

Practice Material

Class - XII

Day & Date	Subject to be covered	Time Slot
Wednesday 05.08.2026	Accountancy/Political Science English class Painting,/Psychology/Maths	9:00-9:45 A.M 10:00-10:45 A.M 11:00-11:45 A.M
Thursday 06.08.2026	Maths/Psychology English class Hindi/Economics	9:00-9:45 A.M 10:00-10:45 A.M 11:00-11:45 A.M
Friday 07.08.2026	Business Studies/Music, English class Political Science/Maths	9:00-9:45 A.M 10:00-10:45 A.M 11:00-11:45 A.M
Monday 10.08.2026	Political Science/Business Studies English class Physical Education	9:00-9:45 A.M 10:00-10:45 A.M 11:00-11:45 A.M
Wednesday 12.08.2026	CS/Music/IP English class Psychology/Accountancy	9:00-9:45 A.M 10:00-10:45 A.M 11:00-11:45 A.M

Accountancy

Q.1. Aloo and Baingan share profits in 3:1

Liabilities		Assets	
Creditors	31000	Cash	22000
Reserve	4000	B/R	13000
Aloo's capital	87000	Debtors	16000
Baingan's capital	75000	Stock	60000
		Furniture	11000
		Land and building	75000
	197000		197000

On this date they decided to change their P.S.R. to 2:1 on the following terms:

➤ Goodwill of the firm is valued at Rs.120000

➤ Stock and furniture be reduced by 10% each and a provision of doubtful debts amounting to 950 is be provided on debtors.

➤ Land and building be appreciated by 20%.

➤ There is a claim against the firm for damages, a liability to the extent of 1000 be created.

➤ An item of 650 included in creditors is not likely to be claimed.

➤ Reserve was not to be distributed and the new balance sheet would show old values of the assets and liabilities. Pass a single adjustment entry and prepare the capital account of the partners and the new balance sheet

Q.2. Parrot and Pigeon are partners sharing profits 3:2

Liabilities		Assets	
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Parrot's capital	16800	Cash	2000
Pigeon's capital	13200	Stock	7700
Creditors	6200	Debtors	8800
Bills payable	3300	Machinery	18000
Reserve	5000	Investments	3000
		Goodwill	5000
	44500		44500

On this date their p.s.r. was changed to 1:1 on the following terms:

- ♣ Total goodwill of the firm was Rs. 60000.
- ♣ Stock and machinery are valued at 90%. Market value of investment is 12000. Make a provision of 5% on debtors and a provision of 5% discount on creditors.
- ♣ They decided to retain reserve a/c for the future use of the firm.

Prepare revaluation account, capital accounts and balance sheet of the new firm.

Q.3. Indira and Rajiv are partners sharing profits 3:2

Liabilities		Assets	
Indira's capital	300000	Fixed assets	360000
Rajiv's capital	100000	Investments	90000
Reserve fund	75000	Debtors	40000
Creditors	70000	Stock	60000
Bills payable	25000	Cash	20000
	570000		570000

On this date they admitted Sonia in partnership on the following conditions:

- Sonia is to bring 200000 as capital and 35000 as goodwill for a third share in profits.
- Fixed assets are to be reduced by 20% and stock is to be reduced by 10000.
- Capitals of all the partners shall be proportionate to their p.s.r. on the basis on Sonia's capital. Excess capital to be withdrawn and deficiency is to be brought in cash.

Q.4. Aries, Leo and Taurus are partners sharing profits 2:3:5

Liabilities		Assets	
Aries's capital	36000	Cash	18000
Leo's capital	44000	Bills receivable	24000
Taurus's capital	52000	Furniture	28000
Creditors	64000	Stock	44000
Bills payable	32000	Debtors	42000
P/L appropriation a/c	10000	Investment	32000

Workmen compensation fund	4000	Machinery	34000
		Goodwill	20000
	242000		242000

On this date they admitted Pisces into partnership on the following conditions:

- Furniture, machinery and investment are to be depreciated by 15%
- Stock is revalued at 48000
- Goodwill is valued at 24000
- Outstanding rent is 1800
- Prepaid salaries are 800
- Pisces brings 32000 as capital for $\frac{1}{6}$ th share in profits and old partners are to adjust their capitals in new p.s.r. on the basis of Pisces. All the adjustments are to be made in cash.
- Prepare necessary ledger accounts and Balance sheet of the new firm.

Q.5. The balance sheet of Joginder and Rajender was as follows:

Liabilities		Assets	
Joginder's Capital	60000	Machines	120000
Rajendra's Capital	40000	Tools	10000
Reserve	80000	Stock	30000
Creditors	30000	Debtors	50000
Bills payable	30000	Cash in hand	30000
	240000		240000

Rakesh is admitted with $\frac{1}{4}$ th share in the profits of the firm. For this share he contributes 80000 as capital excluding his share of goodwill in cash. Goodwill of the firm is values on the basis of Rakesh's share of capital in the firm. The assets and liabilities were revalued as follows:

- Machines 115000
- Tools 8000
- Stock 50000

Pass necessary entries and prepare capital account and balance sheet of the new firm.

Q.6. Honey and Sunny are partners sharing profits equally with capital of 120000 and 80000 respectively. They admitted their friend Tony with $\frac{1}{5}$ th share in profits. He agrees to bring Rs.70000 as capital. Calculate the amount of goodwill of the firm and pass necessary entries regarding treatment of goodwill at the time of admission.

Q.7. Kripi and Kunti are partners sharing profits equally. Their balance sheet on 31st March 2005 was as follows:

Liabilities		Assets	
Kripi's capital	201500	Land and building	300000
Kunti's capital	201500	Goodwill	30000
Reserve	80000	Investment	100000

Creditors	70000	Stock	50000
		Debtors	60000
		Cash	13000
	553000		553000

Kranti is admitted with $\frac{2}{9}$ th share in profits on the following terms:

- ✍ She will bring sufficient capital to be equal to $\frac{2}{9}$ of the total capital of the firm after admission.
- ✍ Goodwill of the firm is valued at 180000, and she is able to contribute her required share of goodwill which is withdrawn by the old partners.
- ✍ Buildings are to be depreciated by 10% and stock is valued at 60000
- ✍ Investments are valued at 120000. Half of the investments are taken by the old partners equally.

Prepare necessary entries and accounts and the balance sheet of the new firm.

Q.8. Chinu, Pappu and Sonu are partners sharing profits in $\frac{2}{5}$, $\frac{3}{10}$ and $\frac{3}{10}$ respectively.

Liabilities	Amount	Assets	Amount
Chinu's capital	16000	Building	18000
Pappu's capital	12000	Plant	14000
Sonu's capital	10000	Car	4000
Reserves	5000	Stock	10000
Bills payable	2000	Debtors	7000
Creditors	8000	Less: provision	<u>1000</u>
		Bank	1000
	53000		53000

Pappu retired on the following terms:

- Goodwill of the firm is valued at 7000
- Stock and building are appreciated by 10% each
- Plant and car are to be depreciated by 10% each
- Provident fund for the workers 2000 is to be recorded and Debtors are all good
- Pappu is to be paid in three equal annual installments with interest @10%p.a.

Prepare the balance sheet of the new firm and the loan account of Pappu till it is finally paid off.

Q.9. Pepsi, Coke and Limca are partners sharing profits in proportion of their capitals.

Liabilities	Amount	Assets	Amount
Pepsi capital	90000	Building	100000
Coke capital	60000	Plant and machinery	48000

Limca capital	30000	Stock	15000
Creditors	21600	Debtors 20000	
		Less: provision 400	19600
		Cash	8000
		Bank	11000
	201600		201600

Coke retired on the following conditions:

- ☞ Building is found to be undervalued by 10000
- ☞ Provision for bad debts is 5% on debtors.
- ☞ Unexpired insurance is 2000
- ☞ Plant and machinery is depreciated to 95%
- ☞ Goodwill is valued at 36000
- ☞ Outstanding repair bill is 3000
- ☞ Total capital of the new firm is 120000 and new partners decide to adjust their capitals in new p.s.r. by bringing in or withdrawing cash
- ☞ Prepare necessary ledger accounts and prepare the balance sheet of new firm

Q.10. Reena, Meena and Teena are partners sharing profits equally.

Liabilities	Amount	Assets	Amount
Creditors	25000	Goodwill	15000
Reena capital	40000	Land and building	40000
Meena capital	40000	Plant and machinery	28000
Teena capital	30000	Motor car	27000
		Debtors	24000
		Cash at bank	1000
	135000		135000

On this date Reena retired on the following terms:

- ☞ Land and building is to be appreciated by 10%
 - ☞ Plant and machinery is to be reduced to 23000
 - ☞ Create a provision at 5% for bad and doubtful debts
 - ☞ Create a provision of 700 on creditors
 - ☞ Goodwill of the firm was valued at 30,000
 - ☞ Reena was paid cash and the entire sum paid to Reena is brought by remaining partners in new p.s.r.
- Prepare necessary ledger accounts and prepare the balance sheet of new firm

Economics	Q1 define rural credit discuss the importance of credit in rural development. Q2 write a short note on National bank for Agriculture and ruler development. Q3 explain the role of micro credit in meeting capital requirements for the poor. Q4 explain the meaning of agriculture marketing. Q5 Define agriculture diversification what are its aspects. Q6 Information Technology plays a very significant role in achieving sustainable development and food security comment. Q7 Enlist some problems faced by farmers during the initial year of organic farming. Q8Distinguish between green revolution and Golden revolution. Q9Discuss any two measures initiated by the government to improve agriculture marketing in India. Elaborate the importance of credit in rural India Q10Explain the steps taken by the government in developing ruler markets. Q11 critically evaluate the role of ruler banking system in the process of ruler development in India. Q12 what are the sources of agriculture or ruler credit. Q13 what is organic farming and how does it promote sustainable development. Q14 explainself help groups Bank linkages program for micro credit or Finance.
Business studies	BOOK NCERT CHAPTER ORGANISING PAGE NUMBER 136 COMPELETE EXCERCISE CONTAINING SHORT ANSWER TYPE QUESTIONS AND LONG ANSWER TYPE QUESTIONS IN YOUR FAIR REGISTERS .
Political science	CLASS (XII C) 1. Examine the political and constitutional implications of the Emergency (1975–77).2. Evaluate the role of the judiciary, media, and opposition during the Emergency. Justify the statement: "The Emergency was the greatest test of Indian democracy." 3.Analyse the causes and consequences of regional movements in India. 4.Evaluate the role of democratic institutions in resolving regional conflicts such as Punjab, Assam, and Jammu & Kashmir. 5.Critically examine whether regionalism strengthens or weakens Indian democracy. 6.Analyse the impact of coalition politics on the functioning of Indian democracy. 7.Evaluate the political significance of the implementation of the Mandal Commission recommendations. 8.Critically examine the Ayodhya dispute and its impact on Indian politics and secularism. 9.Assess the changing nature of party politics in India after 1989. Evaluate the role of coalition governments in promoting cooperative federalism. 10.Justify the statement: "The decline of one-party dominance strengthened democratic politics in India." CLASS XII (Political science) 1.Analyse the major challenges faced by India immediately after Independence. How were these challenges addressed? 2.Evaluate the role of Sardar Vallabhbhai Patel in the integration of princely states. Why is he known as the "Iron Man of India"? 3.Critically examine the reorganisation of states on a linguistic basis. Was it a threat or a strength to Indian unity? 4.Evaluate the reasons for the dominance of the Congress Party in the first three general elections. 5.Analyse the factors responsible for the decline of the Congress system after 1967. 6.Assess the role of opposition parties in strengthening Indian democracy during the Congress-dominant era. 7.Critically analyse India's strategy of planned economic development after Independence. How successful was it in achieving its objectives? 8.Examine the debates between public sector-led development and private sector participation in India's economic planning.. 9.Analyse the principles and objectives of India's foreign policy after Independence.

	10. Evaluate the relevance of the policy of Non-Alignment during the Cold War. 11. Critically examine India's relations with China and Pakistan and their impact on India's foreign policy. 12. Analyse the political and economic factors that led to the declaration of the Emergency in 1975. 13. Evaluate the impact of the Emergency on Indian democracy and civil liberties. 14. Critically assess the reasons behind the restoration of the Congress Party in the 1980 general elections.
Hindi	१. कमरेमेंबंदअपाहिज, कविताध्यानपूर्वकपढ़ें। तथाअपनेउत्तरपुस्तिका(कॉपी) मेंरघुवीरसहायजीका - जीवनपरिचयलिखें - शब्दार्थलिखें - व्याख्यालिखें - प्रश्नउत्तरलिखें
Psychology	Practical Work – Class XII Psychology Dear Students, During the holidays, you are required to complete your Psychology practical work. This work will be checked after the school reopens. Instructions: • Complete the introduction and first practical neatly in your practical file. • Draw tables, graphs, and diagrams wherever required. • Keep your work organized and maintain proper headings.
MATHEMATICS	<u>Ch.1- Relations & Functions</u> Q.1. Show that the relation R in the set A = {1, 2, 3, 4, 5} given by $R = \{(a, b) : a - b \text{ is even}\}$, is an equivalence relation. Q.2. Show that the relation R in R defined by $R = \{(a, b) : a \leq b\}$, is reflexive and transitive but not symmetric. Q.3. Let A = $\mathbb{R} - \{3\}$ and B = $\mathbb{R} - \{1\}$, Consider the function $f: A \rightarrow B$ defined by $f(x) = \frac{x-2}{x-3}$. Show that f is one-one and onto Q.4. If $f: \mathbb{R} \rightarrow \mathbb{R}$ be given by $f(x) = (3-x^3)^{\frac{1}{3}}$, find the value of $f \circ f(x)$ Q.5. Consider $f: \mathbb{R} \rightarrow \mathbb{R}$ given by $f(x) = 4x+3$, show that f is invertible. Find the inverse of f. Q.6. Let $f: \mathbb{N} \rightarrow \mathbb{R}$ be a function defined as $f(x) = 4x^2 + 12x + 15$. Show that $f: \mathbb{N} \rightarrow S$ where S is the range of f, is invertible. Find the inverse of f.

- Q.7. Show that binary operation $a * b = \frac{a+b}{2} \quad \forall a, b \in \mathbb{N}$ is commutative but not associative.
- Q.8. Show that $f: \mathbb{N} \rightarrow \mathbb{N}$ defined by $f(x) = \begin{cases} \frac{n+1}{2}, & \text{if } n \text{ is odd} \\ \frac{n}{2}, & \text{if } n \text{ is even} \end{cases}$ is many-one onto function.
- Q.9. Show that $f: \mathbb{R} - \{0\} \rightarrow \mathbb{R} - \{0\}$ given by $f(x) = 3/x$ is invertible and it is inverse of itself.
- Q.10. On the set $M = A(x) = \left\{ \begin{bmatrix} x & x \\ x & x \end{bmatrix} : x \in \mathbb{R} \right\}$ of 2×2 matrices, find the identity element for the multiplication of matrices as a binary operation. Also, find the inverse of an element of M .

Ch.2- Inverse Trigonometric Functions

- Q.1. Find the value of : $\tan^{-1}(1) + \cos^{-1}(-1/2) + \sin^{-1}(-1/2)$.
- Q.2. Prove : $\tan^{-1}x + \tan^{-1}\frac{2x}{1-x^2} = \tan^{-1}\left(\frac{3x-x^3}{1-3x^2}\right), \quad |x| < \frac{1}{\sqrt{3}}$
- Q.3. If $\tan^{-1}\frac{x-1}{x-2} + \tan^{-1}\frac{x+1}{x+2} = \frac{\pi}{4}$, then find the value of x .
- Q.4. Find the value of $\sin\left(\frac{\pi}{3} - \sin^{-1}\left(\frac{-1}{2}\right)\right)$.
- Q.5. Prove : $\sin^{-1}\frac{12}{13} + \cos^{-1}\frac{4}{5} + \tan^{-1}\frac{63}{16} = \pi$
- Q.6. Solve : $\tan^{-1}2x + \tan^{-1}3x = \frac{\pi}{4}$
- Q.7. Prove : $\frac{9\pi}{8} - \frac{9}{4}\sin^{-1}\frac{1}{3} = \frac{9}{4}\sin^{-1}\frac{2\sqrt{2}}{3}$
- Q.8. Solve : $\sin^{-1}(1-x) - 2\sin^{-1}x = \frac{\pi}{2}$.
- Q.9. Evaluate: $\tan^{-1}\sqrt{3} - \sec^{-1}(-2) + \operatorname{cosec}^{-1}\frac{2}{\sqrt{3}}$.
- Q.10. Prove : $\tan^{-1}\left\{\frac{\sqrt{1+\cos x} + \sqrt{1-\cos x}}{\sqrt{1+\cos x} - \sqrt{1-\cos x}}\right\} = \frac{\pi}{4} + \frac{x}{2}$

Ch.3-Matrices

- Q.1. Construct a 3×4 matrix, whose elements are given by $a_{ij} = \frac{1}{2}|-3i + j|$

- Q.2. Construct a 2×3 matrix $A = [a_{ij}]$ whose elements are given by $a_{ij} = \frac{(j-2i)^3}{4j}$, $i \neq j$
 $= |i+2j|$, $i = j$
- Q.3. If $A = \begin{bmatrix} 8 & 0 \\ 4 & -2 \\ 3 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -2 \\ 4 & 2 \\ -5 & 1 \end{bmatrix}$, then find the matrix X , such that $2A + 3X = 5B$.
- Q.4. If $A = \begin{bmatrix} 0 & -\tan \alpha / 2 \\ \tan \alpha / 2 & 0 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, then show that $I+A = (I - A) \begin{bmatrix} \cos \alpha & -\sin \alpha \\ \sin \alpha & \cos \alpha \end{bmatrix}$
- Q.5. Express the matrix $A = \begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$ as the sum of symmetric and skew-symmetric matrix
- Q.6. Obtain the inverse of the matrix $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$ using elementary transformations.
- Q.7. If $f(x) = \begin{bmatrix} \cos x & -\sin x & 0 \\ \sin x & \cos x & 0 \\ 0 & 0 & 1 \end{bmatrix}$ Prove that $f(x) \cdot f(y) = f(x+y)$
- Q.8. Show that the matrix $B'AB$ is symmetric or skew-symmetric according as A is symmetric or skew symmetric.
- Q.9. If A and B are invertible matrices of the same order, then prove that $(AB)^{-1} = B^{-1}A^{-1}$
- Q.10. Let $f(x) = x^2 - 5x + 6$. Find $f(A)$ If $A = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$
- Q.11. If $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ Show that $A^2 - 5A + 7I = 0$, Use this to find A^4 .
- Q.12. Express the matrix $A = \begin{bmatrix} 4 & 2 & -1 \\ 3 & 5 & 7 \\ 1 & -2 & 1 \end{bmatrix}$ as the sum of a symmetric and a skew-symmetric matrix.

Ch.4- Determinants

- Q.1. Prove that : $\begin{vmatrix} 1 & x & x^2 \\ x^2 & 1 & x \\ x & x^2 & 1 \end{vmatrix} = (1-x^3)^2$
- Q.2. Find the equation of the line joining $A(1,3)$ and $B(0,0)$ using determinants and find if $D(K, 0)$

is a point such that area of a triangle ABD is 3 square units.

Q.3. If $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$ Verify that $A^3 - 6A^2 + 9A - 4I = 0$ and hence find A^{-1}

Q.4. Prove that : $\begin{vmatrix} a+bx & c+dx & p+qx \\ ax+b & cx+d & px+q \\ u & v & w \end{vmatrix} = (1-x^2) \begin{vmatrix} a & c & p \\ b & d & q \\ u & v & w \end{vmatrix}$

Q.5. Solve by matrix method:

$$\begin{aligned} 2x + y + z &= 1 \\ x - 2y - z &= 3/2 \\ 3y - 5z &= 9 \end{aligned}$$

Ch.5- Continuity & Differentiability

Q.1. Find the values of a and b such that the function defined by:

$$f(x) = \begin{cases} 5, & \text{if } x \leq 2 \\ ax + b & \text{if } 2 < x < 10 \\ 21, & \text{if } x \geq 10 \end{cases} \text{ is a continuous function}$$

Q.2. Find $\frac{dy}{dx}$ of $\sin^2 y + \cos(xy) = \pi$

Q.3. Differentiate w.r.t. x $(x \cos x)^x + (x \sin x)^{1/x}$

Q.4. If $x = \sqrt{a^{\sin^{-1} t}}$, $y = \sqrt{a^{\cos^{-1} t}}$, show that $\frac{dy}{dx} = \frac{-y}{x}$

Q.5. If $y = (\tan^{-1} x)^2$, show that

$$(x^2 + 1)^2 y_2 + 2x (x^2 + 1) y_1 = 2.$$

Q.6. Differentiate $\sin^{-1} \left(\frac{2^{x+1}}{1+4^x} \right)$ w.r.t. x

Q.7. If $x \sqrt{1+y} + y \sqrt{1+x} = 0$ for $-1 < x < 1$, show that $\frac{dy}{dx} = \frac{-1}{(1+x)^2}$

Q.8. Find $\frac{dy}{dx}$, if $y = a^{t+1/t}$, $x = (t + 1/t)^a$

Q.9. Discuss the continuity of the function given by:-

$$f(x) = \begin{cases} |x-1| & \text{if } x < 1 \\ |x-2| & \text{if } x \geq 1 \end{cases}$$

Q.10. If the function f(x) is given by $f(x) = \begin{cases} 3ax + b & \text{if } x > 1 \\ 11 & \text{if } x = 1 \\ 5ax - 2b & \text{if } x < 1 \end{cases}$

$$\text{is continuous at } x = 1, \text{ find the values of } a \text{ and } b.$$

Q.11. If $y = [x + \sqrt{x^2 + a^2}]^n$, then prove that $\frac{dy}{dx} = \frac{ny}{\sqrt{x^2 + a^2}}$

Ch.10- Vector Algebra

- Q.1. Find a vector in the direction of vector $\vec{a} = \hat{i} - 2\hat{j}$ that has magnitude 7 units.
- Q.2. Show that the points A, B and C with position vectors,
 $\vec{a} = 3\hat{i} - 4\hat{j} - 4\hat{k}$, $\vec{b} = 2\hat{i} - \hat{j} + \hat{k}$ and $\vec{c} = \hat{i} - 3\hat{j} - 5\hat{k}$ respectively, form the vertices of a right angled triangle.
- Q.3. Find $\left| \vec{a} - \vec{b} \right|$, if two vectors $\vec{a}$ and $\vec{b}$ are such that $\left| \vec{a} \right| = 2$, $\left| \vec{b} \right| = 3$ and $\vec{a} \cdot \vec{b} = 4$.
- Q.4. Find the area of the parallelogram whose adjacent sides are determined by the vectors
 $\vec{a} = \hat{i} - \hat{j} + 3\hat{k}$ and $\vec{b} = 2\hat{i} - 7\hat{j} + \hat{k}$
- Q.5. If a unit vector $\vec{a}$ makes angles $\frac{\pi}{3}$ with $\hat{i}$, $\frac{\pi}{4}$ with $\hat{j}$ and acute angle θ with $\hat{k}$, then find θ and hence the components of $\vec{a}$.
- Q.6. Let $\vec{a}$, $\vec{b}$ and $\vec{c}$ be three vectors such that $\left| \vec{a} \right| = 3$, $\left| \vec{b} \right| = 4$, $\left| \vec{c} \right| = 5$ and each one of them being perpendicular to the sum of other two, Find $\left| \vec{a} + \vec{b} + \vec{c} \right|$.
- Q.7. Find the value of $\hat{i} \cdot (\hat{j} \times \hat{k}) + \hat{j} \cdot (\hat{i} \times \hat{k}) + \hat{k} \cdot (\hat{i} \times \hat{j})$
- Q.8. The scalar product of the vector $\hat{i} + \hat{j} + \hat{k}$ with a unit vector along the sum of vectors $2\hat{i} + 4\hat{j} - 5\hat{k}$ and $\lambda\hat{i} + 2\hat{j} + 3\hat{k}$ is equal to one. Find the value of λ .
- Q.9. If the sum of two unit vectors is a unit vector, Prove that the magnitude of their difference is $\sqrt{3}$.
- Q.10. If $\vec{a}$ and $\vec{b}$ are position vectors of points A and B respectively, then find the position vector of points of trisection of AB.
- Q.11. Prove that the line segment joining the mid-points of two sides of a triangle is parallel to the third side and equal to half of it.
- Q.12. ABCD is a parallelogram. If the coordinates of A, B, C are (-2, -1), (3, 0) and (1, -2) respectively, Find the co-ordinate of D.
- Q.13. Show that the points A, B, C with position vectors $-2\vec{a} + 3\vec{b} + 5\vec{c}$, $\vec{a} + 2\vec{b} + 3\vec{c}$ and $7\vec{a} - \vec{c}$ respectively are collinear
- Q.14. If a vector makes α , β , γ with OX, OY and OZ respectively, prove that $\sin^2\alpha + \sin^2\beta + \sin^2\gamma = 2$.

	Q.15. If $\hat{a}$ and $\hat{b}$ are unit vectors inclined at an angle θ, then prove that $\sin \frac{\theta}{2} = \frac{1}{2} \hat{a} - \hat{b}$. Q.16. If $\vec{a} + \vec{b} + \vec{c} = 0$, $\vec{a} = 3$, $\vec{b} = 5$, $\vec{c} = 7$, find the angle between $\vec{a}$ and $\vec{b}$. Q.17. If $\vec{a} = 2$, $\vec{b} = 5$ and $\vec{a} \times \vec{b} = 8$, find $\vec{a} \cdot \vec{b}$. Q.18. Consider two points P and Q with position vectors $\vec{OP} = 3\vec{a} - 2\vec{b}$ and $\vec{OQ} = \vec{a} + \vec{b}$. Find the position vector of a point R which divides the line joining P and Q in the ratio 2:1, (i) internally, and (ii) externally. Q.19. Find a unit vector perpendicular to each of the vectors $\vec{a} + \vec{b}$ and $\vec{a} - \vec{b}$ where $\vec{a} = i + j + k$, $\vec{b} = i + 2j + 3k$. Q.20. Show that the vectors $2i - j + k$, $i - 3j - 5k$ and $3i - 4j - 4k$ form the vertices of a right angled triangle. Q.21. Find a unit vector parallel to the vector $2\vec{a} - \vec{b} + 3\vec{c}$ where $\vec{a} = i + j + k$, $\vec{b} = 2i - j + 3k$ and $\vec{c} = i - 2j + k$.
Physical Education	Practical work for file Practical -2 Physical fitness test ● BMI ● 600 mt run and walk ● 50 mt dash ● Push ups for boys ● Modified push ups for girls ● Partial curl up test ● Sit and reach test
Painting	Answer all the questions in your notebook Chapter- 2 Pahari School of Painting Long answer questions: 1. Write a brief introduction to the Pahari School of Painting, mentioning its origin, period, and sub-schools. 2. Describe the main characteristics of Pahari school of painting. 3. Explain the important features of the Basohli School of Painting. 4. What are the major themes and subject matter of the Pahari school of painting? 5. Describe the Kangra School of Painting. Why is it considered the most refined style of the Pahari School? 6. Describe the prescribed painting "Krishna with Gopis." Explain its composition, subject matter, color scheme, and artistic features. 7. Describe the prescribed painting "Nand, Yashoda and Krishna with Kinsmen Going to Vrindavan." Explain its composition, theme, color scheme, and artistic features. 8. Explain the influence of nature in the Pahari school. 9. Explain the significance and contribution of the Pahari School of Painting in the

	development of Indian miniature painting. Practical Work (A2 size sheet) 1. Still Life (Watercolor) Draw and paint a still-life consisting of 4–5 objects using watercolors. Focus on proportion, perspective, color harmony, light and shade, and neat brushwork. 2. Rajasthani School of Painting Make any one painting from the Rajasthani School of Painting using Watercolor or Poster Colors. Maintain the original composition, color scheme, and decorative details.
Music	1. Practice the following topics in your notebook Notation- Raag Malkauns Drut khyal Notation- Raag Malkauns Dhamar Notation- Raag Bhairav Drut Khyal 2. Complete your project file and submit it on the day of reopening of school
Computer Science	Write the output of the following code : <pre>def Exam2026(given) : new=[] for ch in given[1:-1]: if ch.isupper(): new.reverse() elif ch not in new: new.append(ch) elif ch in new: new.pop() print(new) Exam2026("Gold-24Medals")</pre> 2. <pre>def Exam2026(given): new = 0 while given: if new % 2: new += given % 10 else: new += given % 5 print(new, end='-') given //= 10 Exam2026(123456)</pre> 3. Write the output of the following code <pre>def ALTER(Y=25): global X Y += X X += Y print(X,Y,sep="#") X=5; Y=15 ALTER(Y) ALTER() print(X,Y,sep="@")</pre>

	4. What is the difference between default parameters and positional parameters in Python ? Also give an example of a function header which uses both. 5. Write a function remove_element() in Python that accepts a list L and a number n. If the number n exists in the list, it should be removed. If it does not exist, print a message saying "Element not found" 6. Write a Python function add_contact() that accepts a dictionary phone_book, a name, and a phone number. The function should add the name and phone number to the dictionary. If the name already exists, print "Contact already exists" instead of updating its																																																																
informatics Practices	1. Create a Database named “Library” in MySQL 2. Use database library as active database 3. Create a table Books as per the given specifications Table : Book <table><tr><th>Field Name</th><th>Data Type & Size</th><th>Constraints</th><th>Comments</th></tr><tr><td>Access No</td><td>int(10</td><td>Primary key</td><td>Book Accession No that is always unique in a library</td></tr><tr><td>Book Title</td><td>Char(150)</td><td>Not null</td><td>Name of the book</td></tr><tr><td>Author</td><td>Char(100)</td><td>Not null</td><td>Book author name (s)</td></tr><tr><td>Category</td><td>Char(60)</td><td>Not Null</td><td>Book Category</td></tr><tr><td>Publisher</td><td>Char(100)</td><td>Not null</td><td>Publisher name</td></tr><tr><td>Price</td><td>Float(7,2)</td><td>Not null</td><td>Book price</td></tr><tr><td>Pages</td><td>Int(5)</td><td>Not null</td><td>Number of pages in the book</td></tr><tr><td>Date_purchase</td><td>Date</td><td>Not null</td><td>Purchase date of the book</td></tr><tr><td>Keywords</td><td>Char(100)</td><td>Not null</td><td></td></tr><tr><td>Status</td><td>Int(1)</td><td>Default -0</td><td>0- Not issued, 1- issued, 2- lost, 3, weed out</td></tr></table> 4. Create another table : Member in the same database LIBRARY. The table structure of Member Table is as follows 5. Table: Member <table><tr><th>Field Name</th><th>Data Type & Size</th><th>Constraints</th><th>Comments</th></tr><tr><td>Id</td><td>Int(10)</td><td>Primary key</td><td>Primary key of this table</td></tr><tr><td>Name</td><td>Char(30)</td><td>Not null</td><td></td></tr><tr><td>Class</td><td>Char(15)</td><td>Not null</td><td></td></tr><tr><td>Section</td><td>Char(15)</td><td>Not null</td><td></td></tr></table>	Field Name	Data Type & Size	Constraints	Comments	Access No	int(10	Primary key	Book Accession No that is always unique in a library	Book Title	Char(150)	Not null	Name of the book	Author	Char(100)	Not null	Book author name (s)	Category	Char(60)	Not Null	Book Category	Publisher	Char(100)	Not null	Publisher name	Price	Float(7,2)	Not null	Book price	Pages	Int(5)	Not null	Number of pages in the book	Date_purchase	Date	Not null	Purchase date of the book	Keywords	Char(100)	Not null		Status	Int(1)	Default -0	0- Not issued, 1- issued, 2- lost, 3, weed out	Field Name	Data Type & Size	Constraints	Comments	Id	Int(10)	Primary key	Primary key of this table	Name	Char(30)	Not null		Class	Char(15)	Not null		Section	Char(15)	Not null	
Field Name	Data Type & Size	Constraints	Comments																																																														
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Section	Char(15)	Not null																																																															

Status	Int(1)	Default -0	0 –no book issued, otherwise book accession no
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6. Create another table : Transaction in the same database LIBRARY. The table structure of the Transaction table is as follows

Table : Transaction

Field Name	Data Types & size	Constraints	Comments
Trans_id	Int(10)	Primary key	Primary key of the table
Id	Int(10)	Foreign Key	This data is coming from member table
Access_no	Int(10)	Foreign key	This data is coming from book table
Issue_date	Date	Null	If book is not issued then null otherwise will contain book issue date
Return_date	Date	Null	If book is not returned then null otherwise will contain book return date

7. Add a new column in Book Table with the following specification

Field Name	Data Types & size	Constraints	Comments
Volume	Char(30)	Null	

8. Change the data type of status field from int(1) to char(2) in book Table
 9. Create a duplicate table of Book Table Named "DuplicateBooks"
 10. Drop the table book from Library Table

(All the Queries are based on the Library database containing Book, Member and Transaction Tables
 -Assume all these tables have sufficient records)

- Write SQL command to display all the contents of Book table
- Write SQL command to display book id, name, title and price of all the books from book
- Write SQL command to show Book Title, price, pages from book table
- Write SQL command to create a report of all the books having access no, title, price and vat of all the books where vat = 5 % of book price) from book table
- Display all the records of books showing access no as "ID", title as "book title" from the table book.

Where clause

- Display all the books records whose publisher is 'BPB'
- Display book access no, title, price and pages of all the books from books table where price of the books are more than 200.
- Display Book title, category of all those books whose category is 'database' and price is more than 500
- Display all the books records whose is right now available in the library for issue purpose.

10.	Display the records of all the weed out books from the books table.
11.	Display all the records of those members who got some books from the library.
In clause	
11.	Display the records of all books whose category is either 'design' or 'database' from book table
Between Clause	
13.	Display all the records of the books whose price is not in the range of 100 to 200
14.	Display the records of all the books whose price is between 250 and 400 from book table
Null Clause	
15.	Display the members records who do not have any book from the library
16.	Display all the books who has been issued but not returned to the library from transaction table
Like Clause	
17.	Display the records of all the books who have keyword 'C' and 'C++'
18.	Make a list of all the books from book table whose writer name contains 'ku' and its been published from 'BPB' publication.
19.	Display the records of all those books who have keyword 'design'
20.	Create a list of books whose title contains 'dummies' in its title.
Based on Update/Delete	
21.	Update the book price by 15% of the book table
22.	Change the publisher name from TATA to 'McGrawHill' of all those books whose publisher is 'TATA'
23.	Delete all those records from book table whose date of purchase is less than 31/01/1990
24.	Delete all the books from book table where book category is not defined.