



CLASS XII
SUMMER HOLIDAY HOMEWORK
(2024-25)

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ACCOUNTANCY

PROJECT GUIDELINES

THE OBJECTIVES OF THE PROJECT WORK ARE TO ENABLE THE LEARNERS:

1. To state the meaning, objectives, and limitations of Financial Statement Analysis.
2. To study the proper use of different tools of 'Financial Statements Analysis' like Comparative Analysis, Ratios and Cash Flow Statement.
3. To create Comparative Statement and Common Size Statement.
4. To understand the meaning, objectives, advantages, and limitations of Accounting Ratios.

SCOPE OF THE PROJECT:

STEPS INVOLVED IN THE CONDUCT OF THE PROJECT:

- A listed Company will be allotted. Name of the company will be according to First letter of the name of student. Like Name of student is Dikshant then name of company should be started with letter **D** Like Dabur.
- 1 Company will be taken by 1 student means same company will not be taken by other student.
- Collection of the research material/data
- Organization of material/data
- Present material/data
- Analysing the material/data for conclusion
- Draw the relevant conclusion
- Presentation of the Project Work

DETAILS ABOUT THE PROJECT:

- Research on the company allotted to each student.
- Background details of a company.
- Board of directors: -Name, Designation and Pictures.
- Pictures of the products in which the company is dealing
- Consolidated Financial Statements of a company (2024-25) for the current year's and the previous year's to be pasted (Balance sheet, Statement of Profit and Loss.
- Major Notes to Accounts. (**5 Notes** from Balance Sheet and **5 Notes** from Statement of Profit and Loss which shall include the note to account for **Share Capital** from Balance Sheet and **Revenue from Operation** from P&L Account.)
- Analysis of financial statements to be done based on the following.
 - 1. Cash Flow Statement.**
 - 2. Calculate the ratios based on the data. (3 ratios from each major category) (Definition, formula & solution for both the years, Pie diagram and comments of current**

year and previous year, Pie chart and diagram of each ratio)

SEQUENCE IN THE PROJECT:

1. Title of the project
2. Acknowledgement
3. Certificate
4. Index or Table of contents
5. Project work.

POINTS NEED TO BE KEPT IN MIND:

- Project should be made only on A3size sheet. (only White Interleaf sheets to be used)
- Certificate of project will be provided by the school.
- Project content should have pictures and bar diagrams.

BUSINESS STUDIES

PROJECT INSTRUCTIONS (054)

The course in Business Studies is introduced at Senior School level to provide students with a sound understanding of the principles and practices bearing in business (trade and industry) as well as their relationship with the society. The projects have been designed to allow students to appreciate that business is an integral component of society and help them develop an understanding of the social and ethical issues concerning them. By means of Project Work the students are exposed to life beyond textbooks giving them opportunities to refer materials, gather information, analyse it further to obtain relevant information and decide what matter to keep.

OBJECTIVES

After doing the Project Work in Business Studies, the students will be able to do the following:

- Develop a practical approach by using modern technologies in the field of business and management;
- Get an opportunity for exposure to the operational environment in the field of business management and related services;
- Inculcate important skills of team-work, problem solving, time management, information collection, processing, analysing and synthesising relevant information to derive meaningful conclusions;
- Get involved in the process of research work;
- Demonstrate his or her capabilities while working independently and
- Make studies an enjoyable experience to cherish.

(I) PROJECT ONE: ELEMENTS OF BUSINESS ENVIRONMENT

Students have to select *any one* element of the following:

1. Changes witnessed over the last few years on mode of packaging and its economic impact. The teacher may guide the students to identify the following changes:

- (a) The changes in transportation of fruits and vegetables such as cardboard crates being used in place of wooden crates, etc. Reasons for above changes.
- (b) Milk being supplied in glass bottles, later in plastic bags and now in tetra pack and through vending machines.
- (c) Plastic furniture [doors and stools] gaining preference over wooden furniture.
- (d) The origin of cardboard and the various stages of changes and growth.
- (e) Brown paper bags packing to recycled paper bags to plastic bags and cloth bags.
- (f) Reuse of packaging [bottles, jars and tins] to attract customers for their products.
- (g) The concept of pyramid packaging for milk.
- (h) Cost being borne by the consumer/manufacturer.
- (i) Packaging used as means of advertisements.

2. The reasons behind changes in the following:

Coca-Cola and Fanta in the seventies to Thums up and Campa Cola in the eighties to Pepsi and Coke in nineties.

Students will have to research about the times when India sold Coca Cola and Fanta which were being manufactured in India by the foreign companies.

The students have to enquire about:

- (a) Reasons of stopping the manufacturing of the above-mentioned drinks in India THEN.

- (b)The introduction of Thums up and Campa cola range.
 - (c)Re-entry of Coke and introduction of Pepsi in the Indian market.
 - (d)Factors responsible for the change.
 - (e)Other linkages with the above.
 - (f)Leading brands and the company having the highest market share.
 - (g)Different local brands venturing in the Indian market.
 - (h)The rating of the above brands in the market.
 - (i)The survival and reasons of failure in competition with the international brands.
 - (j)Other observations made by the students.
- 3.Changing role of the women in the past 25 years relating to joint families, nuclear families, women as a bread earner of the family, changes in the requirement trend of mixers, washing machines, micro wave and standard of living.
- 4.The changes in the pattern of import and export of different Products.
- 5.The trend in the changing interest rates and their effect on savings.
- 6.A study on child labour laws, its implementation and consequences.
- 7.The state of 'anti plastic campaign,' the law, its effects and implementation.
- 8.The laws of mining /setting up of industries, rules and regulations, licences required for running that business.
- 9.Social factors affecting acceptance and rejection of an identified product. (Dish washer, Atta maker, etc.)
- 10.What has the effect of change in environment on the types of goods and services? The students can take examples like:
- (a)Washing machines, micro waves, mixers and grinder.
 - (b)Need for creche, day care Centre for young and old.
 - (c)Ready to eat food, eating food outside, and tiffin centres.
- 11.Change in the man-machine ratio with technological advances resulting in change of cost structure.
- 12.Effect of changes in technological environment on the behaviour of employee.

(II) PROJECT TWO: PRINCIPLES OF MANAGEMENT

The students are required to visit *any one* of the following:

- 1.A departmental store.
- 2.An industrial unit.
- 3.A fast-food outlet.
- 4.Any other organization approved by the teacher.

They are required to observe the application of the general Principles of Management advocated by Fayol.

Fayol's principles:

- 1.Division of work.
- 2.Unity of command.
- 3.Unity of direction.
- 4.Scalar chain
- 5.Esprit de corps

- 6.Fair remuneration to all.
- 7.Order.
- 8.Equity.
- 9.Discipline
- 10.Subordination of individual interest to general interest.
- 11.Initiative.
- 12.Centralization and decentralization.
- 13.Stability of tenure.

Or

They may enquire into the application of scientific management techniques by F.W. Taylor in the unit visited.

Scientific techniques of management:

- 1.Functional foremanship.
- 2.Standardisation and simplification of work.
- 3.Method study.
- 4.Motion Study.
- 5.Time Study.
- 6.Fatigue Study.
- 7.Differential piece rate plan.

The observations could be on the basis of:

- The different stages of division of work resulting to specialisation.
- Following instructions and accountability of subordinates to higher authorities.
- Visibility of order and equity in the unit.
- Balance of authority and responsibility.
- Communication levels and pattern in the organisation.
- Methods and techniques followed by the organisation for unity of direction and coordination amongst all.
- Methods of wage payments followed. The arrangements of fatigue study.
- Derivation of time study.
- Derivation and advantages of method study.
- Organisational chart of functional foremanship.
- Any other identified in the organisation

(vi)It is advised that students should pick up different areas of visit.

(vii)The students may be encouraged to develop worksheets.

Examples; worksheets, questionnaire, interviews and organisational chart, etc.

III. PROJECT THREE: STOCK EXCHANGE

The purpose of this project is to teach school students the values of investing and utilising the stock market. This project also teaches important lessons about the economy, mathematics and financial responsibility.

The basis of this project is to learn about the stock market while investing a specified amount of fake money in certain stocks. Students then study the results and buy and sell as they see fit.

This project will also guide the students and provide them with the supplies necessary to successfully monitor stock market trends and will teach students how to calculate profit and loss on stock.

The project work will enable the students to:

- Understand the topics like sources of business finance and capital market
- Understand the concepts used in stock exchange
- Inculcate the habit of watching business channels, reading business journals/newspapers and seeking information from their elders.

The students are expected to:

- (a) Develop a brief report on History of Stock Exchanges in India, (your country)
- (b) Prepare a list of at least 25 companies listed on a Stock Exchange.
- (c) To make an imaginary portfolio totalling a sum of 50,000 equally in any of the 5 companies of their choice listed above over a period of twenty working days.

The students may be required to report the prices of the stocks on daily basis and present it diagrammatically on the graph paper.

■ They will understand the weekly holidays and the holidays under the Negotiable Instruments Act. They will also come across with terms like closing prices, opening prices, etc.

■ During this period of recording students are supposed to distinctively record the daily and starting and closing prices of the week other days under the negotiable instrument act so that they acquire knowledge about closing and opening prices.

■ The students may conclude by identifying the causes in the fluctuations of prices. Normally it would be related to the front-page news of the business journal, for example,

- Change of seasons.
- Festivals.
- Spread of epidemic.
- Strikes and accidents
- Natural and human disasters.
- Political environment.
- Lack of faith in the government policies.
- Impact of changes in government policies for specific industry.
- International events.
- Contract and treaties at the international scene.
- Relations with the neighbouring countries.
- Crisis in developed countries, etc.

The students are expected to find the value of their investments and accordingly rearrange their portfolio. The project work should cover the following aspects;

1. Graphical presentation of the share prices of different companies on different dates.
2. Change in market value of shares due to change of seasons, festivals, natural and human disasters.
3. Change in market value of shares due to change in political environment/ policies of various countries/crisis in developed countries or any other reasons
4. Identify the top ten companies out of the 25 selected on the basis of their market value of shares.

It does not matter if they have made profits or losses.

(IV) PROJECT FOUR: MARKETING MANAGEMENT

1. Adhesives	6. Bike	11. Butter
2. Air conditioners	7. Blanket	12. Camera
3. Baby diapers	8. Body Spray	13. Car
4. Bathing Soap	9. Bread	14. Cheese spreads
5. Bathroom cleaner	10. Breakfast cereal	15. Chocolate
16. Coffee	37. Ladies bag	58. Salt
17. Cosmetology product	38. Ladies footwear	59. Sarees
18. Crayons	39. Learning Toys	60. Sauces/Ketchup
19. Crockery	40. Lipstick	61. Shampoo
20. Cutlery	41. Microwave oven	62. Shaving cream
21. Cycle	42. Mixers	63. Shoe polish
22. DTH	43. Mobile	64. Shoes
23. Eraser	44. Moisturizer	65. Squashes
24. e-wash	45. Music player	66. Suitcase/airbag
25. Fairness cream	46. Nail polish	67. Sunglasses
26. Fans	47. Newspaper	68. Tea
27. Fruit candy	48. Noodles	69. Tiffin Wallah
28. Furniture	49. Pen	70. Toothpaste
29. Hair Dye	50. Pen drive	71. Wallet
30. Hair Oil	51. Pencil	72. Washing detergent
31. Infant dress	52. Pickles	73. Washing machine
32. Inverter	53. Razor	74. Washing powder
33. Jams	54. Ready Soups	75. Water bottle
34. Jeans	55. Refrigerator	76. Water storage tank
35. Jewellery	56. RO system	77. Wipes
36. Kurti	57. Roasted snacks	

suggestions by the teacher:

The students must ensure that the identified product should not be items whose consumption/ use is discouraged by the society and government like alcohol products/pan masala and tobacco products, etc.

Identify one product/service from the above which the students may like to manufacture/ provide [pre-assumption].

Now the students are required to make a project on the identified product/service keeping in mind the following.

1. Why have they selected this product/service?
 2. Find out '5' competitive brands that exist in the market.
 3. What permission and licences would be required to make the product?
 4. What are your competitors Unique Selling Proposition [U.S.P.]?
 5. Does your product have any range give details?
 6. What is the name of your product?
 7. Enlist its features.
 8. Draw the 'Label' of your product.
 9. Draw a logo for your product.
 10. Draft a tag line.
 11. What is the selling price of your competitor's product?
 - (i) Selling price to consumer
 - (ii) Selling price to retailer
 - (iii) Selling price to wholesaler
- What is the profit margin in percentage to the:
- Manufacturer.
 - Wholesaler.
 - Retailer.
12. How will your product be packaged?
 13. Which channel of distribution are you going to use? Give reasons for selection?
 14. Decisions related to warehousing, state reasons.
 15. What is going to be your selling price?
 - (i) To consumer
 - (ii) To retailer
 - (iii) To wholesaler
 16. List five ways of promoting your product.
 17. Any schemes for:
 - (i) The wholesaler
 - (ii) The retailer
 - (iii) The consumer
 18. What is going to be your 'U.S.P'?
 19. What means of transport you will use and why?
 20. Draft a social message for your label.
 21. What cost effective techniques will you follow for your product.
 22. What cost effective techniques will you follow for your promotion plan.

At this stage the students will realise the importance of the concept of marketing mix and the necessary decision regarding the four P's of marketing:

- Product
- Place
- Price
- Promotion

On the basis of the work done by the students the project report should include the following:

- 1.Type of product /service identified and the (consumer/industries) process involve their 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

PRESENTATION AND SUBMISSION OF PROJECT REPORT

At the end of the stipulated term, each student will prepare and submit his/her project report. Following essentials are required to be fulfilled for its preparation and submission:

- 1.The total length of the project will be of 25 to 30 pages.
- 2.The project should be handwritten.
- 3.The project should be presented in a neat folder.
- 4.The project report should be developed in the following sequence:
 - Cover page should include the title of the Project, student information, school and year.
 - List of contents.
 - Acknowledgements and preface (acknowledging the institution, the places visited and the persons who have helped).
 - Introduction.
 - Topic with suitable heading.
 - Planning and activities done during the project, if any.
 - Observations and findings of the visit.
 - Conclusions (summarized suggestions or findings, future scope of study).
 - Photographs (if any).
 - Appendix
 - Teacher's observation.
 - Signatures of the teachers.
- At the completion of the evaluation of the project, it should be punched in the centre so that the report may not be reused but is available for reference only.

■The project will be returned after evaluation. The school may keep the best projects.

ASSESSMENT

Allocation of Marks = 20 marks

The marks will be allocated under the following heads:

1.	Initiative, cooperativeness and participation	2 marks
2.	Creativity in presentation	2 marks
3.	Content, observation and research work	4 marks
4.	Analysis of situation	4 marks
5.	Viva	8 marks
	Total	20 marks

ECONOMICS (030)

PROJECT INSTRUCTIONS

For Project File students have to keep in mind following points: -

1. A3 Size sheets to be used.
2. Pages can be coloured/black and white. Pages can be one side line or both side black
3. Red and Green colour pen is not to be used anywhere.
4. Following sequence is to be followed in project
 - a. Page 1: - Self Introduction page containing name, class, section, roll no. (to be left blank), school logo, topic name etc.
 - b. Page 2: - Acknowledgement
 - c. Page 3: - Certificate
 - d. Page 4: - Index
 - e. Page 5: - Introduction of Topic
 - f. Page 6 onwards **Content of Topic with a CASE** Study related to topic.
 - g. After content Conclusion using Bar diagram, Pie diagram, graphs, tables etc. (minimum 6)
 - h. Last page Bibliography

Key Notes: -

1. Total Number of pages should not be less than 30 in total.
2. Minimum 8-10 photographs should be used to make project more creative as well as informative along with statistical data.
3. **SEPARATE TOPICS HAVE BEEN ALLOTTED TO EACH STUDENT AND ALSO THE LIST OF TOPIC OF EACH STUDENT IS SHARED IN CLASS COMMUNITY GROUP.**
4. **LAST DATE OF SUBMISSION OF PROJECT IS 24TH JUNE 2024.**

PHYSICAL AND HEALTH EDUCATION

❖ **Practical 1** :- Details of any major game

1. History of the game
2. Latest rules and regulations
3. Important terminologies
4. Fundamental skills
5. Award winners name
6. Play Field specifications and
7. Tournaments.

❖ **Practical 2** :- Details of Athletics

1. History of Athletics
2. Latest rules and regulations
3. Important terminologies
4. Fundamental skills
5. Award winners name
6. Play Field specifications and
7. Tournaments.

ENGLISH CORE

Q 1. Every year in the central park of the city, a flower show is held in the month of February. Your school has received a circular from the District Collector inviting your students to visit it. Write a notice informing the students about the show and advising them to go and enjoy it. You are Navtej/Navita, Head Boy/Head Girl, Sunrise Public School, Surat.

Q 2. You are Health Secretary, Students Council Citizens Public School, Ram Bagh, Varanasi. The Council has decided to start from the second of October a week-long cleanliness drive around the school. Draft a notice asking the Class XI students to enroll for the drive.

Q 3. You are Jasveen / Jasbir, you recently visited a significant historical site. You were astounded to discover it in such a condition of disrepair. Compose a letter to the editor of a major newspaper noting the terrible condition of significant archaeological and historical sites. Highlight the lack of vital services, the poor condition of upkeep, and people's carelessness for it. Make suggestions about how to improve the issue.

Q 4. Highlight the importance of proper garbage disposal with an aim to create awareness among the city residents. Write a letter regarding the same to the editor of a local daily Hindustan Times. You are Rubal of Shakti Nagar, Delhi.

HISTORY

- Prepare a file.(practical)
 - Write about the given topics according to this format...
 1. Index
 2. Synopsis
 3. Content
 4. Conclusion
 5. Bibliography

- Revise
 - Chapter -1:writing &city life
 - Chapter -2 An empire across Three continents

GEOGRAPHY

1. Prepare a chart showing the impacts of nature on humans.
2. Prepare a chart of the adverse effects of the changes made by humans in nature.
3. Prepare a traffic signal picture that explains Stop and Go Theory or Neo-Determinism.
4. Draw a flowchart showing the development of human geography through the passage of time.
5. Prepare a simple bar diagram to compare the 10 most populous countries of the world.
6. Draw a graph of Demographic Transition Theory and show the transition stages in it

CORE MATHEMATICS

• LAB MANUAL ACTIVITY

- Activity 1. To verify that the relation R in the set of lines L of all lines in a plane defined by $R = \{(l, m) : l \text{ is perpendicular to } m\}$ is an equivalence relation.
- Activity 2. To demonstrate a function which is not one one but onto.
- Activity 3. To demonstrate a function which is one one but not onto.
- Activity 4. To draw the graph of $\sin^{-1}x$, using the graph of $\sin x$ and demonstrate the concept of mirror image (about the line $y=x$).

Question 1. If $|A|=5$ and order of matrices is 3 then find the following

- a. $|\text{adj}A|$
- b. $|2 \text{adj}A|$
- c. $|\text{adj}(\text{adj}A)|$
- d. $|5A|$
- e. $|A^{-1}|$
- f. $A(\text{adj}A)$
- g. $|A^{-1}A^T|$

Question 2. if the system of equation $-2x+y+z=a$, $x-2y+z=b$ and $x+y-2z=c$ is consistent then find the values of $a+b+c$.

Question 3. Determine the product $\begin{bmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix} \begin{bmatrix} 1 & -1 & 1 \\ 1 & -2 & -2 \\ 2 & 1 & 3 \end{bmatrix}$ and use to solve the system of equations $x+y+z=4$, $x-2y-2z=9$ and $2x+y+3z=1$.

Question 4. If $A = \begin{bmatrix} 1 & -1 & 1 \\ 2 & 1 & -3 \\ 1 & 1 & 1 \end{bmatrix}$ then find A^{-1} . And hence solve the system of linear equations $X+2y+z=4$, $-x+y+z=0$ and $x-3y+z=2$.

Question 5. If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ a & 2 & b \end{bmatrix}$ is a matrix satisfying $AA^T = 9I_3$ then find the values of a and b .

Question 6. If $A(a,b)$, $B(c,d)$ and $D(e,f)$ are vertices of an equilateral triangle whose side is p , Then show that

$$\begin{vmatrix} a & b & 1 \\ c & d & 1 \\ e & f & 1 \end{vmatrix}^2 = 3p^4$$

Question 7. On his birthday, a person decided to donate some money to children of an orphanage home. If there were 8 children less, every one would have got 10 rs more. However if there were 16 children more, everyone would have got 8 Rs, less.

Let number of children be x and amount distributed biishan to one child is y .

Based on the above information answer the following questions.

- a). write matrix equation representing the information given above

b). if A is the coefficient matrix of above situation, then what is $\text{adj}A$.

c). find the number of child and amount donated by ishan.

Question 8. If R and S are equivalence relation then show that $R \cap S$ is also an equivalence relation

Question 9. Find the number of one one function defined from $A=\{a,b,c,d\}$ to $B=\{e,f,g,h\}$ and find the number of onto functions defined from A to B.

Question 10. $F(x)=3x^2+2$ is defined from R to R then show that the function is neither one one nor onto.

PSYCHOLOGY

- **Prepare a file.(practical)**

- ❖ **Write about the given topics according to the instructions given in class.**

1. Intelligence
2. Personality
3. Aptitude
4. Attitude
5. Adjustment

- ❖ **Revise**

- Chapter -1 ,Variations in Psychological Attributes.
- Chapter -2 ,Self and Personality.

INFORMATICS PRACTICES

Instructions-

All the Questions to be done in Copy / Practical file-

Q1. How is Series data structure different from a DataFrame data structure?(3 points)

Q2. Given are the two objects, a list object namely lst1 and a series object namely ser1, both are having similar values i.e. 2,4,6,8. Find the output produced by the following statements-

i) `print(lst1*2)` ii) `print(ser1*2)`

Q3. Consider the given series ,M1-

	Marks
Term1	45
Term2	65
Term3	24
Term4	89

Write a program in Python to create the series.

Q4. What will be the output of the following program-

```

Import pandas as pd
Fst= [9,10,11]
Scd=pd.Series(fst)
Ob1=pd.Series(data=Fst*2)
Ob2=pd.Series(data=Scd*2)
Print("Ob1")
Print(Ob1)
Print("ob2")
Print(Ob2)

```

Q5. What will be the output of the following code-

```

Import pandas as pd
Import numpy as np

Data=np.array(['a1','b1','c1','d1','e1','f1'])
s=pd.Series(Data)
print("I.")
print(s[:3])
print("II.")
print(s[-3:])

```

Q6. What will be the output of the following:-

```

data=np.data(["a1","b1","c1","d1","e1"])
s=pd.Series(data,index=[1001,1002,1003,1004,1005])
print(s[[1002,1003,1004]])

```

Q7. Given a DataFrame `mdf` as shown below:

	A	B	C
0	1	2	3
1	4	5	6

What will be the output produced by the following code-

```
Print("I : ", mdf.iloc[0][0])
```

```
Print("II : ", mdf[0]['C'])
```

```
Print("III:", mdf.at[1,'A'])
```

```
Print("IV :", mdf.iat[1,2])
```

Q8. Explain briefly the CSV format.

Q9. Do Q10,11 of NCERT (Page no 61,62) in Practical File.

Q10. Project Work-(Project related work on the topic assigned is to be completed by using DataFrame, Series , CSV files and Matplotlib Library).

APPLIED MATHEMATICS

Question 1. If $|A|=5$ and order of matrices is 3 then find the following

- a. $|adjA|$
- b. $|2 adjA|$
- c. $|adj(adjA)|$
- d. $|5A|$
- e. $|A^{-1}|$
- f. $A(adjA)$
- g. $|A^{-1}A^T|$

Question 2. if the system of equation $-2x+y+z=a$, $x-2y+z=b$ and $x+y-2z=c$ is consistant the find the values of $a+b+c$.

Question 3. Determine the product $\begin{bmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix} \begin{bmatrix} 1 & -1 & 1 \\ 1 & -2 & -2 \\ 2 & 1 & 3 \end{bmatrix}$ and use to solve the system of equations $x+y+z=4$, $x-2y-2z=9$ and $2x+y+3z=1$.

Question 4. If $A = \begin{bmatrix} 1 & -1 & 1 \\ 2 & 1 & -3 \\ 1 & 1 & 1 \end{bmatrix}$ then find A^{-1} . And hence solve the system of linear equations $X+2y+z=4$, $-x+y+z=0$ and $x-3y+z=2$.

Question 5. If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ a & 2 & b \end{bmatrix}$ is a matrix satisfying $AA^T=9 I_3$ then find the values of a and b .

Question 6. If $A(a,b)$, $B(c,d)$ and $D(e,f)$ are vertices of an equilateral triangle whose side is p , Then show that

$$\begin{vmatrix} a & b & 1 \\ c & d & 1 \\ e & f & 1 \end{vmatrix}^2 = 3p^4$$

Question 7. On his birthday, a person decided to donate some money to children of an orphanage home. If there were 8 children less, every one would have got 10 rs more. However if there were 16 children more, every one would have got 8 rs less.

Let number of children be x and amount distributed by ishan to one child is y .

Based on the above information answer the following questions.

- a). write matrix equation representing the information given above
- b). if A is the coefficient matrix of above situation, then what is $adjA$.
- c). find the number of child and amount donated by ishan.

Question 9. 20 litres of a mixture contain milk and water In ratio 3:1, the amount of milk in litres to be added to the mixture as to have milk and water in the ratio 4:1.

Question 10. How many litres of water will have to be added to 1125 litres of 45% solution of acid so that the resulting mixture will contain more that 25% but less than 30% acid content?.

Project work-

1. Each day newspaper tells us about the maximum temperature, minimum temperature, and humidity. Collect the data for a period of 30 days and represent it graphically. Compare it with the data available for the same time period for the previous year xv)
2. Analysis of career graph of a cricketer (batting average for a batsman and bowling average for a bowler). Conclude the best year of his career. It may be extended for other players also – tennis, badminton, athlete xvi)
3. Vehicle registration data – correlating with pollution and the number of accidents

CHEMISTRY

- ❖ DO PROJECT FILE AND LAB WORK. TOPIC AND LAB WORK DETAILS WILL BE SHARED IN COMMUNITY GROUP SEPARATELY.

PHYSICS

- ❖ DO PROJECT FILE AND LAB WORK. TOPIC AND LAB WORK DETAILS WILL BE SHARED IN COMMUNITY GROUP SEPARATELY.

BIOLOGY

- ❖ DO PROJECT FILE AND LAB WORK. TOPIC AND LAB WORK DETAILS WILL BE SHARED IN COMMUNITY GROUP SEPARATELY.

POLITICAL SCIENCE

❖ **Dear Students make a project file.(Choose any one from below given Topics)**

Write about the given topics according to this format-

- 1) Index
- 2) Synopsis
- 3) Content
- 4) Conclusion
- 5) Bibliography

Topics (Any one)

1. NAM- 1961 to present times.
2. Division of Germany with special focus on the construction and dismantling of the Berlin Wall.
3. CIS-Central Asian Republics
4. Disintegration of USSR with special focus on Gorbachev.
5. Arab Spring
6. Cover the negative as well as positive aspects of relationship between India and the following countries.
Focus on any one of the following (current updates should be highlighted):
 - a) Relationship between India and Russia
 - b) Relationship between India and China
 - c) Relationship between India and Pakistan
 - d) Relationship between India and Bangladesh
8. European Union and BREXIT
9. BRICS
10. SAARC
11. India's Nuclear Policy
12. United Nations with focus on India's candidature in Security Council.
13. UN Agencies – UNICEF, UNESCO, WHO
14. Pandemics: Covid 19- Its global impact (focus on worldwide cooperation and preparedness along with controversies (please collect newspaper clippings for the same)
15. Partition of India-Theory behind it and its legacy
16. Comparison between NITI AAYOG and Planning Commission and their contribution in India's Development.
17. Election 2019- Rise of BJP and Downfall of Congress (1989-2019).
18. Emergency – A blot on Indian Democracy
19. NDA III and NDA IV – Social and Economic welfare programmes.