BADRI NARAYAN SAHA D.A.V PUBLIC SCHOOL
BLOCK ROAD, SIRSIA, GIRIDIH

SUMMER VACATION HOLIDAY HOME WORK-2025

MATH: FIND $\begin{bmatrix} 1 & 1 & 2 \\ 0 & 2 & -3 \\ 3 & 2 & 4 \end{bmatrix} \begin{bmatrix} 2 & 0 & 1 \\ 9 & 2 & 3 \\ 6 & 1 & 2 \end{bmatrix}$ ALSO SOLVE X-Y+2Z=1

$$2Y-3Z=1$$
$$3X-2Y+4Z=2$$

SOLVE THE SYSTEM OF EQUATIONS BY MATRIX METHOD

$\frac{2}{X} + \frac{3}{Y} + \frac{10}{Z} = 4$, $\frac{4}{X} - \frac{6}{Y} + \frac{5}{Z} = 1$, $\frac{6}{X} + \frac{9}{Y} - \frac{20}{Z} = 2$.

FIND THE MATRIX A IF $\begin{bmatrix} 2 & -1 \\ 1 & 0 \\ -3 & 4 \end{bmatrix} A = \begin{bmatrix} -1 & -8 & -10 \\ 1 & -2 & -5 \\ 9 & 22 & 15 \end{bmatrix}$

IF A=$\begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}$ FIND K SO THAT $A^2 = KA - 2I$

EXPRESS IF $\begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$ AS THE SUM OF SYMMETRIC AND SKEW SYMMETRIC MATRIX.

IF A,B ARE SYMMETRIC MATRIX OF SAME ORDER THEN AB-BA=_____.

SHOW THAT THE MATRIX B'AB IS SYMMETRIC OR SKEW SYMMETRIC ACCORDING AS A IS SYMMETRIC OR SKEW SYMMERRIC .

IF A AND B ARE SYMMETRIC MATRIX OF SAME ORDER SUCH THAT AB=BA, THEN PROVE THAT

IF $A^2=A$ THEN $(I+A)^3-7A =$_____.

FIND X, IF $X\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} = \begin{bmatrix} -7 & -8 & -9 \\ 2 & 4 & 6 \end{bmatrix}$

FIND X,Y,Z, IF THE MATRIX A=$\begin{bmatrix} 0 & 2Y & Z \\ X & Y & -Z \\ X & -Y & Z \end{bmatrix}$ SATISFY A'A= I

IF A=$\begin{bmatrix} 0 & -tan\alpha/2 \\ tan\alpha/2 & 0 \end{bmatrix}$ SHOW THAT$(I+A) =(I-A) \begin{bmatrix} cos\alpha & -sin\alpha \\ sin\alpha & cos\alpha \end{bmatrix}$

PHYSICS: 1. Static Electricity in Daily Life
Observe the behavior of plastic comb when rubbed on dry hair and brought near small pieces of paper. What do you observe?
Explain the phenomenon using the concept of electric charge and electrostatic force.

Build a simple electroscope using foil and a jar.
 What happens when you bring a charged object near the foil leaves?
 What does it indicate about the nature of electric charge?
Explain why:
a. Electric field lines never cross each other.
b. Current is scalar even though it has direction.
c. The resistance of a wire increases with temperature.

Case Study: Electric Fencing in Agriculture
Electric fences are used in farms to prevent animals from escaping or intruders from entering.
• How does an electric fence work?
• What kind of current (AC/DC) is used and why?
• What safety measures are in place?
• Which laws of electricity govern the working of such fences?
(Research and write a report of 100-150 words)
i. Numerical – Coulomb's Law- Two charges of +3µC and −5µC are placed 10 cm apart in air. Calculate the force between them.
 Is the force attractive or repulsive?
ii. Numerical – Electric Field- A charge of +2 µC is placed in an electric field of 5×10^4 N/C.
Find the force acting on the charge.
What would be the acceleration of a 1g particle with this charge in this field?
iii Numerical – Ohm's Law- A wire of resistance 5 Ω is connected to a 10 V battery.
Calculate the current through the wire.
Find the heat produced in 2 minutes.

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BIOLOGY: Create a flowchart comparing Spermatogenesis and Oogenesis in terms of process, duration and end products.
Design a public awareness poster promoting reproductive health among teenagers
What are the remedies of population explosion?
Draw and Label the 7 - celled,8-Nucleate embryo sac.
Mark the egg apparatus, Polar Nuclei, Antipodal cells and central cell.
Diagrammatic presentation on chart paper of various events during a menstrual cycle.(NCERT fig.-3.9)

CHEMISTRY: (a) At 25°C , 3g of a solute A in 100mL of an aqueous solution gave an osmotic pressure of 2.5 atmosphere. What is the nature of solute (associated or dissociated) if its normal molar mass is 246?
(b) Are equimolar solutions of sodium chloride and urea isotonic? Why?
Write short notes on the following:
(a) Van't Hoff factor (b) Edema (c) Reverse Osmosis (d) Anoxia (e) Isotonic solution
(a) Under what conditions Van't Hoff actor 'i' is (i) equal to unity (ii) less than I and (iii) greater than 1?
(b) When mercuric iodide is added to an aq. solution of KI, the freezing point is raised. Why?
(a) Express the relation between conductivity and molar conductivity of a solution.
(b) Why does blue colour of copper sulphate get discharged when zinc rod is dipped in it?
Given E° (Cu2+/Cu) =0.34V, E°(Zn2+/Zn)=-0.76V.
Define the followings and write down their units--(i) Molarity (ii) Molality (iii) Mole fraction.

GEOGRAPHY: "The imprints of human activities are created everywhere. "Evaluate the statement in context of humanization of nature.
Explain the impact of physical environment on the life style of Eskimos.
Describe the main features of population growth from 1901-2011.
Explain the spatial distribution of population density in India using maps and diagrams.
On the outline map of India, locate the following- a. State with highest population density b. State with lower population density.

HISTORY: Prepare a project report on Town Planning of Harappan Civilization.
Write about any two Harappan Crafts (Bead making, pottery etc) in 150 words each.
Create a timeline showing major political and economic events from 600BCE to 600CE.
On the political map of India, locate the following sites of Harappan Civilization-
i. Lothal   ii. Chanhudaro   iii. Kalibangan   iv. Banawali
On the political map of India, locate the following -
i. Magadha   ii. Kure   iii. Avanti   iv. Kosala

POL. SCIENCE: What was 'Marshall plan'?
What was 'Open Door 'policy of china?
Define ASEAN.What Steps should be taken to strengthen it?
What were the problems faced during 1967 elections?
a) Name the state with the largest number of seats in its Legislative assembly.(1967)
b)Name the state where the congress party did not get majority in 1967 Assembly polls, but formed the government with the help of others.

ACCOUNTS Divya and Kushagra start a business together, but they don't create a formal partnership agreement. As the business grows, they begin to disagree on key decisions. They realize the importance of having a clear partnership agreement in place.- Questions:
 - What are the benefits of having a partnership agreement?
 - How can partners ensure that their agreement is comprehensive and effective?
 - What are the potential consequences of not having a partnership agreement?
Amit and are partners in a business. Amit makes a decision to purchase a large quantity of inventory without consulting Priya. Priya disagrees with the decision and feels that it will harm

the business.   - Questions:
- What is mutual agency, and how does it affect partners?
 - How can partners ensure that they are acting in the best interests of the business?
- What are the potential consequences of mutual agency for business decisions?
Name persons who cannot enter into the contract of partnership and give reasons.
What are the provisions of Partnership Act 1932 which is applicable in the absence of Partnership Deed.
A company has an average profit of ₹ 1,00,000 for the last 5 years. The normal rate of return is 10%. The total assets of the company are ₹ 10,00,000, and the total liabilities are ₹ 3,00,000. Calculate the goodwill using the capitalization of average profits method.

B.ST: "Management is a goal-oriented and multi-dimensional process." In the light of this statement, explain the nature of management.

A factory sets a standard output of 100 units per day. The normal piece rate is ₹5 per unit. Under the differential piece rate system:

Workers who produce up to 100 units are paid at normal rate.

Workers who produce more than 100 units are paid at 120% of the normal rate.

Calculate the daily wages of the following two workers:

(a) Ram, who produces 95 units.   (b) Shyam, who produces 110 units.

ABC Ltd. is a leading textile company. The company has a clear aim to increase its market share by 10% within the next year. All the employees are working in coordination to achieve this goal. The company has various departments like production, finance, marketing, etc., and all are interlinked through effective communication. The manager, Mr. Raj, continuously motivates the team and takes decisions to ensure that work is completed on time. He also ensures that the company's activities are aligned with environmental and social responsibility.

Questions:

1. Identify and explain any three features of management highlighted in the above case.

2. Which level of management does Mr. Raj belong to? Justify your answer.

3. How is management described as a goal-oriented process in this case?

Case Study (Experiential Learning-Based):

Rising Star Ltd. is a Smartphone manufacturing company. Recently, it has been facing problems because workers often receive orders from two different supervisors, leading to confusion and delay in work. Also, the finance department directly gives instructions to the sales staff, bypassing their department manager. Moreover, workers feel demotivated because their efforts and ideas are not recognized by the company. One of the supervisors suggested setting clear lines of authority and encouraging team spirit among employees to boost morale and efficiency.

Questions:

1. Identify and explain any three principles of Henri Fayol that are being violated in the above case.

2. Suggest how the company can implement any two principles of Fayol correctly to improve the situation.

3. Explain the importance of the principle of Spirit De Corps in the context of this case.

Explain any two principles and any three techniques of Scientific Management as developed by F.W. Taylor. Also, briefly state how they help in improving efficiency at the workplace.

ECONOMICS: 'If primary sector produces intermediate goods, then tertiary sector mostly produces final goods '. Comment.

"In a two sector economy, National Income is always less than Domestic income ". Justify the above statement with valid reasons.

Swati, has recently completed her fashion designing studies and started a boutique. To produce dresses for sale, she purchased various materials, including a sewing machine, fabric,buttons and threads which are essential for production.

Classify the materials purchased by Swati as intermediate goods or final goods, giving valid reasons in support of the classifications.

"In the past few decades, Indian economy has been fairly benefitted by positive externalities created by rapid rise in infrastructure". Justify the given statement with valid arguments.

"Distribution Phase of Circular flow of Income indicates the flow of spending by the households on purchase of goods and services produced by firms ".

Defend or refute the statement, giving valid reasons in support of your answer.

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APP. MATH
Find the remainder when 987+876+765+654+543+432+321+210 is divided by 6
Find the last three digits of 456x7688
It is 4:00p.m currently. What time in (a.m or p.m) will be in next1500 hours?
Find the last two digit of 3^{20} .
In what ratio water must be added in milk costing ₹60 per litre, so that resulting mixture would be worth ₹50 per litre ?
A man takes twice as long as to row a distance against the stream as to row the same distance in the direction of stream. Find the ratio of speed of man in still water to the speed of stream.
Three pipes A, B and C can fill a tank in 5 hours working simultaneously. The pipes C is twice as faster B and B is twice as first as A . How much time will pipe A alone take to fill the tank?
Solve for x, 5+3x<$|5 + 3x|$ Solve for x,$|4x + 2|$≥5   Solve graphically x+y≤6,x+y≥3

SANSKRIT:
विद्यालय प्रार्थनासभा विद्यालय क्रीडाक्षेत्रम् वा इत्यस्य मनसि चित्रम् परिकल्प्य संस्कृतेन पञ्च वाक्यानि रचयत।
भास्वती द्वितीयभाग पाठ्यपुस्तकस्थ पाठानां सन्दर्भ ग्रन्थानां नामानि तेषाम् च रचनाः लिखत।
पञ्च महाकाव्यानां नामानि तेषाम् च महाकवीनाम् च नामानि लिखत।
पञ्च महागद्यानां लेखकानां च नामानि लिखत।
पञ्च नाटकानि नाटककाराणां च नामानि लिखत ।

HINDI:
1. किस प्रकार के ग्राहक समाज में अमन, चैन, शांति व रिश्वतखोरी एवं मुनाफ़ाखोरी को नियंत्रित कर सकते हैं?
2) भक्तिन पाठ में समाज की किस ज्वलंत समस्या को केंद्र में रखकर कहानी का ताना-बाना बुना गया है?
3) जग की गाने और अपने मन की गाने का क्या अर्थ है ? कवि अन्य से किस प्रकार भिन्न है ?
4) छात्र-छात्राओं को दंड मिलना चाहिए । पक्ष- विपक्ष में अपना तर्क दीजिए।
5) आदर्श प्राचार्य की विशेषताओं को केंद्र में रखकर अपने विचारों को लिखें ।
6) संचार के घटकों का उल्लेख करें।

ENGLISH
Your school is organizing a blood donation camp in collaboration with a nearby hospital. Write a notice in 50 words to inform students regarding this camp.
The story "The Last Lesson" highlights the concept of "Linguistic Chauvinism". Elaborate.
Write down the theme/central idea of the poem 'My mother at sixty six' and also find out all the poetic devices used in the poem.
The words Viva La France (M.Hamel) and See you soon Amma (Kalpana Das) evoke a common traits of optimism in contrasting context. Discuss (100 words).
 M.Hamel and Little Franz rue a common negligence in their own different way. Illustrate with reference to The Last Lesson.

COMPUTER SCIENCE
 "FUNCTIONS CHAPTER"
Practice Assignments (Theory + Programming)   Topics to Cover in Functions
1. Introduction to Functions   - Definition, need, and advantages
- Types of functions (Built-in vs User-defined)   2. Function Components
- Function definition, parameters, and arguments   - Return statement
3. Types of Arguments   - Positional, Keyword, Default, Variable-length (*args, **kwargs)
A. Programming Questions
1. - Write a function is even (n) that returns True if the number is even, else False.
2. - Write a function greet (name, msg="Good morning!") that prints a personalized message.
3. - Write a function is prime (n) that checks if a number is prime.
4. - Write a function fib (n) that returns the nth Fibonacci number (using recursion or loops).
5. - Write a function is palindrome(s) that checks if a string is a palindrome.

INFORMATICS PRACTICES
1) Differentiate between
a) Series vs list   b) Series vs dictionary   c) numpy array vs series
2) Write all the attributes of data frame.
3) Write a program in series to print the name of your five friends.
4) Write a program in data Frame using index (row and column) list by subject.
5) Write a program to create data series and then change the index of the series subject in any random order.