



Sanskriti KMV SCHOOL

Session 2026-27

Summer Break Assignments

Grade-XII Commerce

"Summertime offers the perfect pause to rejuvenate the body, mind, and spirit."

Dear Parents,

The summer vacation is a cherished opportunity to pause, reconnect with loved ones, and invest time in meaningful and enjoyable pursuits. To make this interval both enriching and engaging, we have curated a collection of experiential learning tasks aimed at promoting creativity, responsibility, and joyful exploration.

As the students unwind and recharge, we request your support in ensuring that this break is spent in a productive and wholesome manner. A few essential guidelines are as follows:

- All assignments must be completed with sincerity and submitted promptly after the vacation. Kindly ensure the work is neatly arranged in a well-labelled folder with the student's name, father's name, class, and section.
- Promote daily physical activity by encouraging your child to follow a simple fitness routine and adopt healthy eating habits.
- Engage your child in basic household tasks to instil a sense of cooperation and independence.
- Limit screen time and create opportunities for heartfelt conversations and bonding, especially with grandparents.
- Maintain a creative journal capturing memorable outings, celebrations, or simple joyful moments, accompanied by photographs.
- Let us work together to make this summer a season of discovery, joy, and meaningful learning.

"Wishing you a refreshing, safe, and sunshine-filled holiday season!"

HAPPY HOLIDAYS



ENGLISH

1. PROJECT FILE

Guidelines

o It is compulsory for all students to prepare the Project File for Internal Assessment.

o The assessment will include:

Project File – 5 Marks

Viva – 5 Marks

The project should be handwritten in about 800–1000 words.

Use A4 size white sheets and get the file spiral bound.

Cover Page, Acknowledgement and Certificate may be printed, but the remaining work should be handwritten neatly.

Paste pictures, charts and graphs on the left side and write the content on the right side.

Students should collect information through surveys, interviews, questionnaires, articles and case studies.

At least 10 people should be interviewed and a questionnaire of 15 questions should be prepared.

Attach photographs, questionnaire and other evidences at the end of the file.

Suggested Topics for Grade XI

- Importance of Time Management in Student Life
- Linguistic Chauvinism and Importance of Mother Tongue
- Fear, Phobias and Ways to Overcome Them
- Stress, Anxiety and Mental Health among Students
- Environmental Degradation and Conservation
- Meditation and Importance of Self-Introspection

- Importance of Parents and Care for Elders
- Condition of Old Age Homes in India
- Freedom Movements of India and Contributions of Freedom Fighters
- Importance of Nature and Mental Peace
- Disability and Inclusion in Society
- Society's Attitude Towards Disabled People
- Life in Slums and Child Labour
- Education for Underprivileged Children
- Role of Youth in Upliftment of Society
- War, Peace and Their Impact on Society
- Crime and Criminal Behaviour in Society

- Condition of Farmers in India
- Or Any Contemporary Topic

Project File Layout

- Cover Page
- Objective / Purpose
- Certificate
- Action Plan
- Introduction
- Main Content (Survey, Interview, Questionnaire, Case Study, Articles, Graphs, Pictures)
- Handwritten Report / Essay (800–1000 words)
- Student Reflection (100–150 words)
- Photographs / Evidence
- Bibliography / Resources

Parameters of Assessment

- Quality of Content
- Accuracy of Information
- Creativity and Presentation
- Grammar and Spellings
- Clarity of Ideas
- Timely Submission
- Participation and Effort
- Knowledge and Understanding

Q2. Activities

a. You are Rohan living in Punjab. Write an invitation to your friend living in Odisha to spend his summer vacations with you.

b. Write a notice informing the students of class 9 to 12 about the school trip to Odisha that your school cultural society is organising during the summer vacation.

Q3. Self Expression Activity

a) Motivational Speech

Prepare a 3–4 minute speech on topics like:

Never Give Up

Importance of Discipline

Power of Positivity

Success Through Hard Work

b)Any Book or Movie Review

Present:

summary

favourite character

moral/message

personal opinion

ECONOMICS

Topic : Environment and Sustainable development



Read the Chapter Environment and Sustainable Development from Indian Economic Development book and do the following question on ruled sheet.

Define the following terms:

1. Environment
2. Carrying capacity of environment
3. Absorptive capacity of environment
4. Environmental Degradation
5. Sustainable development

Answer the following questions:

1. State and discuss any two strategy involved in attaining sustainable development in India. (3)
2. Discuss the long term implication of increase in demand for environmental resources exceeding their natural regenerative capacity. (3)
3. If nation fails to enforce the regulation of Montreal Protocol the likely long term environmental and biological consequences of this will be _____ (1)
 - (i) Rapid deforestation
 - (ii) Increase possibility of skin cancer
 - (iii) Green house effect causing rise in global temperature
 - (iv) Possibility of acid rain

Options:

- (a) Only (i)
- (b) (ii), (iii) , (iv)
- (c) (i) and (iv)
- (d) (i) and (iii)

4. Study the following image carefully:



Interpret the given image and comment upon the phenomenon of environmental crisis as a result of changed production and consumption patterns. (4)

5. Mention any two factors which challenged the carrying capacity of the environment. (2)
6. State the meaning of Economic growth and zero emission? (1)

Topic : Comparative development experience of India , China and Pakistan



Read the Chapter Comparative Developmental Experience of India , China and Pakistan from Indian Economic Development book and do the following question on ruled sheet.

1. State meaning of 'Commune System'. (1)
2. "In late 1970's China's population growth rate has sharply declined as compared to India". Elucidate the reasons and impacts of this situation. (3)
3. "At the time of independence both India and Pakistan inherited similar colonial economic structure. Both the nation adopted similar economic planning strategies". Explain any two such similarities in developmental path of India and Pakistan. (4)
4. "In 1958 China launched the Great Leap Forward (GLF) campaign with a definite aim".
 - (i) State the rationale behind the introduction of GLF campaign. (2)
 - (ii) State any two failure of Great Leap Forward campaign. (2)
5. On the basis of the given data comment upon the annual growth of Gross Domestic Product (GDP) of India and China.

Annual Growth of GDP (%) 1980 - 2017			
Country	1980-90	2015-17	2022
India	5.7	7.3	7.0
China	10.3	6.8	3.0
Pakistan	6.3	5.3	4.8

PROJECT WORK CLASS XII ECONOMICS

(FOR FINAL TERM)

Dear Student

Make Economic Project file as per the assigned topic and following instructions given.

Steps towards making project:

- Cover page
- Acknowledgement
- Certificate
- Index
- Introduction
- Objective
- Identify cause, consequences and remedies
- Impact on Indian Economy
- Factors effecting
- Analysis
- Conclusion
- Bibliography

Guidelines:

1. Coloured thick A4 sheets to be used.
 2. Minimum pages 25 (From Introduction to conclusion)
 3. Spiral binding
 4. Use Blue pen
 5. Must include latest data, pictures or graphs
 6. Project file content should be written in your own handwriting
 7. File should be Neat and presentable
- **Last date of submission is 1st November 2026**

MARKETING

Q1. Collect various 20 to 25 packages for fast moving consumer goods. Create a practical

file demonstrating environmentally friendly packaging and labelling strategies adopted by various firms keeping in mind sustainable development goals

Q2. Develop your own product

TANGIBLE

Good

Name of your product

Develop Brand for your product

Logo for your Product

Describes components

Core product

Associated feature

Label for your product

Packaging for your product

With front Labelling

With side Labelling

With back Labelling

Levels of Packaging

Modes of Transportation

Classify it

Consumer + Industries

Features Features

Unique Characteristic, if any

In which Stage your product is? Why

Marketing Strategy adopted during
this stage and why?

Importance of Labelling in the
current

INTANGIBLE

ACCOUNTANCY

D) Project work

Project 1. Common Size and Comparative Financial Statements

Project Structure:

1. Company Profile:

- a. Select an Indian company.
- b. Write a 2-3 page profile, detailing its background, operations, and financial standing.

2. Financial Statements:

Include the company's vertical Balance Sheet and Profit & Loss Statement for a 12-month period specifically for the fiscal years ending March 31, 2025, and March 31, 2026.

3. Prepare **comparative balance sheets and profit & loss accounts** for two consecutive years of

a company and analyze **changes in financial positions and performance**.

4. Convert financial statements into percentages to create **common size statements** for two consecutive years **and analyze the financial statements**

Suggested list of companies

- RIL company
- Godrej
- ITC
- Blue Star
- HUL
- Tata Steel
- Tata Motors
- Sun pharma
- Bharti airtel
- Wipro
- Vardmaan
- LG

II) Assignment

1. A and B are partners sharing profits and losses in the ratio of 3:2. Their capital accounts showed balances of ₹1,50,000 and ₹ 2,00,000 respectively on Jan 01, 2003. Show the treatment of interest on capital for the year ending December 31, 2006 in each of the following alternatives:

(a) If the partnership deed is silent as to the payment of interest on capital and the profit for the year is ₹ 50,000;

(b) If partnership deed provides for interest on capital @ 8% p.a. and the firm incurred a loss of ₹ 10,000 during the year;

(c) If partnership deed provides for interest on capital @ 8% p.a. and the firm earned a profit of ₹ 50,000 during the year;

- (d) If the partnership deed provides for interest on capital @ 8% p.a. and the firm earned a profit of ₹ 14,000 during the year.
2. Ram, Mohan and Sohan are partners with capitals of ₹ 5, 00,000, ₹ 2, 50,000 and ₹ 2, 00,000 respectively. After providing interest on capital @10% p.a. the profits are divisible as follows: Ram $\frac{1}{2}$, Mohan $\frac{1}{3}$ and Sohan $\frac{1}{6}$. Ram and Mohan have guaranteed that Sohan's share in the profit Adjustment required Dr. -45,000 -5,000 +50,000 shall not be less than ₹ 25, 000, in any year. The net profit for the year ended March 31, 2016 is ₹ 2, 00,000, before charging interest on capital. You are required to show distribution of profit.
 3. The net profit of X, Y and Z for the year ended 31st March, 2021 was ₹ 60, 000 and the same was distributed among them in their agreed ratio of 3:1:1. It was subsequently discovered that the under mentioned transactions were not recorded in the books:
 - (i) Interest on Capital @ 5% p.a.
 - (ii) Interest on drawings amounting to X ₹ 700, Y ₹ 500 and Z ₹ 300.
 - (iii) Partner's Salary: X ₹1, 000, Y ₹1,500 p.a. The capital accounts of partners were fixed as: X ₹ 1, 00,000, Y ₹ 80, 000 and Z ₹ 60, 000.Record the adjustment entry.
 4. A & B are partners sharing profits in proportion of 3:2 with capital of 4,00,000 & 3,00,000 respectively. Interest on capital is agreed @ 5% p.a. B is to be allowed an annual salary of 30,000 which has not been withdrawn. During 2011-12, the profit for the year prior to calculation of interest on capital but after charging B's salary amounted to 1,20,000. A Provision of 5% of this amount is to be made in respect of commission to the Manager. Prepare an account showing the allocation of profits between partners.
 5. On March 31, 2008 after the close of books of accounts, the capital accounts of A, B and C stood at 24000; Rs 20000 and 12000 respectively. The profit for the year 36000 was distributed equally. Subsequently, it was discovered that interest on capital @ 5% p.a had been omitted. The profit-sharing ratio was 2:2:1. Pass an adjustment Journal Entry.
 6. Read the hypothetical text and answer the following questions. Arun, Varun, and Tarun were partners in firm sharing profits equally. On 1st April, 2020, their capitals stood at ₹ 2, 00,000, ₹ 1, 50,000 and ₹ 1, 00,000 respectively. As per the provisions of the Partnership Deed:
 - 1) Arun was entitled to a salary of ₹ 2,500 p.m.
 - 2) Partners were entitled to interest on capital @ 10% p.a.The net profit for the year ended 31st March 2021, ₹ 1, 50,000 were distributed among the partners without providing for the above items.

Q1. What is the amount of interest on capital Varun?

 - a) ₹ 20,000
 - b) ₹ 15,000
 - c) ₹ 10,000
 - d) ₹ 30,000

Q2. What is the amount of distributable profit for the partners after providing salary and interest on capital to the partners?

 - a) ₹ 50,000 each

b) ₹ 25,000 each

c) ₹ 10,000 each

d) ₹ 15,000 each

Q3. Arun's Capital A/c will be credited with Rs.....for giving the adjustment to the above omissions.

a) Rs 20,000

b) Rs15,000

c) Rs 25,000

d) Rs10,000

Q4. Capital Account/Accounts of will be debited to give the effect of the above adjustments.

a) Varun

b) Tarun and Arun

c) Arun and Varun

d) Varun and Tarun

7. Read the hypothetical text and answer the following questions. A B and C are partners in a firm. Their capitals are ₹ 30,000, ₹ 20,000 and ₹ 10,000 respectively. As per the partnership deed,

i) C is to be allowed remuneration of ₹ 3,000 p.a.

ii) Interest on capital @ 5% p.a. iii) Profits should be distributed in the ratio of 2:2:1.

Ignoring the above terms, a net profit of ₹ 18,000 was distributed among the partners equally.

Q1. How much interest on capital is to be credited to partner A?

a) ₹ 1,500

b) ₹ 1,000

c) ₹ 900

d) ₹ 800

Q2. How much profit is to be credited to Partner B after all adjustments?

a) ₹ 2,400

b) ₹ 4,800

c) ₹ 1,000

d) ₹ 1,200

Q3. What is the total profit to be credited to A, B, and C after all adjustments?

a) ₹ 12,000

b) ₹ 8,000

c) ₹ 9,000

d) ₹ 10,000

Q4. What is the amount of the past adjustment entry?

a) ₹ 350

b) ₹ 450

c) ₹ 250

d) ₹ 55

8. The goodwill of the firm is valued at 4 years purchase of average profit of five years. The profits for the last five years were: Year Profit 2013-14 : 2,00,000 2014-15 : (3,00,000) 2015-16 : 4,50,000 (including an abnormal gain of ₹ 50,000) 2016-17 : 3,50,000 (after charging an abnormal loss of ₹ 90,000) 2017-18 : 2,60,000 Calculate the amount of goodwill.
9. Y and Z are partners with capitals of ₹ 25,000 and ₹ 15,000 respectively on 1st April 2020. Each partner is entitled to 9% p.a. interest on his capital. Z is entitled to a salary of ₹ 6,000 p.a. together with a commission of 6% of Net Profit remaining after deducting interest on capital and salary and after charging his commission. The profits for the year ended 31st March 2021 before making any of the above-mentioned adjustments amount to ₹ 30,800. Prepare Partner's Capital Accounts: (1) when capitals are fixed, and (2) when capitals are fluctuating.
10. The capital accounts of Alka and Archana showed a credit balance of Rs.4,00,000 and 3,00,000 respectively, after taking into account drawings and a net profit of RS.2,00,000. The drawings of the partners during the year 2018-19 were a. Alka withdrew Rs.10,000 at the end of each quarter b. Archana's drawings were 31st May 2018 Rs.8,000 1st November 2018 Rs. 7,000 1st February 2019 Rs. 5,000 Calculate interest on partner's capitals @10% p a and interest on partners' drawings @ 6% p a for the year ended 31st March 2019.
11. Lata and Mamata are partners with capitals of ₹3,00,000 and ₹ 2,00,000 respectively sharing profits as Lata 70% and Mamata 30%. During the year ended 31st March 2021, they earned a profit of ₹ 2,26,440 before allowing interest on the partner's loan. The terms of the partnership are as follows: (i) Interest on Capital is to be allowed @ 7% p.a. (ii) Lata is to get a salary of ₹ 2,500 per month. (iii) Interest on Mamata's Loan account of 80,000 for the whole year. (iv) Interest on drawings of partners at 8% per annum. Drawings being Lata ₹36,000 and Mamata ₹ 48,000. (v) 1/10th of the distributable profit should be transferred to General Reserve. Prepare the Profit and Loss Appropriation Account.
12. A and B are partners in a firm sharing profits in the ratio of 3 : 2. They decided to share future profits equally. Calculate A's gain or sacrifice
 - (a) 2/10 (sacrifice)
 - (b) 5/10 (gain)
 - (c) 1/10 (Gain)
 - (d) 1/10 (sacrifice)
13. A and B are partners sharing profits and losses in the ratio of 3:1. It was decided that with effect from 1st April,2021 the profit sharing ratio will be 5:3. Goodwill is to be valued at 2year's purchase of average of 3years profits. The profits for the years ending 31st March 2019,2020 and 2021 were Rs.36,000 , Rs.32,000 and Rs.40,000 respectively. Pass the necessary journal entry for the treatment of goodwill.
14. A, B and C are partners sharing profits and losses in the ratio of 5:3:2. A was unable to devote time to business due to her other commitments. Therefore adjustments were required in the agreed terms of partnership. They decided to share future profits and losses in the ratio of 2:3:5. With effect from 1st April,2021.The values of assets and liabilities did not require any adjustments. However, an unrecorded computer of value

Rs.60,000 and a claim of a customer of Rs.30,000 was to be brought in the books. The balance sheet has goodwill of Rs.10,000 as an asset, other assets(excluding goodwill were Rs.6,00,000 whereas liabilities were Rs.50,000. Normal rate of return is 15% and average profit is Rs.90,000.

1. Calculate Goodwill under capitalisation of average profit will be
2. Calculate Sacrificing and gaining ratio of the partners
3. Who is neither a gaining nor a sacrificing partner
15. State under which major headings and sub-headings will the following items be presented in the Balance Sheet of a company as per Schedule-III, Part-I of the Companies Act, 2013.
 - i. Prepaid Insurance
 - ii. Investment in Debentures
 - iii. Calls-in-arrears
 - iv. Capital Reserve
16. Under which major heads and sub-heads will the following items be placed in the Balance Sheet of the company as per Schedule III, Part I of the Companies Act, 2013?
 - (i) Cheques and Bank Drafts in Hand
 - (ii) Securities Premium Reserve
 - (iii) Long-Term Investments with maturity period less than six months
 - (iv) Debtors
17. From the following information prepare Comparative Balance Sheet

BALANCE SHEET as at 31 March, 2020

Particulars	Note No.	31 st March, 2020 (₹)	31 st March, 2019 (₹)
I. EQUITY AND LIABILITIES			
1. Shareholders' funds			
Share Capital (Equity)		18,00,000	12,00,000
2. Non-Current Liabilities			
Long-term Borrowing: 8% Debentures (Secured)		6,00,000	6,00,000
3. Current Liabilities			
Trade Payables		6,00,000	3,00,000
Total		30,00,000	21,00,000
II. ASSETS			
1. Non-Current Assets			
Fixed Assets: Tangible Assets		18,00,000	15,00,000
2. Current Assets			
(a) Trade Receivables		10,00,000	5,00,000
(b) Cash and Cash Equivalents		2,00,000	1,00,000
Total		30,00,000	21,00,000

18. Prepare common size Balance Sheet

Particulars	31 st March, 2019 (₹)	31 st March, 2020 (₹)
Shareholders' Funds	12,00,000	18,00,000
Non-current Liabilities	6,00,000	6,00,000
Current Liabilities	2,00,000	6,00,000
Non-current Assets	14,00,000	21,00,000
Current Assets	6,00,000	9,00,000

19. Prepare Comparative Statement of Profit and Loss

Particulars	31 st March, 2017	31 st March, 2016
Revenue from Operations	₹ 24,00,000	₹ 18,00,000
Other Incomes (% of Revenue from Operations)	15%	25%
Expenses (% Revenue from Operations)	60%	50%
Tax Rate	40%	40%

20. Prepare Common Size Statement of Profit and Loss

Particulars	31 st March, 2020	31 st March, 2019
Revenue from Operations	10,00,000	7,50,000
Other Income	1,00,000	75,000
Purchases of stock-in-Trade	7,50,000	6,00,000
Change in Inventories of Stock-in-Trade	(50,000)	10,000
Other Expenses	10,000	7,500
Rate of Income Tax	50%	50%

Note : Assignment should be done on separate ruled sheets.

PSYCHOLOGY

TASK 1

Case Study

Development of case profile: Using appropriate methods like interview, observation & psychological tests.

Prepare a case study on the topic of your choice.(refer chapter 4.Psychological disorders). Case study is an in depth analysis of a person. You are required to choose a person on whom you want to do your case study and who is willing to cooperate.

File should consist of:

1. Cover page

2. Title page (Objective of your case profile)

3. Certificate

4. Acknowledgement

5. Rationale (Reason for choosing the particular topic)

6. Introduction to Case Study (heading)

- Explain Case Study Method; Advantages and Disadvantages of this Method.

7. About the topic

- Somebody unfamiliar with your topic should have a good idea of what it's about having read this.
- Write all the possible information about your topic.
- For e.g. if your topic is about depression, this should include:
 - What is Depression?
 - Types of Depression
 - Signs and Symptoms
 - Risk factors
 - Prognosis
 - Treatment etc..
- A detail of your project covering the theories, research, studies, experiments. The format of this section is totally up to you. Always remember when we are writing about a topic we first have to describe, define the meaning of it. Relate some relevant researchers studied that you can easily find in your textbooks or on the internet.
- I would suggest you to use pictures, stories, case studies, famous instances, news articles, editorial cuttings anything that is relevant to your topic. Psychology can be related and can be located in our daily life. The project should be as interactive and interesting to the reader.
- Originality, innovative thinking, and practicality will be appreciated

8. Method of Research

- Write all possible methods of research in detail that can be included in a case profile like observation, interview, survey, psychological tests.
- In the end write a paragraph stating the methods that you have used in your case profile.

9. Detailed Case Profile

a. Subject Profile

Name _____

Age _____

Class _____

Occupation _____

Education qualification _____

Chief complaint _____

(You can more details on your own)

b. Background Information

Introduce your subject here. This must be written in a paragraph form.

Mention some basic information about the subject

c. Case Analysis

- Relating to birth
- Relating to development
- Relating to family
- Relating to socio-economic condition
- Relating to physical and mental fitness
- Relating to emotionality and aggression
- Relating to personality adjustment
- Relating to hostility

(Add topics)

- Relationship with family members
- Relationship with peers
- Educational history

d. Psychological tests/ Tools used to collect data

- You can choose one or more tests and conduct them on your subject.
- Kindly check the reliability, validity, and norms of the tests.

e. Interviews

Interview sessions need to be conducted with your subject. Setup a convenient time suitable for both of you. Interview sessions can be a combination of structured or unstructured. Keep the interview sessions flexible and free flowing. Minimum of 5-6 sessions should be conducted

Interview work will be written theme based under case analysis.

f. Observation

Here you will include your observations about your subject. both verbal and nonverbal behaviours. While interviewing your subject be alert and observe the following things - i.e. The room setup, the body language, behaviour with you, eye contact, way to talking to the parent, comfort level, hand movements etc.

g. Challenges faced by the subject (1-2 pages)

Here you can include the day to day issues your subject is facing. for example, if it is a student's exam stress, family issues, time management, peer pressure. If it is an adult. financial management, time management, family issues. Etc. The challenges can be big or small depending on your case.

Write in point form.

h. Possible interventions (1-2 pages)

Based on the challenges faced by your subject write possible suggestions that you can provide to your subject. You can refer your textbook also for the same.

Write in point form.

10. Conclusion

The project's conclusions should list the things which have been learnt as a result of the work you have done.

Your findings and experiences during the work can also be included here.

11. References

Always mention the source from where you extract information in the correct format. This consists of a list of all the books, articles, manuals etc. used in the project and referred to in the report.

- **Web Resources for assistance**

<https://youtu.be/FYtoac9Se54?si=RM34shIPqUOZUA6>

The file should be well made and decorated.

TASK 2

STUDENTS MUST WATCH ANY **TWO** MOVIES AND RELATE THEM TO PSYCHOLOGICAL DISORDERS.

List of the movies that are related with the Mental Health problems.

1. Uda Punjab (Hindi) -Substance Abuse
2. 15 Park Avenue – Schizophrenia
3. Matchstick Men- OCD (Obsessive Compulsive Disorder)
4. Kartik Calling Kartik – Schizophrenia
5. Barfi (Hindi)- Autism
6. Tarre Zameen par (Hindi) –Learning Disabilities
7. Tannu Weds Mannu Returns - Anxiety & Bipolar Disorder
8. A Beautiful mind – Schizophrenia
9. Silver Linings Playbook- Borderline Personality Disorder
10. Colossal- Substance Use Disorder
11. Joker: *Folie a Deux* (2024)- Psychotic Disorder
12. Split- Associative Identity Disorder
13. Filth- Borderline Personality Disorder

14. Phobia- Agoraphobia
15. Good Will Hunting PTSD and Attachment Disorder
16. Dear Zindagi - Anxiety & Counselling
17. It's Kind Of a Funny Story - Depression
18. The Skeleton Twins- Depression
19. Bhool Bhulaiya- Dissociative Identity Disorder
20. Me, Myself, & Irene- Dissociative Identity Disorder
21. The King of Staten Island – Depression and Bipolar Disorder
22. Tamasha- Borderline Personality Disorder
23. Anjaana Anjaani- Depression and Suicidal Tendency
24. Heroine- Bipolar Mood Disorders
25. To the Bone- Anorexia Nervosa
26. The Disaster Artist- Delusion of Grandiosity
27. Horse Girl- Paranoid Delusions
28. Black- Alzheimer Disease
29. My name is Khan- Autism Spectrum Disorder- Asperger's Syndrome
30. Devdas- Major Depressive Disorder with Alcoholism

Attempt these five questions for each movie:

- A. Who was the main character in the movie?
- B. What was the disorder the movie tried to explain and relate with the criteria (DSM-V and ICD-10)?
- C. Explain the causes and the symptoms of disorder?
- D. Explain the possible treatment for related disorder?
- E. What will be prognosis of the disorder?

(Refer – NCERT TEXTBOOK FOR CLASS XII and DSM-V for the same)

TASK 3

ART INTEGRATION

1. Prepare an art piece to facilitate art therapy to treat the psychological disorder as mindful involvement of overcoming the disorder.
 - LIPPAN ART
 - MANDALA ART
 - MOSAIC ART

- SKETCHING
 - PAINTING
2. Use ivory sheets and MDF boards to create your art piece.
 3. Write a report on the art therapy you have used with step integration. Also illustrate the meaning and aim of that therapy.
 4. Do this report writing on A4 size sheets in a file.

NOTE: Do all the tasks Creatively and innovatively using your incredible thoughts and idea.

BUSINESS STUDIES

PART A) ASSIGNMENT

1. Suraj Power Ltd. set up a factory for manufacturing solar lanterns in a remote village as there was no reliable supply of electricity in rural areas: The revenue earned by the company was sufficient to cover its cost, so the company decided to increase production to generate higher sales. For this they decided to employ people from the nearby villages as very few job opportunities were available in that area. The company also decided to open schools and creches for the children of its employees. Identify and explain the objectives of management discussed above.
2. Mr Sharma is managing director of Happy Ltd manufacturing different varieties of cheese. He has an efficient team working under Raman, the production manager, Vivan , the marketing manager and Aditya, the finance manager. They understand and interpret the policies made by Mr Sharma, ensure that their departments have adequate manpower and assign them the necessary duties.
 - (a) State two more functions other than those mentioned above that this team may perform at the level they are working. (b) Also recognise the level.
3. For the last three years, Abhishek Solutions Pvt.(Ltd.) is not functioning smoothly and systematically. The relations between management and employees are becoming bitter day by day. After a complete analysis, it was observed that employees are not working effectively and efficiently and management is not fulfilling its commitment of increments and promotions. The managers sometimes fall into temptation of misusing her/his powers for individual/ family benefit at the cost of larger general interest of the workers/ company Identify and explain the principles of management violated in the above case.
4. One of the principles of scientific management emphasizes that to make the employees learn the best method of production, training to workers is essential. It further emphasizes that each person should be scientifically selected and the work assigned to the employees should suit physical, mental and intellectual capabilities. a. Name and explain the principle of scientific management involved. b. Name the principles of management

which is concerned with selecting the best way of performing a job through application of scientific analysis and not by intuition or hit and trial methods.

5. 'Accent Electronics Ltd.' was operating its business in Malaysia. The company started exporting its products to India when the Prime Minister announced relaxation in import duties on electronic items. The company appointed retailers in India who had direct on-line links to the suppliers to replenish stocks when needed. Identify and explain the dimensions of the business environment discussed in the above case.
6. With change in the consumption habits of people, Neelesh, who was running a sweets shop, shifted to the chocolate business. On the eve of Diwali, he offered chocolates in attractive packages at reasonable prices. He anticipated huge demand and created a website chocolove.com for taking orders online. He got a lot of orders online and earned huge profit by selling chocolates. Identify and explain the dimensions of business environment discussed in the above case.
7. Jayant is working as Head Relationship Manager in the wealth management division of a private sector bank. He has created an internal environment which is conducive to an effective and efficient performance of his team of ten relationship management executive. Typical days at work in Jayant's life consists of a series of interrelated and continue functions. He decides the targets for his department which are in line with the objectives of the organization as a whole. The future course of action for his team members is laid out well in advance. The various resources required by the relationship managers like an iPad with GPS system, account opening forms, brochures, details of account holders etc. are made readily available to them. The executives are given sufficient authority to carry out the work assigned to them. Jayant works in close coordination with the Human Resource Manager in order to ensure that he is able to create and maintain a satisfactory and satisfied workforce in his department. Through constant guidance and motivation, Jayant inspires them to realise their full potential. He offers them various types of incentives from time to time keeping in view their diverse individual needs. Moreover, he keeps a close watch on their individual performances in order to ensure that they are in accordance with the standards set and takes corrective actions whenever needed. In context of the above case: Identify the concept being referred to in the following line, —He has created an internal environment which is conducive to an effective and efficient performance of his team of ten relationship management executives. Identify and describe the various functions of the concept as identified in part (a) of the question by quoting lines from the paragraph.
8. Sanchit, after completing his entrepreneurship course from Sweden returned to India and start a coffee shop "Aroma Coffee Can" in a famous mall in New Delhi. The specialty of the coffee ship was the special aroma of coffee and a wide variety of flavours to choose from. Somehow, the business was neither profitable nor popular. Sanchit was keen to find out the reason. He appointed Sandhya, an MBA from a reputed college, as a manager to find out the causes for the same. Sandhya took feedback from the clients and found out that though they loved the special unique aroma of coffee but were not happy with the long waiting time being taken to process the order. She analysed & found out that there were many unnecessary in obstructions between which could be eliminated. She fixed a

standard time for processing the order. She also realised that there were some flavours whose demand was not enough. So, she also decided to stop the sale of such flavours. As a result, within a short period Sandhya was able to attract the customers. Identify & explain any two techniques of scientific management used by Sandhya to solve the problem.

9. On 8th November, 2016 the Government of India announced the demonetisation making all Rs.500 and Rs. 1,000 banknotes of the Mahatma Gandhi Series invalid past midnight. The government claimed that the action would curtail the use of illicit and counterfeit cash to fund illegal activity and terrorism. The BSE SENSEX and NIFTY 50 stock indices fell over 6% on the day after the announcement. The decision was heavily criticised by members of the opposition parties, leading to debates in both houses of parliament and triggering organised protests against the government in several places across India. People seeking to exchange their bank notes had to stand in lengthy queues, and several deaths were linked to the inconveniences caused due to the rush to exchange cash. After demonetisation the demand for point of sales (POS) or card swipe machines has increased. E-payment options like Paytm has also seen a rise. In context of the above case: Identify & explain the various dimensions of business environment which relate to the above-mentioned case. List any through two values that the government seeks to promote through demonetisation.
10. Prakhar purchased an ISI mark electric iron from Bharat Electricals. While using it, he found that it was not working properly. He approached the seller and complained about the same. The seller satisfies Prakhar by saying that he will ask the manufacturer to replace the iron. The manufacturer refused to replace and Bharat Electricals decided to file a complaint in the consumer court. Can Bharat Electricals do this? Why? Also explain who is a consumer as per Consumer Protection Act, 2019?
11. Indian Youth Organisation (IYO) organised a visit of its members to an old age home to inculcate the habit of social work among them. The visit revealed that the living conditions of the inmates of the old age home were not hygienic. So, the IYO members decided to clean the premises. During their cleanliness drive, they realised that the old age home also required pest control. But some of the inmates of old age home were reluctant for it because they believed that the pest control may create health problems for them. IYO, therefore decided to provide ethical, safe and odourless pest control. They showed to the inmates of old age home a pamphlet of the proposed pest control product which promised easy, inexpensive and long-lasting pest control. The inmates happily agreed and the pest control was carried out. It worked for a fortnight but to their dismay the effect started wearing off. IYO contacted the pest control company which kept on postponing their visit. After waiting for a month, IYO filed a case in the consumer court. The consumer court was satisfied about genuineness of the complaint and issued necessary directions to the pest control company. 1. State the six directions that might have been issued by the court. 2. Also identify any two values that are being communicated by IYO to the society.
12. Karan Nath took over 'North Motor Company' from his ailing father three months ago. In the past, the company was not performing well. Karan was determined to improve the

company's performance. He observed that methods of production as well as selection of employees were not scientific. He believed that there was only one best method to maximize efficiency. He also felt that, once the method is developed, workers of the company should be trained to learn that 'best method.' He asked the production manager to develop the best method and carry out necessary training. The production manager developed this method using several parameters right from deciding the sequence of operations, place for men, machines and raw materials till delivery of the product to the customers. This method was implemented throughout the organization. It helped in increasing the output improving the quality and reducing the cost and wastage. Identify and explain the principles and the technique of scientific management followed by the production manager in the above case

13. Two big Bollywood movies were scheduled to be released on the same date. But, at the last moment, release of one movie had to be postponed due to opposition by a group of people because of some unethical content in the movie. The loss suffered by the postponed movie provided opportunity for the released movie to earn maximum profits. (a) Which characteristic of Business Environment is highlighted in the given case? (b) Identify and explain the dimension of Business Environment which led to the postponement of movie.
14. The Government is considering a pioneer proposal to launch a single debit-cum credit card to increase the ease and usage for the consumers. The card which will be called the "National Mobility Card" will have unique advantages for making payments in metro, buses, parking and making transactions during visits abroad. After hearing this news, Mega decided to launch a "Mega Mobility Card" on similar lines, so that they could be the first to exploit the opportunity, arising due to the increasing trend of digitization. In order to improve their performance, they laid down a plan to hire more people in their marketing department and prepared guidelines to train their sales force to market the new card facility being launched by the bank. Identify the dimension of business environment highlighted above
15. Sehaj bought Teak wood furniture for his drawing room from "Akshay Decors" of Kirti Nagar, Delhi for Rs. 4 lakhs. At the time of purchase the firm assured Sehaj about the best quality of the said furniture and gave 2 years warranty stating that if anything goes wrong, the firm shall replace it with a new one or refund the purchase amount. But the dining table and chairs started developing cracks at various places and the polish' became very dull within 30 days of purchase. Sehaj reported the matters to the firm and requested a number of times to replace the furniture. The firm neither paid attention to these requests nor replaced the furniture. 1. Identify the consumer rights which have been violated by the furniture manufacturer. 2. Where can Sehaj lodge complaint for this?

PART B: PROJECT WORK

Students have to prepare a Project file on the topic allotted to them in the class.

Project 1 An empirical Analysis of Rise of Female entrepreneurs in Contemporary India

Focus: To examine the growth, challenges, and contributions of female entrepreneurs in India's contemporary business landscape, using empirical data to highlight their role in economic development and social change. (e.g. Analysing the growth of women Led Unicorns, D2C Brands in India)

Project 2 Anti-Plastic Legislation in India: Challenges and Success

Focus: Study the consequences of using plastic on different aspects of economy, initiatives and laws enacted by India to promote campaign against use of plastic. You should also cover the statistics related to this campaign. Project 2 Anti-Plastic Legislation in India: Challenges and Success

Project 3 Evaluating Child Labour Laws in India: Challenges and Effectiveness

Focus :Study the meaning, reasons and consequences of child labour. Explain how child labour can be eradicated, what laws are there in India for eliminating child labour, role of NGOs' and initiative of people to eradicate child labour.

Project 4 Investment in the Stock Exchange: An Analytical Study

You are required to make an imaginary portfolio totalling a sum of Rs 50000 equally in any of the 5 companies of your choice listed in stock exchange over a period of twenty working days. During the period of recording, students are required to keep the record of closing and opening prices of shares and identify the causes of fluctuations in prices.

Project 5 : Evolving Modes of Packaging: An Analytical Study of Economic Consequences

Focus on trends in the packaging of different products like milk, fruits, use of plastic furniture, tetra packaging, re-usage of packaging etc. Analyse the different types of packaging and its economic impact on the business as well as consumers.

Project 6: Consumer Protection in India Law Implementation and Awareness

This project should include need for consumer protection, law and redressal machinery available for settling the consumer disputes, role of different agencies and consumer association along with case studies of different business sectors.

Project 7 “An Analytical Study of Marketing Mix Strategies for [Chosen Product]”

Focus Students have to choose any product which they want to manufacture on the basis of pre assumption with reference to various elements of marketing mix.

Project 8 The Battle of Soft Drinks in India: A Competitive Study

Focus: Trace the evolution of the Indian soft drink market. Analyze how Coca-Cola's exit in the 1970s created space for domestic champions like Thums Up and Campa Cola, their acquisition/revival, and how modern health trends (Social Environment) are forcing a shift toward zero-sugar formulations.

Project 9 Fayol's Principles of Management: A Case Study Approach

Focus Visit a local business (a supermarket, a bank branch, or a small manufacturing unit). Interview the manager or observe the workspace to see if Henri Fayol's principles of management—specifically Division of Work, Discipline, and Unity of Command—are being followed. Note down what happens when these principles are ignored.

Project 10 Debranding in Competitive Markets: An Analysis of Environmental Forces

Focus Choose any two competing brands in the market today (e.g., Coke vs. Pepsi, Blinkit vs. Zepto, Apple vs. Samsung). Analyze how shifts in the External Business Environment (like technological advancements, changing consumer tastes, or government policies) have forced these companies to change their marketing strategies over the last two years.

Project 11 Business Environment Analysis: Demonetization, UPI, and FinTech Growth in India

Focus: Analyze the impact of Demonetization and the subsequent rollout of UPI (Legal & Technological Environments). Track how it systematically transformed small retail shops, traditional banking systems, and gave rise to financial platforms like Paytm and PhonePe.

Project 12 Business Environment Analysis: EV Growth and the Transformation of Indian Automobiles

Focus: Research how the Indian government's FAME policies and pollution regulations (Political & Legal Environments) combined with increasing eco-consciousness (Social Environment) disrupted legacy automobile companies and created space for newcomers like Ather Energy and Ola Electric.

Project 13– The Rise of Quick Commerce (Q-Commerce): A case study on Blinkit & Zepto Effect

What it is: A deep dive into how ultra-fast delivery apps are redefining the retail landscape in India.

Project 14 The Rise of Made-in-India D2C Brands: A Business Environment Analysis

What it is: An analysis of how Direct-to-Consumer (D2C) startups bypassed traditional distributors to challenge legacy global giants (like Unilever or Sony) using the digital ecosystem.

Project 15 The Fast-Fashion Disruption & The Sustainability Wave (Zudio vs. Eco-Brands)

What it is: A contrasting study of the Business Environment forces driving hyper-affordable fast fashion (like Tata's Zudio) versus the growing consumer demand for sustainable, ethical fashion.

Project 16 The Resurgence of Indian Tourism & Spiritual Tourism (Vande Bharat & Temple Corridors)

What it is: An investigation into how infrastructure development and cultural shifts are driving an unprecedented boom in the domestic hospitality and aviation sectors.

Project 17 Impact of Rapid Rise in IA on business sectors

Focus: Explore how Artificial Intelligence is rapidly transforming diverse business sectors, highlighting opportunities for innovation, efficiency, and growth while addressing challenges of ethics, employment, and regulation.

MUSIC

Project File

* Raag Bhairav and Bageshwari (Introduction and notation)

* Introduction and notation of Rupak taal and Jhaptaal along with Ekgun , dugun ,tigun and chaugun.

PHYSICAL EDUCATION

Prepare a Project Report 15 to 20 Pages on Asian Games 2026

1. Historical Status

2. No of Countries

3. No of Events

4. No of Venue

5. No. of Top Players performance from india 1982 onwards with their event details

DANCE

Prepare your dance file according to topics given below:

1. Introduction of dance
2. Brief history of all 8 classical dances
3. Gharanas of Kathak
4. Ras
5. Bhava
6. Laya
7. Folk dances of India
8. Taal- Teentaal, Dadra, Kaharva, Jhaptal, Rupak and Dhamar taal.
9. Life sketches of few Kathak legends (Birju Maharaj, Kundanlal, Gangnani, Sitara Devi).

(Paste suitable pictures and make your file decorative.)

LEGAL STUDIES

I. PROJECT on 'Understanding Case Laws'

METHODOLOGY- Select any 3 decided cases related to the curriculum where one must be civil in nature, one criminal and one constitutional in character.

The research on the cases must include the following points:

- Name of the case
- Parties to the case
- Citation to the case
- Bench
- Nature of the case (Civil, Criminal or Constitutional)
- Facts of the case and issues involved
- Decision of the case including Ratio Decidendi and Obiter Dicta.

II. ASSIGNMENT(To be done in Legal Studies Notebook)

1. Mr Ram is a music composer and works in the XYZ company. Mr Ravi is a new composer in the music industry and he always tries to copy Ram in the music composition. He launched one song which is composed by Ram. He took every credit for his song. When this situation arises for the Ram then what should Ram do in this situation? How should Ram safeguard his rights with the help of IPR and what penalty will be imposed on Ravi for this offence?

2. Mr X purchased his shoes from the Yikee company. After some days Mr. Y's showroom launched the Nikee name shoe brand. And Mr X noticed that the trademark which is used by

the Nikee company arrow Mark is similar to the Yikee company. After that, Mr X complained about this situation in the Yikee Company.

A. Explain in this situation what will the Yikee company do.

What are the remedies available to the Yikee company in the infringement of a trademark?

B. Which type of punishment is given to the accused for such acts?

3. Varsha, a law graduate who completed law from India, wants to practice law in New York. Advise her on the procedure to be followed in order to be eligible for practicing in New York.

4. Rajiv recently learned about IPR. He owns a business which makes custom-made gifting items. His work, ideas can be easily copied. He also has a few partners in his business who are not very loyal. So, he has decided to put his knowledge of IPR into action and protect his business. What rights will Rajiv have through IPR? Explain the advantages of IPR.

5. A company brings out an orange cola in the market that is packaged in a bottle identical to the Cip-Kola bottle.

i. Which form of Intellectual Property would protect Cip-Kola's interests?

ii. What is the law governing the said protection in India?

iii. What are the characteristics of this type of Intellectual Property?

6. ASSERTION AND REASON QUESTIONS:

a. Assertion (A): False imprisonment is unlawful restraint of a person's liberty.

Reason(R) : Total restraint of liberty is essential for false imprisonment.

b. Assertion (A): Defamation is injury to reputation.

Reason (R) : Libel is spoken defamation while slander is written defamation.

c. Assertion (A): Nuisance is unlawful interference with a person's use of land.

Reason(R) : Public nuisance affects the general public or a class of persons.

d. Assertion (A): Strict liability was established in Rylands v. Fletcher.

Reason(R) : Under strict liability, liability arises even without negligence.

e. Assertion (A): Absolute liability was established in MC Mehta v. Union of India.

Reason(R) : Absolute liability has no exceptions unlike strict liability.

7. Compare the crime rate and legal issues of Punjab and Odisha.

FINE ARTS

- Make still life in Acrylic colours of any two still life objects (e.g water bottle, fruits and vegetables)
- Make 3 composition (landscape or figurative paintings)

Note: The students has to use half ivory sheets for still life and composition and should use Acrylic colour in both still life and composition.

APPLIED MATHS

Solve the questions on loose sheets and submit in a folder.

PRACTICE QUESTIONS

Q1.

If $3A - B = \begin{bmatrix} 5 & 0 \\ 1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 3 \\ 2 & 5 \end{bmatrix}$ then find the value of matrix A.

Q2. Find the value of x- y if

$$2 \begin{bmatrix} 1 & 3 \\ 0 & x \end{bmatrix} + \begin{bmatrix} y & 0 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 5 & 6 \\ 1 & 8 \end{bmatrix}$$

Q3. Find the value of 'x'

$$[2x \ 3] \begin{bmatrix} 1 & 2 \\ -3 & 0 \end{bmatrix} \begin{bmatrix} x \\ 3 \end{bmatrix} = 0$$

Q4.

If $2 \begin{bmatrix} 3 & 4 \\ 5 & x \end{bmatrix} + \begin{bmatrix} 1 & y \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 7 & 0 \\ 10 & 5 \end{bmatrix}$, then find (x - y)

Q5.

Find value of $2a + 3b - c$, if $A = \begin{bmatrix} 0 & -1 & 28 \\ a - 8 & 0 & 3b \\ -c + 2 & 2 & 0 \end{bmatrix}$ is a skew-symmetric matrix

Q6.

There are two real value(s) of x , for which the value of the determinant $\Delta = \begin{vmatrix} 1 & -2 & 5 \\ 2 & x & -1 \\ 0 & 4 & 2x \end{vmatrix}$ is 86.

Find the value(s) of x

Q7.

Two badminton teams A and B are staying in the same hotel. Team A has 2 male and 3 female players accompanied by 1 coach. Team B comprises of 1 male, 2 female players and 2 coaches. The daily diet requirement (calories and protein) for each person is as given below:

	Calories	Protein
Male player	2500	65 g
Female player	1900	50 g
Coach	2000	54 g

Use matrix algebra to calculate the total diet requirement of calories and protein for each team.

Q8.

Obtain 4-yearly centered moving averages for the following time series.

Year	1987	1988	1989	1990	1991
Annual sales (in lakh ₹)	36	43	43	34	44
Year	1992	1993	1994	1995	
Annual sales (in lakh ₹)	52	38	49	54	

Q9.

A printing press costs the company ₹ 200,000 and its effective life is estimated to be 12 years. If the scrap realises ₹ 10000 only, what amount should be retained out of profits at the end of each year to accumulate at a compound interest at 5% per annum? (Given $(1.05)^{12} = 1.796$)

Q10.

Find $|AB|$, if $A = \begin{bmatrix} 0 & -1 \\ 0 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 5 \\ 0 & 0 \end{bmatrix}$.

Q11.

Jenifer has just bought a house. She estimates that the roof will have to be renewed at a cost of ₹ 250,000 after 20 years. To cover these costs, she intends to save an equal amount of money at the end of each year, earning 10% annual interest rate. How much is such a yearly saving? (Given $(1.1)^{20} = 6.7275$)

Q12.

If $\begin{vmatrix} x+1 & x-1 \\ x-3 & x+2 \end{vmatrix} = \begin{vmatrix} 4 & -1 \\ 1 & 3 \end{vmatrix}$, then write the value of x .

Q13.

For what value of x , $A = \begin{bmatrix} 2(x+1) & 2x \\ x & x-2 \end{bmatrix}$ is a singular matrix?

Q14.

Write the value of $\Delta = \begin{vmatrix} x+y & y+z & z+x \\ z & x & y \\ -3 & -3 & -3 \end{vmatrix}$

Q15.

Find the present value of a sequence of payments of ₹ 8000 made at the end of each 6 months and continuing for ever, if money is worth 4% compounded semiannually.

Q16.

The number of road accidents in the city due to rash driving, over a period of 3 years, is given in the following table:

Year	Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec
2010	70	60	45	72
2011	79	56	46	84
2012	90	64	45	82

Calculate four quarterly moving averages and illustrate them and original figures on one graph using the same axes for both.

Q 17.

Consider the following data:

Dates in the month of April	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Number of units sold	2	5	0	12	13	25	45	13	31	18	11	2	3	1

Calculate three days moving averages and display these and the original figures on the same graph.

Q18.

$$\text{If } \begin{vmatrix} 2x & x+3 \\ 2(x+1) & x+1 \end{vmatrix} = \begin{vmatrix} 1 & 5 \\ 3 & 3 \end{vmatrix}, \text{ then find the value of } x.$$

Q19.

If $X = \begin{bmatrix} 3 & 1 & -1 \\ 5 & -2 & -3 \end{bmatrix}$ and $Y = \begin{bmatrix} 2 & 1 & -1 \\ 7 & 2 & 4 \end{bmatrix}$, find a matrix Z such that $X + Y + Z$ is a zero matrix.

Q20.

$$\text{Find the value of } x \text{ if } \begin{bmatrix} 1 & x & 1 \\ 2 & 5 & 1 \\ 15 & 3 & 2 \end{bmatrix} \begin{bmatrix} 1 \\ 2 \\ x \end{bmatrix} = O$$

Q21.

If the matrix $\begin{bmatrix} 0 & a & 3 \\ 2 & b & -1 \\ c & 1 & 0 \end{bmatrix}$ is a skew symmetric matrix, find the values of a , b and c .

Q22.

Using matrix method solve the following system of equations:

$$6x - 9y - 20z = -4$$

$$2x + y + z = 1$$

a) $4x - 15y + 10z = -1$

b) $x - 2y - z = \frac{3}{2}$

$$2x - 3y - 5z = -1$$

$$3y - 5z = 9$$

AIL ACTIVITY – Prepare a project file in a creative and innovative way.

Activity Title: “Maths in Business: Budgeting and Loan Calculations for a Micro-Enterprise”

Materials Needed:

- Chart paper or spreadsheet printouts
- Internet access for research (optional)
- Sample interest rate tables (banks, cooperative societies, microfinance)

Activity Description:

Scenario:

Students are budding entrepreneurs in Odisha / Punjab planning to start a **small business** (like a cashew processing unit in Koraput, handloom in Sambalpur, or a tea stall / food cart in Amritsar or Ludhiana).

Activity Steps:

Step 1: Business Plan Selection

- Select a type of business relevant to Odisha’s or Punjab’s economy.
- Estimate initial costs (e.g., ₹50,000 to ₹2,00,000).

Step 2: Loan and Interest Calculation

- Assume the group takes a **loan** from:
 - A local bank (SBI, UCO)
 - An SHG (Self Help Group) or cooperative
- Use given interest rates (simple and compound) to calculate:
 - Total repayment over 1, 3, and 5 years
 - EMI using the formula

Step 3: Profit Estimation and Budget

- Assume monthly income and expenses.
- Create a monthly budget table.

Step 4: Present Your Financial Plan

- Present your business plan with a poster/chart showing:
 - Loan taken
 - Repayment details
 - Monthly budget
 - Profit estimate

WORKING MODEL

GROUP - 1

Design and create a Matrix Calculator Machine that demonstrates matrix addition, subtraction, and multiplication using movable strips, rotating wheels, or sliders. The model should allow users to change matrix values interactively and perform different matrix operations visually.

GROUP – 2

Design and create a Time Series-based Electricity Consumption Tracker with an LED Trend Board that displays monthly electricity usage data. The model should help analyze and compare increasing or decreasing electricity consumption patterns over time using graphs, charts, and LED indicators

🌿 Eco Club Summer Green Mission 🌿

Theme for the Session

“Small Green Steps, Big Future Changes”

Eco Club Slogan

“Save Nature Today, Secure Tomorrow.”

Event Name

🌿 “My Kitchen Garden Mission” 🌿

Activity Details

Students will create a small kitchen garden at home using any one of the following:


- Pots
- Recycled bottles
- Trays
- Balcony space
- Terrace area
- Backyard soil


Students may select and grow:

- Coriander
- Mint
- Spinach
- Tomatoes
- Chillies
- Fenugreek
- Basil
- Any other seasonal vegetables/herbs

Student Tasks

Students Will Submit an Observation Report on an A4 Sheet:

 Paste 1–2 photographs while planting.

 Write about:

- Weekly growth record
- Plant grown
- Duration taken for growth
- Challenges faced during gardening

Chapter: Matrices and Determinants

1. Construct a matrix $A = [a_{ij}]_{2 \times 2}$ whose elements a_{ij} are given by

a) $a_{ij} = e^{2i} \sin jx$. b) $a_{ij} = \frac{(i-2j)^2}{2}$ c) $a_{ij} = |-2i+3j|$

2. Show that a matrix which is both symmetric and skew symmetric is a zero matrix.

3. If $X = \begin{bmatrix} 3 & 1 & -1 \\ 5 & -2 & -3 \end{bmatrix}$ and $Y = \begin{bmatrix} 2 & 1 & -1 \\ 7 & 2 & 4 \end{bmatrix}$, find a matrix Z such that $X + Y + Z$ is a zero matrix.

4. Find values of a and b if $A = B$ where $A = \begin{bmatrix} a+4 & 3b \\ 8 & -6 \end{bmatrix}$ and $B = \begin{bmatrix} 2a+2 & b^2+2 \\ 8 & b^2-5b \end{bmatrix}$.

5. Find the value of x if $\begin{bmatrix} 1 & x & 1 \\ 2 & 5 & 1 \\ 15 & 3 & 2 \end{bmatrix} \begin{bmatrix} 1 \\ 2 \\ x \end{bmatrix} = O$

6. If $A = \begin{bmatrix} 1 & 3 & 2 \\ 2 & 0 & -1 \\ 1 & 2 & 3 \end{bmatrix}$, then show that A satisfies the equation $A^3 - 4A^2 - 3A + 11I = O$.

7. Let $A = \begin{bmatrix} 2 & 3 \\ -1 & 2 \end{bmatrix}$, then show that $A^2 - 4A + 7I = O$. Using this result calculate A^5 also.

8. If $A = \begin{bmatrix} 3 & -5 \\ -4 & 2 \end{bmatrix}$, then find $A^2 - 5A - 14I$. Hence obtain A^3 .

9. If the matrix $\begin{bmatrix} 0 & a & 3 \\ 2 & b & -1 \\ c & 1 & 0 \end{bmatrix}$ is a skew symmetric matrix, find the values of a, b and c.

10. If $P(x) = \begin{bmatrix} \cos x & \sin x \\ -\sin x & \cos x \end{bmatrix}$, then show that $P(x) \cdot P(y) = P(x+y) = P(y) \cdot P(x)$.

11. If $A = \begin{bmatrix} \cos \alpha & \sin \alpha \\ -\sin \alpha & \cos \alpha \end{bmatrix}$ and $A^{-1} = A'$, find the value of α .

12. Find the matrix A satisfying the following equations:

a) $\begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix} A \begin{bmatrix} -3 & 2 \\ 5 & -3 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

b) $\begin{bmatrix} 4 \\ 1 \\ 3 \end{bmatrix} A = \begin{bmatrix} -4 & 8 & 4 \\ -1 & 2 & 1 \\ -3 & 6 & 3 \end{bmatrix}$

c) $\begin{bmatrix} 2 & -1 \\ 1 & 0 \\ -3 & 4 \end{bmatrix} A = \begin{bmatrix} -1 & -8 & -10 \\ 1 & -2 & -5 \\ 9 & 22 & 15 \end{bmatrix}$

13. If $A = \begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix}$, then show that $A^2 = \begin{bmatrix} \cos 2\theta & \sin 2\theta \\ -\sin 2\theta & \cos 2\theta \end{bmatrix}$

14. If $A = \begin{bmatrix} 1 & 5 \\ 7 & 12 \end{bmatrix}$ and $B = \begin{bmatrix} 9 & 1 \\ 7 & 8 \end{bmatrix}$, find a matrix C such that $3A + 5B + 2C$ is a null matrix

15. Show that $\Lambda'\Lambda$ and $\Lambda\Lambda'$ are both symmetric matrices for any matrix Λ .

16. Express the following matrices as sum of a symmetric and skew-symmetric matrices

a) $\begin{bmatrix} 2 & 3 & 1 \\ 1 & -1 & 2 \\ 4 & 1 & 2 \end{bmatrix}$ b) $\begin{bmatrix} 2 & 4 & -6 \\ 7 & 3 & 5 \\ 1 & -2 & 4 \end{bmatrix}$

17. Give an example of matrices A , B and C such that $\Lambda B = \Lambda C$, where Λ is nonzero matrix, but $B \neq C$.

18. Show by an example that for $\Lambda \neq O$, $B \neq O$, $\Lambda B = O$.

19. Find inverse of the following matrices, if exists.

a) $\begin{bmatrix} 2 & -1 & 3 \\ -5 & 3 & 1 \\ -3 & 2 & 3 \end{bmatrix}$ b) $\begin{bmatrix} 2 & 3 & -3 \\ -1 & -2 & 2 \\ 1 & 1 & -1 \end{bmatrix}$ c) $\begin{bmatrix} 2 & 0 & -1 \\ 5 & 1 & 0 \\ 0 & 1 & 3 \end{bmatrix}$

20. Evaluate a) $\begin{vmatrix} a+ib & c+id \\ -c+id & a-ib \end{vmatrix}$, b) $\begin{vmatrix} \cos 15^\circ & \sin 15^\circ \\ \sin 75^\circ & \cos 75^\circ \end{vmatrix}$ c) $\begin{bmatrix} 1 & -3 & 2 \\ 4 & -1 & 2 \\ 3 & 5 & 2 \end{bmatrix}$ d) $\begin{bmatrix} 0 & 2 & 6 \\ 1 & 5 & 0 \\ 3 & 7 & 1 \end{bmatrix}$

21. Find x if $\begin{vmatrix} 3 & x \\ x & 1 \end{vmatrix} = \begin{vmatrix} 3 & 2 \\ 4 & 1 \end{vmatrix}$

22. Find the value of k such that the points are collinear

- a) $A(-3, 7)$, $B(7, k)$ and $(2, 1)$.
 b) $A(1, -5)$, $B(-4, 5)$ and $(k, 7)$.

23. Find the area of the triangle whose vertices are $A(11, 7)$, $B(5, 5)$ and $C(-1, 3)$

24. Compute A^{-1} for the matrix $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$

$$y + 2z + 8 = 0$$

Hence solve the system of equations: $x + 2y + 3z + 14 = 0$

$$3x + y + z + 8 = 0$$

25. Find A^{-1} for the matrix $A = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$ and show that $A^{-1} = \frac{A^2 - 3I}{2}$

26. Using matrix method solve the following system of equations:

a) $6x - 9y - 20z = -4$ $2x + y + z = 1$ $3x + 2y - 2z = 3$
 $4x - 15y + 10z = -1$ b) $x - 2y - z = \frac{3}{2}$ c) $x + 2y + 3z = 6$
 $2x - 3y - 5z = -1$ $3y - 5z = 9$ $2x - y + z = 2$

27. If $A = \begin{bmatrix} 1 & 2 & 0 \\ -2 & -1 & -2 \\ 0 & -1 & 1 \end{bmatrix}$, find A^{-1} . Using A^{-1} solve the system of equations

$$x - 2y = 10, \quad 2x - y - z = 8, \quad -2y + z = 7.$$

MULTIPLE CHOICE QUESTIONS

- The principal value of $\cos^{-1}(\cos\frac{17\pi}{5})$ is
a) $\frac{17\pi}{5}$ b) $\frac{2\pi}{5}$ c) $\frac{3\pi}{5}$ d) $\frac{-2\pi}{5}$
- The value of $\tan^{-1}(1) + \cos^{-1}(\frac{-1}{2})$ is
a) $\frac{3\pi}{4}$ b) $\frac{11\pi}{12}$ c) $\frac{2\pi}{3}$ d) $\frac{13\pi}{12}$
- Using the principal value, find the value of $\tan(\sec^{-1}(\frac{-2}{\sqrt{3}}))$.
a) $-\sqrt{3}$ b) $\frac{1}{\sqrt{3}}$ c) $\sqrt{3}$ d) $\frac{-1}{\sqrt{3}}$
- $\sin(\frac{\pi}{3} - \sin^{-1}(\frac{-1}{2}))$ is equal to
a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{-1}{2}$ d) 1
- The value of $\tan^{-1}(\sqrt{3}) - \cot^{-1}(-\sqrt{3})$
a) π b) $\frac{\pi}{2}$ c) 0 d) $2\sqrt{3}$
- If $\sec^{-1}(\frac{a}{5}) + \sin^{-1}(\frac{5}{b}) = \frac{\pi}{2}$, then
a) $ab=1$ b) $a=b$ c) $a=b^2$ d) none of these
- If $\tan^{-1}(\frac{a}{x}) + \tan^{-1}(\frac{b}{x}) = \frac{\pi}{2}$, then the value of x is
a) ab b) 1 c) \sqrt{ab} d) none of these
- The Value of $\sin(\tan^{-1}\frac{3}{4}) + \cot(\tan^{-1}\frac{5}{12})$
a) $\frac{7}{6}$ b) 3 c) $\frac{5}{6}$ d) 5
- Evaluate: $\sin^{-1}(\cos(\sin^{-1}\frac{\sqrt{3}}{2}))$
a) $\frac{\pi}{6}$ b) $\frac{\pi}{3}$ c) $\frac{\pi}{2}$ d) $\frac{\pi}{4}$
- Find the value of $\sec(\tan^{-1}(\frac{y}{2}))$
a) $\frac{4+y^2}{2}$ b) $\frac{4-y^2}{2}$ c) $\sqrt{\frac{4-y^2}{2}}$ d) $\sqrt{\frac{4+y^2}{2}}$