. if $\begin{vmatrix} a & a^3 & a^4-1 \\ b & b^3 & b^4-1 \\ c & c^3 & c^4-1 \end{vmatrix} = 0$ and a, b, c are different , prove that $abc\,(ab +bc + ca) = a + b + c$

11. If $y = x \sin^{-1}x / \sqrt{1-x^2} + \log \sqrt{1-x^2}$, prove that $dy / dx = \sin^{-1}/(1-x^2)^{3/2}$

12. if $y = \frac{x}{2}\sqrt{a^2 - x^2} + \frac{a^2}{2} \sin^{-1} x/a$, prove that $dy/ dx = \sqrt{a^2 - x^2}$

13. if $y = \sin^{-1} \left(\frac{\sqrt{1+x} + \sqrt{1-x}}{2}\right)$, prove that $dy/dx = -1/2\sqrt{1-x^2}$

14. if $x\sqrt{1 + y} + y\sqrt{1 + x} = 0$, prove that $dy/ dx = \frac{-1}{(1+x)^2}$

15. If $\sqrt{1 - x^2} + \sqrt{1 - y^2} = a (x-y)$, prove that $dy/ dx = \sqrt{\frac{1-y^2}{1-x^2}}$

16. if $y\sqrt{1 - x^2} + x\sqrt{1 - y^2} = 1$, prove that $dy/dx = -\sqrt{\frac{1-y^2}{1-x^2}}$

17. If $x^2 + y^2 = t - \frac{1}{t}$, $x^4 + y^4 = t^2 + \frac{1}{t^2}$ prove that $\frac{dy}{dx} = \frac{1}{X^3 y}$

18. If $y = (x + \frac{1}{x})^x + x^{(1+\frac{1}{x})}$ find $\frac{dy}{dx}$.

19. if $y = x^x$, prove that $\dfrac{d^2y}{dx^2} - \dfrac{1}{y}\left(\dfrac{dy}{dx}\right) - \dfrac{y}{x} = 0$.

20. if $y = \sin(\sin x)$,prove that $\dfrac{d^2y}{dx^2} + \tan x \dfrac{dy}{dx} + y.\cos^2 x = 0$

21. if $x = \sin\left(\dfrac{1}{a}\log y\right)$, prove that $(1 - x^2)y_2 - xy_1 - a^2 y = 0$.

22. if $y = \dfrac{ax+b}{cx+d}$, prove that $2y_1\, y_3 = 3\,(y_2)^2$.

23. if $y = x\log\left(\dfrac{x}{a+bx}\right)$, prove that $x^3 \dfrac{d^2y}{dx^2} = \left(x\dfrac{dy}{dx} - y\right)^2$.

24. if $x = a(\cos\theta + \theta\sin\theta), y = a(\sin\theta - \theta\cos\theta)$, prove that $d^2y/dx^2 = -b^4/a^2y^3$.

25. if $x = a\cos\theta + b\sin\theta$, $b = a\sin\theta - b\cos\theta$, prove that $y^2y_2 - xy_1 + y = 0$.

26 The volume of a cube is increasing at a constant rate. Prove that increase in surface area varies inversely as the length of the cube.

27. Water is dripping out from a conical funnel of semi-vertical angle $\pi/4$ at the rate of 2 cm^2 per second through a tiny hole at the vertex. When the slant height of the water is 4 cm find the rate of decrease of the slant height of the water.

Q28. A man is moving away from a tower 41.6 high at the rate of 2 metre per second. Find the rate at which the angle of elevation of tower is changing, when he is at a distance of 30m from the foot of the tower. Assume that the eye level of the man is 1.6 m from the ground?

29. A balloon is in the form of a right circular cone surmounted by a hemi-sphere, having a diameter equal to the height of the cone, is being inflated. How fast is its volume changing with respect to its total height h, when h = 9 cm.

30. Find the equation of tangents and normal to the curve $y = \dfrac{x-7}{(x-2)(x-3)}$ at the point, where it cuts x – axis.

31. The equation of tangent at (2, 3) on the curve $y^2 = ax^3 + b$ is $y = 4x - 5$, find a and b.

32. Find all the tangents to the curve $y = \cos(x + y)$, $-2\pi \le x \le 2\pi$ that are parallel to the line $x + 2y = 0$.

33. Show that the normal at any point θ to the curve $x = a(\cos\theta + \sin\theta)$, $y = a(\sin\theta - \cos\theta)$ in at a constant distance from the origin.

34. The curve $y = ax^3 + bx^2 + cx + 5$ touches the x - axis at P (-2,0) and cuts y – axis at the point θ where its gradient in 3. Find the equation of the curve.

35. Prove that $\left(\dfrac{x}{a}\right)^m + \left(\dfrac{y}{b}\right)^n = 2$ touches the straight line $\dfrac{x}{a} + \dfrac{y}{b} = 2$ at the point (a, b)

36. Show that the curves $xy = a^2$ and $x^2 + y^2 = 2a^2$ touch each oher.

37. Separate the intervals $(0, \pi/2)$ into sn intervals in which $f(x) = \sin^4 x + \cos^4 x$ is increasing or decreasing.

38. show that $f(x) = \cos(2x + \pi/4)$ is increasing on $\left(\dfrac{3\pi}{8}, \dfrac{7\pi}{8}\right)$.

39. Determine whether $f(x) = -\dfrac{x}{2} + \sin x$ is increasing or decreasing on $\left(-\dfrac{\pi}{3}, \dfrac{\pi}{3}\right)$

40. Show that $f(x) = \tan x - 4x$ is a decreasing function on $\left(-\dfrac{\pi}{3}, \dfrac{\pi}{3}\right)$.

41. Find the value of a for which the function $f(x) = (a+2)x^3 - 3ax^2 + 9ax - 1$ decreases.

42. Show the maximum value of $(1/x)^x$ is $e^{1/e}$.

43. Show that $\sin^p\theta\,\cos^q\theta$ a maximum when $= \tan^{-1}\sqrt{p/q}$.

44. Show that $f(x) = \dfrac{\log x}{x}$ has a maximum value at x = 2.

45. A given quantity of metal is to be cart into a half cylinder with a rectangles base and semi circular ends. Show that in order that the total surface area may be minimum, the ratio of the length of the cylinder to the diameter of the semi-circular ends is $\pi : \pi + 2$.

46. The combined resistance of two resistors R$_1$ and R$_2$ is given by $\dfrac{1}{R} = \dfrac{1}{R_1} + \dfrac{1}{R_2}$.

if $R_1 + R_2 = C$, show that the maximum resistance R is obtained by $R_1 = R_2$.

47. Let AB and PQ be two vertical poles at points A and B resp. if AB= 16m, BQ = 22 m and AB=20m, then find the distance of a point R on AB from the point A such that $RP^2 + RQ^2$ is minimum.

48. Find all the point of local maxima and local minima and their conespoinding maximum and minimum values.

a) $f(x) = \sin 2x - x$, $-\dfrac{\pi}{2} \le x \le \dfrac{\pi}{2}$

b) $f(x) = \sin x + \dfrac{1}{2}\cos 2x$, $0 \le x \le \dfrac{\pi}{2}$

c) $f(x) = 2\cos x + x$, $0 < x < \pi$

d) $f(x) = x + \sqrt{1-x}$, $x \le -1$.

e) $f(x) = (x+1)(x+2)^{1/3}$, $x \ge -2$.

Physics: 1. Make a project on :

a) Capacitor	b) Metre Bridge	c) Potentio Metre	d) Moving Coil Galvanometer
e) Magnetic Materials & types of its		f) AC current	g) Semi conductor and Devices
h) AC and DC generator	i) Communication	j) Microscope and Telescope	k) Nuclear Reactor
l) Transformers	m) PNP & NPN Transistors		

Chemistry : Prepare an Investigatory Projects :

Project 1 : Study of oxalate ions content in guava fruit during different stages of ripening.

Project 2 : Study of Quantity of cosein present in different samples of milk.

Project 3: Preparation of soyabean milk and its comparison with the natural milk.

Project 4 : Study of effect of potassium bisulphate as food preservative under various conditions.

Project 5 : To study digestion of starch by salivary amylase and effect of pH and temperature.

Project 6 : Comparative study of rates of fermentation of various food materials.

Project 7 : Extraction of essential oils.

Project 8 : Study of common food adulterants in various food materials.

Project 9 : Effect of metal coupling on rusting of iron.

Project 10 : Preparation of rayon threads from cellulose sources.

Project 11: Dyeing of fabrics under various conditions.

Project 12 : Study of setting of mixtures of cement.

Project 13 : Study of constituents of alloys.

Project 14 : Study of presence of insecticides and pesticides in vegetables/ fruits.
Project 15 : Sterilization of water with bleaching powder.

Biology: Prepare an investigatory project report on any one topic out of the following – Infertility in human/ IVF Technology/ Assisted Reproductive Technologies/ Tissue Culture/ Apiculture/ Amniocentesis/ Female Foeticide/ Conservation of Biodiversity/ Study of Hematology of man/ Bacillus thuringiensis/ Sexually transmitted Diseases/ Study of Ascariasis in children/ GM plants and animals/ vermicompositing.

Instructions :

i) The project report should be handwritten in A-4 size pages.

ii) The project report should be presented in the following order-

a) Cover Page showing title 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

iii) Credit will be awarded to the original drawings, illustrations and creative use of materials.

iv) All photographs and sketches should be labelled and acknowledged.

History:

Topic : Prepare a project on : The Indus Valley Civilization :
  a) Find out the historical references on Urbanization.
  b) Art and Craft production.

Learning Outcomes : This activity will enable the students to develop :
  a) Their innovation and Creative Skills.
  b) Their research ability and future scope.
  c) Spirit of enquiry.

Method : This activity can be completed in stick file under chart paper. Maximum pages should be 15 with images and diagrams.

Geography : Collect the complete information on any one of the topics related to the field survey given below :
  1.   Poverty   2. Land Use   3. Soil   4. Pollution

Economics : 1. Explain the central problems of 'Choice of technique'?

2. Explain the meaning of opportunity cost with the help of PPC.

3. Large no of technical training institutions have been started by the govt. State the economic value in context to PPC.

4. Based on the concepts of National Income create 56 equations of National Income Aggregates.

5. The economic problem exits everywhere in the world. Whatever type of economic system a country may have. Discuss whether people during in a country would benefit, if their country's economic system changed from mixed to market economy.

6. Using a diagram explain what will happen on PPC of Bihar, if the river kosi causes widespread floods?

7. Distinguish between :

a) Factor Income and Transfer Receipt   b) Domestive and National Product

c) $GNP_{(MP)}$ and $NDP_{(FC)}$ d) Private and Personal Income

8. Calculate NDP_{FC}, GDP_{FC} and NI.

GDP_{MP}	=	2200
Consumptionof fixed capital	=	100
Indirect Taxes	=	+50
Subsidies	=	+ 35
NFIA	=	(-)50

9. Calculate :   i) GDP_{MP} ii) GNP_{MP} iii) NNP_{MD} iv) GDP_{FC} v) NDP_{FC} vi) NNP_{FC}

NNP_{MP}	-	1870
Consumption of fixed capital	-	45
Net Indirect Taxes	-	65
Factor Income to abroad	-	60
Factor Income from aboard	-	80
Direct Taxes	-	60

10. Do the following questions from Macro Economics (T.R. Jain and V.k Ohri) Page No 97 Question No 1 to 60 (Based on methods of calculating National Income)

11. Is GDP, True index for measuring economic welfare? Comment.

Computer: 1. What is a Constructor? Define a class sports with following members : i) s_id Integer   ii) P_id Integer   iii) P_Name Char (20)
Write 3 different constructors to implement constructor overloading and call them from main function.

2. Define a class to show function overloading. Define the function calc with three different definition with different parameters to calculate the values.

3. What is visibility mode? Define a class teacher with required properties and functions create 2 subclasses of class teacher with the name "Part Time" and "Full Time". Define the required properties and function.

4. Create a function to pass an array of size MXN. Calculate the product of each row and column separately.

5. Create a function to pass an array of 10 elements and add the digits of each value of the array and replace the original value with the new calculated value.

6. Write a function in C++ to count the number of uppercase alphabets present in a text file "ARTICLE.TXT".

7. Write a program to open a file and display consisting of 3 characters in them.

8. Write s program to find frequency of word "the " and replace it word "they".

9. Define a class Book with the following specification:]

Private members

Book_No	integer type
Book_title	20 character
Price	float(price per copy)
Total_cost( )	A function to calculate the total cost for N number of copies ,

where N is passed to the function as argument.

Public members:

INPUT ( )   function to reed Book_no, Book_title, price.

PURCHASE ( ) function to ask the user to input the number of copies to be purchased.

It invokes total_cost and prints the total cost to be paid by the user.

10. Define a class **Departmental** with the following specification :

private data members

Prod_name   string (45 characters)   [Product name]

Listprice   long

Dis_Price   long [Discount Price]

Net   long [Net Price]

Dis_type   char(F or N) [Discount type]

Cal_price() – The store gives a 10% discount on every product it sells. However at the time of festival season the store gives 7% festival discount after 10% regular discount. The discount type can be checked by tracking the discount type. Where 'F' means festival and 'N' means Non- festival. The Cal_price() will calculate the Discount Price and Net Price on the basis of the following table.

Product Name	List Price(Rs.)
Washing Machine	12000
Colour Television	17000
Refrigerator	18000
OTG	8000
CD Player	4500

public members

Constructor to initialize the string elements with "NULL", numeric elements with 0 and character elements with 'N'

➔ Accept() - Ask the store manager to enter Product name, list Price and discount type . The function will invoke Cal_price() to calculate Discount Price and Net Price .

➔ ShowBill() - To generate the bill to the customer with all the details of his/her purchase along with the bill amount including discount price and net price.

Note : Do all questions in PRACTICAL FILE.

Account: Prepare a Comprehensive Project including :

a)   Journal   b) Ledger   c) T. Balance   d) Financial Statement.

BST :

Project 1 : Prepare a detailed project on application of Principles of Management stating its validity and importance. Also state how effectiveness and efficiency is affected due to the applicability of these principles in the organization.

Project 2: Prepare a detailed project on marketing. The project should cover the following parameters choosing of product, ingredients, production process, market research, questionnaire, competing brand, branding, labeling, packaging, pricing, channels of distribution, transportation and warehousing, promotion, firms USP and conclusion.

Physical Education:

1. Prepare a study on Adventure sports which are in your course also explain about the materials required and the safety measures taken while participating in adventure sports.

2.Prepare a detailed study of macro and micro nutrients and their role in sports performances.

3.Prepare a study on posture deformities along with their remedial measures.

4. Make a detailed study on the following: soft tissue injuries, Bone injuries and joint injuries

5.Prepare a study on the role of Asan, Swiss ball, plyometrics and Aerobics on health and fitness (any one).

6. Solve the UT-1 question papers of Group 2 and Group 3

Psychology: 1. Do the practical 1, 2 (Intelligence and Self)

2. Visit on rehabilitation centre, old age home or special school and plan the case study on a subject using:

Case study method, Questionnaire and test supporting the disorder or cause.

3. Do the questions and answer of chapter 1 to 4 in home work note book.

Painting: 1. 10 Water colour in still life.

Note :   * Sheet Size : A3   *Sheet Name : Cartridge Sheet

Music (Vocal) :1. Write the life sketch of the following musicians, specially mentioning their contribution to the field of Music :

a) Ustad Feriyaz Khan   b) Bade Gulam Ali Khan

c) Pt. Krisah Rao Shankar   d) Abdul Kari Khan

2. What do you understand by the Term of 'Music Theraphy'. How does music work as a 'Therapy. Answer by giving few examples.

3. Make a list of Musicians who have received Rashtrapati Award for the year 2016.

Music (Instrumental Tabla) : 1. Write the description of the following Tabla Gharana's Specially mentioning their Vadan Shelly.

a)   Delhi Gharana   b) Ajrana Gharana   c) Lucknow Gharana   d) Banaras Gharana

e)   Farukhabad Gharana   f) Punjab Gharana

2. Write the History of Tabla.