

HOLIDAY HOMEWORK 2019

Class: XII A

This year, your holiday homework is a fun mix of all the aspects of learning. It has been designed to ensure that you enjoy and learn at the same time. Special attention has been taken to ensure that you use your creativity, your innovative ideas and your imagination to shape your holiday homework into fantastic 'creations'. So enjoy your holidays spending quality times with your near and dear ones and devote sometimes to learn new things.

General Instructions:

- Holiday Homework of all subjects to be done in **separate Stick Files** (only).
- The areas to be covered are suggested below. You can of course use your creativity and innovation for new ideas too!
- Credit will be awarded to original photographs/ drawings, illustrations and creative use of materials.
- Holiday Homework needs to be submitted on 10th July 2019.
- Holiday Homework needs to be developed and presented in this order:
 - Cover page showing title, student information, school and academic year and parent's signature.
 - List of contents with page numbers.
 - The last page should have Bibliography/ Sources of information from where you have collected your information.

Subject: English

1. Read the chapter '**Indigo**' from the book Flamingo. After reading and analyzing this chapter try to understand the issues of poor farmers of that time and write a detailed summary of the chapter in about 120-150 words.

In India, still poor farmers are going through so many issues. Choose any one of the Agricultural Issues of India that has provoked a controversy in which lives of poor farmers have been affected: a) find out the facts of the case, b) present your arguments, and c) suggest a possible settlement.

2. Read the chapter '**On the face of it**' from the book Vistas and write a detailed summary of the chapter in about 120-150 words. Attempt character sketch of Mr. Lamb and Derry (word limit: 60-80)

Subject: Mathematics

TOPIC: Matrices

1. Verify that $(AB)' = B'A'$, where: (i) $A = \begin{pmatrix} 2 & 3 \\ 4 & 1 \end{pmatrix}$, $B = \begin{pmatrix} 1 & 0 & -1 \\ 2 & 1 & 3 \end{pmatrix}$ (ii) $A = \begin{pmatrix} 3 \\ 5 \\ 2 \end{pmatrix}$, $B = \begin{pmatrix} 1 & 0 & 4 \end{pmatrix}$

2. If $A = \begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$, show that $A^2 - 5A + 7I = 0$. Hence find A^{-1} .

3. Express $\begin{pmatrix} 4 & 3 & 7 \\ 6 & 5 & -8 \\ 1 & 2 & 6 \end{pmatrix}$ as a sum of a symmetric matrix and a skew-symmetric matrix.

4. Let $A = \begin{pmatrix} \cos \alpha & \sin \alpha \\ -\sin \alpha & \cos \alpha \end{pmatrix}$, prove by mathematical induction that $A^n = \begin{pmatrix} \cos n\alpha & \sin n\alpha \\ -\sin n\alpha & \cos n\alpha \end{pmatrix}$ for every positive integer n.

5. If $A = \begin{pmatrix} 3 & 2 \\ 1 & 1 \end{pmatrix}$, verify that $A^2 - 4A + I = 0$ hence find A^{-1}

6. If $A = \begin{pmatrix} 3 & -2 \\ 4 & -2 \end{pmatrix}$ find k such that $A^2 = K A - 2I_2$

7. If the matrix $\begin{pmatrix} -2 & x-y & 5 \\ 10 & 0 & 4 \\ x+y & z & 7 \end{pmatrix}$ is symmetric, find the values of x,y and z.

8. Find the inverse of the matrix by using elementary operation: $\begin{pmatrix} 1 & 3 & -2 \\ -3 & 0 & -1 \\ 2 & 1 & 0 \end{pmatrix}$

9. If $A^{-1} = \begin{pmatrix} 3 & -1 & 1 \\ -15 & 6 & -5 \\ 5 & -2 & 2 \end{pmatrix}$ and $B = \begin{pmatrix} 3 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{pmatrix}$, find $(AB)^{-1}$

10. Find the matrix X such that $\begin{pmatrix} 2 & -1 \\ 0 & 1 \\ -2 & 4 \end{pmatrix} X = \begin{pmatrix} -1 & -8 & -10 \\ 3 & 4 & 0 \\ 10 & 20 & 10 \end{pmatrix}$

11. If $A = \begin{pmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{pmatrix}$, prove that $A^2 - 4A - 5I = 0$ hence find A^{-1}

12. If $\begin{pmatrix} 0 & -\tan \frac{\alpha}{2} \\ \tan \frac{\alpha}{2} & 0 \end{pmatrix}$ and I is the identity matrix of order 2, show that

$$I + A = (I - A) = \begin{pmatrix} \cos \alpha & -\sin \alpha \\ \sin \alpha & \cos \alpha \end{pmatrix}$$

13. Two schools A and B want to award their selected students on the values of sincerity, truthfulness and helpfulness. The school A wants to award ₹ x each, ₹ y each and ₹ z each for the three respective values to 3, 2 and 1 students respectively with total award money of ₹ 1,600. School B wants to spend ₹ 2,300 to award its 4, 1 and 3 students on the respective values (by giving the same award money to the three values as before). If the total amount of award for one prize on each value is ₹ 900, using matrices, find the award money for each value. Apart from these three values, suggest one more value which should be considered for award.

TOPIC: Determinants

1. If $A = \begin{pmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{pmatrix}$, find A^{-1} and use it solve the system of equations:

$$x + y + 2z = 0, x + 2y - z = 9, x - 3y + 3z = -14.$$

2. Using matrices, solve the following system of equations: $3x - y + z = 5, 2x - 2y + 3z = 7, x + y - z = -1$.

Prove the following by using the properties of determinants:

$$3. \begin{vmatrix} a & a+b & a+2b \\ a+2b & a & a+b \\ a+b & a+2b & a \end{vmatrix} = 9b^2(a+b)$$

$$4. \begin{vmatrix} b+c & c+a & a+b \\ q+r & r+p & p+q \\ y+z & z+x & x+y \end{vmatrix} = 2 \begin{vmatrix} a & b & c \\ p & q & r \\ x & y & z \end{vmatrix}$$

$$5. \begin{vmatrix} 3a & -a+b & -a+c \\ a-b & 3b & c-b \\ a-c & b-c & 3c \end{vmatrix} = 3(a+b+c)(ab+bc+ca)$$

$$6. \begin{vmatrix} (b+c)^2 & a^2 & bc \\ (c+a)^2 & b^2 & ca \\ (a+b)^2 & c^2 & ab \end{vmatrix} = (a-b)(b-c)(c-a)(a+b+c)(a^2+b^2+c^2)$$

$$7. \begin{vmatrix} (b+c)^2 & a^2 & a^2 \\ b^2 & (c+a)^2 & b^2 \\ c^2 & c^2 & (a+b)^2 \end{vmatrix} = 2abc(a+b+c)^3$$

$$8. \begin{vmatrix} (b+c)^2 & ab & ac \\ ab & (c+a)^2 & bc \\ ac & bc & (a+b)^2 \end{vmatrix} = 2abc(a+b+c)^3$$

$$9. \begin{vmatrix} a+x & y & z \\ x & a+y & z \\ x & y & a+z \end{vmatrix} = a^2(a+x+y+z)$$

$$10. \text{ Using properties of determinants, Solve for } x: \begin{vmatrix} a+x & a-x & a-x \\ a-x & a+x & a-x \\ a-x & a-x & a+x \end{vmatrix} = 0$$

11. Using properties of determinants, show that $\triangle ABC$ is isosceles if

$$\begin{vmatrix} 1 & 1 & 1 \\ 1+\cos A & 1+\cos B & 1+\cos C \\ \cos^2 A + \cos A & \cos^2 B + \cos B & \cos^2 C + \cos C \end{vmatrix} = 0$$

12. If x, y, z are real numbers such that $x + y + z = \pi$ then find the value of

$$\begin{vmatrix} \sin(x+y+z) & \sin(x+z) & \cos z \\ -\sin y & 0 & \tan x \\ \cos(x+y) & \tan(y+z) & 0 \end{vmatrix}$$

TOPIC: Linear Programming

1. A dealer deals in two items only – item A and item B. He has ₹ 50,000 to invest and a space to store at most 60 items. An item A costs ₹ 2,500 and an item B costs ₹ 500. A net profit to him on item A is ₹ 500 and on item B ₹ 150. If he can sell all the items that he purchases, how should he invest his amount to have maximum profit? Formulate an LPP and solve it graphically.
2. A manufacturing company makes two models A and B of a product. Each piece of model A requires 9 hours of labour for fabricating and 1 hour for finishing. Each piece of model B requires 12 hours of labour for fabricating and 3 hours for finishing. The maximum number of labour hours, available for fabricating and for finishing, are 180 and 30 respectively. The company makes a profit of Rs 8000 and Rs 12000 on each piece of model A and model B respectively. How many pieces of each model should be manufactured to get maximum profit? Also, find the maximum profit.
3. Solve the following Linear Programming Problem graphically:
Maximize $Z = 3x + 4y$ subject to $x + y \leq 4$, $x \geq 0$, $y \geq 0$
4. A firm has to transport at least 1200 packages daily using large vans which carry 200 packages each and small vans which can take 80 packages each. The cost for engaging each large van is ₹ 400 and each small van is ₹ 200. Not more than ₹ 3,000 is to be spent daily on the job and the number of large vans cannot exceed the number of small vans. Formulate this problem as a LPP given that the objective is to minimize cost.
5. Solve the following Linear Programming problem graphically:
Minimize: $z = 6x + 3y$, Subject to the constraints $4x + y \geq 80$, $x + 5y \geq 115$, $3x + 2y \leq 150$
6. A housewife wishes to mix together two kinds of food, X and Y, in such a way that the mixture contains at least 10 units of vitamin A, 12 units of vitamin B and 8 units of vitamin C. The vitamin contents of one kg of food is given below :

	Vitamin A	Vitamin B	Vitamin C
Food X	1	2	3
Food Y	2	2	1

One kg of food X costs ₹ 6 and one kg of food Y costs ₹ 10. Formulate the above problem as a linear programming problem and find the least cost of the mixture which will produce the diet graphically. What value will you like to attach with this problem?

7. Solve the following linear programming problem graphically :
Minimize : $z = 3x + 9y$
When : $x + 3y \leq 60$
 $x + y \leq 10$
 $x \leq y$
 $x \geq 0, y \geq 0$
8. Two godowns A and B have grain capacity of 100 quintals and 50 quintals respectively. They supply to 3 ration shops, D, E and F whose requirements are 60, 50 and 40 quintals respectively. The cost of transportation per quintal from the godowns to the shops are given in the following table:

Transportation cost per quintal (in Rs)		
From/To	A	B
D	6	4
E	3	2
F	2.50	3

How should the supplies be transported in order that the transportation cost is minimum?
What is the minimum cost?

9. An oil company has two depots A and B with capacities of 7000 L and 4000 L respectively. The company is to supply oil to three petrol pumps, D, E and F whose requirements are 4500L, 3000L and 3500L respectively. The distance (in km) between the depots and the petrol pumps is given in the following table:

Distance in (km)		
From/To	A	B
D	7	3
E	6	4
F	3	2

Assuming that the transportation cost of 10 litres of oil is Rs. 1 per km, how should the delivery be scheduled in order that the transportation cost is minimum? What is the minimum cost?

10. Minimise and Maximise $Z = 5x + 10y$ subject to $x + 2y \leq 120$, $x + y \geq 60$, $x - 2y \geq 0$, $x, y \geq 0$.

Subject: Accountancy

Prepare a Comprehensive Project

Guidelines

- Draw a question of starting new business as discussed in the class – source material.
- Processing the source material:
Journal entries and ledger accounts should be prepared from the information given in the source material.
After preparing the Trial balance, Trading and Profit and Loss Account and Balance Sheet should be prepared.
Lastly necessary ratios should be calculated to take a decision.

Subject: Business Studies

Students are supposed to select one unit out of four and are required to make only ONE project from the selected unit.

I. Project 1: Elements of Business Environment

- Changing role of women in the society
- Child labour
- Use of plastic bags or any other social issue

OR

II. Project 2: Principles of management

Select any business organization and Check the applicability of the Fayol's principles of management and prepare a report of it.

OR

III. Project 3: Marketing Management

Select a product of your choice and prepare the report on 1. Type of product /service identified and the

(consumer/industries) process involve there in. 2. Brand name and the product. 3. Range of the product. 4. Identification mark or logo. 5. Tagline. 6. Labeling and packaging. 7. Price of the product and basis of price fixation. 8. Selected channels of distribution and reasons thereof. 9. Decisions related to transportation and warehousing. State reasons. 10. Promotional techniques used and starting reasons for deciding the particular technique. 11. Grading and standardization.

Subject: Economics

INSTRUCTIONS:

Scope of the project: Student may work upon the following lines:

- i) Introduction
- ii) Details of the topic
- iii) Pros and Cons of the economic event/happening
- iv) Major criticism related to the topic (if any)
- iv) Student's own views/perception/ opinion and learning from the work
- v) Any other valid idea as per the perceived notion of the student who is actually working and presenting the Project-Work.

LIST OF TOPICS FOR STUDENTS

S.NO	NAME OF STUDENT	TOPIC OF PROJECT
1	Mohit Dayma	Indian economy on the eve of independence
2	Gaurang Sharma	Indian economy on the eve of independence
3	Priyanka Advani	Govt. Budget
4	Devansh Daulagupu	Economic reform(LPG Policy)
5	Keshav Goyal	Foreign exchange
6	Pranav Lahoti	Comparative development experiences of India and its neighbouring country China and Pakistan
7	Aman Yadav	Poverty
8	Piyush Goyal	Environment and sustainable development
9	Sogyal Phintso	Rural development
10	Krishna Patwari	Indian economy on the eve of independence
11	Tadar Keyie	Rural development
12	Binayak Agrawal	Govt. Budget
13	Shruti Gupta	Money and banking
14	Naman Jasnani	Money and banking
15	Chirag Yadav	Poverty
16	Ayerish Tomer	Indian economy on the eve of independence
17	Saransh Bhatia	Indian economy on the eve of independence

Subject: Entrepreneurship

Project 1: Market Survey

Students have to conduct the survey in any one of the below mentioned topics and follow the guidelines:

- A. Conduct a sample market research with the objective of estimating demand for an existing product in the market. Students have to give an innovative suggestion to the product.
- B. Conduct a survey for a new innovative product.
- C. Conduct a survey for study on
 - a) Smoking habits
 - b) Skill Trading Options in an economic backward neighbourhood
 - c) Wearing Helmets
 - d) Attitudes of Road Users
 - e) Conservation of Electricity
 - f) Rainwater Harvesting

Project 2: Business Plan

Page wise guideline for entrepreneurship

Page 1 Cover Page

Design an attractive cover page and write following things:

Business Plan	
Under Guidance of: (Name of Teacher)	Submitted by: (Name of Student)
Logo of School	
Name and Address of the School	

Page 2 Certificate of Authenticity – Print of the certificate will be provided.

Page 3 Acknowledgement- Print**Page 4 Objectives**

Write in one page and give 3 to 5 objectives

Examples of objectives:

1. To understand the Hair Oil Industry
2. To find out possibility of marketing a new brand of Hair Oil
3. To understand my competitors and their products
4. To identify the details about my target market
5. To estimate my start-up cost, risk associated and selling price
6. To prepare my projected statement of Profit & Loss
7. To conduct a Break-even Analysis.

Page 5 Index

S.NO.	Particulars	Page NO.
1	Example: Name of the business, Logo and Tagline	

Page 6 Name of the business, Logo and Tagline

1. Name of your business and reason for choosing it.
2. Define a 'Logo' giving the benefits of having a logo and draw a logo for your business.
3. Define a 'Tagline' giving the benefits of having a tagline and draft a tagline for your business.

Page 7 Competing Products/Services and your USP (Unique Selling Proposition)

1. Are there similar products and services in the market? Give details of at least 3 such competitors.
2. Also, give what you consider to be your competitive advantage and your USP that will beat the competition.

Page 8 Marketing Plan

- a. Market Research Plan.
 - Talk about your competitor, demand for your product and service – is it there or do you think you can create it?
 - If there is no competitors (a new product/service), then analyse the demand for the product.
- b. Target customers and how will you reach them
 - What do you mean by target market?
 - Define who constitutes a firm's target market.
 - Drive details about your target market with reasons for your choice.
- c. Your advertising and promotion idea
 - Define promotion mix and its components.
 - Mention the tools of promotion mix that you would be using with reason. (Ex: Advertising, Sales Promotion etc.,)
- d. Packaging
- e. Distribution
 - Define channels of distribution – Direct and Indirect
 - Explain the reasons for your choice of Channels of Distribution.
- f. What does quality mean for your product/service?
 - Including applicable standardization marks such as Agmark, FPO, ISI etc.,

Page 9 Costing Decision

What is the cost of a unit of your product or unit service?

- Define 'Costs' and its components: Fixed costs and Variable Costs

- Show the computation or explain the logic here.
- Compute the fixed costs like- consultation charges, salary, rent, insurance.
- Compute the variable costs like- packaging charges, raw materials, power, and wages.

Page 10 Selling Price

- What is your selling price and the reason for it?
- Name the pricing strategy adopted by you.

Page 11 Start –up Costs

- Give the details of your start-up costs here:
Land, Building, Computers, Equipment's, Machinery, Vehicles, Vessels, Software, Hardware, Inauguration Ceremony expenses, Raw materials, Salary, Rent in advance etc.
- How would you meet your start-up costs? (How much will be the owner's fund and how much will be borrowed and at which rate of interest)

Page 12 Risk Analysis

- Define business risk.
- Explain the causes of business risk.
- What are the likely risk factors of your business and how would you meet them?

Page 13 Statement of Profit & Loss

S No.	Particulars	Units	Rupees	Rupees
A	Sales			XXXX
B	Cost of Sales			XXXX
C	Gross Profit = A - B			XXXX
	Fixed Expenses:			
	Salaries		XXXX	
	Rent		XXXX	
	Utilities		XXXX	
	Monthly interest on loan		XXXX	
	Transport		XXXX	
	Miscellaneous		XXXX	
D	Total Fixed Expenses (Cash)			XXXX
E	Depreciation(Non-Cash)			XXXX
F	Total Fixed Expenses (Cash & Non-Cash)			XXXX
G	Operating Profit /Loss = C - F			XXXX
H	Taxes = Use 25% on profit only			XXXX
I	Net Profit/Net Loss = G - H			XXXX

Page 14 Break Even Analysis

- Define Break-even point
- What is the break-even point of your business? Show the computation assuming the selling price and the units that will be sold.

Page 15 Conclusion and Recommendations

The complete findings of the project should be presented here in points in one or two pages.

Page 16 Bibliography

Names of books used and website addresses.

Page 17 Appendix

- Any specific terms used are to be defines here
- Questionnaire to be attached here

Subject: Informatics Practices

IT APPLICATION

Prepare PPT about 20-25 slides on the following topics:

1. E-Governess

2. E-Business
3. E-Learning
4. Impact of ICT on Society

Note: Refer to chapter no -17 (page no 509-536).

Subject: Physical Education

1. Collect brief portfolio of any one male and one female sportsperson of one of the following games- Football/ Basketball/ Cricket (**Must be an Indian Sportsperson**)
2. Write any ten latest rules of your choice of game (same as above list).
3. Explain any 2-2 Yoga Asana with their benefits, precautions, contraindications to cure 3 lifestyle diseases (Asthma, Obesity and Hypertension).

Note – All the work need to be done only in Practical File (Prescribed for CBSE Board Practical). Do the work neatly. Attach pictures related with the topic wherever required.