

Holiday Homework

Class XII

ENGLISH

1. Practice comprehension passages with note - making
2. Revise the work done in the school.
3. Revise tenses

IP

1. Complete the Assignment given in the class. (Hand Written in practical file)
2. Create project and project file based on database connectivity. (Hard Copy)

CS

THE JAIN
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Make a practical file (Hand Written) —→ KANPUR

1. Containing 10 programs of class and objects.
2. Five programs from array. (single dimension and double dimension)



MATHS

1. Practice of Matrices, determinant, Relation and function from RD Sharma.

Note: Find the Math's assignment from next page.

45 copies
of 26/14

WORKSHEET

CLASS - XII

MATHEMATICS

MATRICES AND DETERMINANTS

- ① Construct a 2×3 matrix $A = [a_{ij}]$ whose elements are given by $a_{ij} = \frac{i+j}{i-j}$
- ② Find the values of x and y if
$$\begin{bmatrix} x+10 & y^2+27 \\ 0 & -4 \end{bmatrix} = \begin{bmatrix} 3x+4 & 3 \\ 0 & y^2-5y \end{bmatrix}$$
- ③ Find a matrix A such that $2A - 3B + 5C = 0$ where $B = \begin{bmatrix} -2 & 2 & 0 \\ 3 & 1 & 4 \end{bmatrix}$ and $C = \begin{bmatrix} 2 & 0 & -2 \\ 7 & 1 & 6 \end{bmatrix}$
- ④ Find the matrices X and Y if
$$2X - Y = \begin{bmatrix} 6 & -6 & 0 \\ -4 & 2 & 1 \end{bmatrix} \text{ and } X + 2Y = \begin{bmatrix} 3 & 2 & 5 \\ -2 & 1 & -7 \end{bmatrix}$$
- ⑤ Find λ if $\lambda \begin{bmatrix} 1 & 0 & 2 \\ 3 & 4 & 5 \end{bmatrix} + 2 \begin{bmatrix} 1 & 2 & 3 \\ -1 & -3 & 2 \end{bmatrix} = \begin{bmatrix} 4 & 4 & 10 \\ 4 & 2 & 14 \end{bmatrix}$
- ⑥ Find the value of x such that
$$\begin{bmatrix} 1 & x & 1 \end{bmatrix} \begin{bmatrix} 1 & 3 & 2 \\ 2 & 5 & 1 \\ 15 & 3 & 2 \end{bmatrix} \cdot \begin{bmatrix} 1 \\ 2 \\ x \end{bmatrix} = 0$$
- ⑦ If $A_\alpha = \begin{bmatrix} \cos \alpha & \sin \alpha \\ -\sin \alpha & \cos \alpha \end{bmatrix}$, then prove that
 - i) $A_\alpha \cdot A_\beta = A_{\alpha+\beta}$
 - ii) $(A_\alpha)^n = \begin{bmatrix} \cos n\alpha & \sin n\alpha \\ -\sin n\alpha & \cos n\alpha \end{bmatrix}$
- ⑧ If $A = \begin{bmatrix} a & 1 \\ 0 & a \end{bmatrix}$, then prove that

(9) If $A = \begin{bmatrix} 0 & c & -b \\ -c & 0 & a \\ b & -a & 0 \end{bmatrix}$ and $B = \begin{bmatrix} a^2 & ab & ac \\ ab & b^2 & bc \\ ac & bc & c^2 \end{bmatrix}$,

then show that $AB = BA = O_{3 \times 3}$

(10) Let $A = \begin{bmatrix} -1 & 1 & -1 \\ 3 & -3 & 3 \\ 5 & 5 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 4 & 3 \\ 1 & -3 & -3 \\ -1 & 4 & 4 \end{bmatrix}$,

then compute $A^2 - B^2$.

(11) i) Show that the matrix $A = \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix}$ satisfies the equation $x^3 - 4x^2 + x = 0$

ii) Show that the matrix $A = \begin{bmatrix} 1 & 2 & 0 \\ 3 & -4 & 5 \\ 0 & -1 & 3 \end{bmatrix}$ ~~is~~

~~compute~~ satisfies the equation $x^2 - 4x + 3 = 0$.

(12) i) Let A be a square matrix. Then, prove that AA^T and $A^T A$ are symmetric matrices.

ii) Let A and B are symmetric matrices of the same order. Then, show that $AB + BA$ is a symmetric matrix.

(13) Express the matrix $A = \begin{bmatrix} 3 & -4 & 5 \\ 13 & 9 & 0 \\ 1 & -5 & 6 \end{bmatrix}$ as the sum of a symmetric and a skew-symmetric matrix.

(14) If $A = [1 \ 2 \ 3]$, then write AA^T .

(15) Show that $|\sin 0^\circ \quad -\cos 0^\circ| = 1$

Determinant and "Relation & function"

Q1. Show that the relation R on the set $A = \{1, 2, 3, 4, 5\}$ given by $R = \{(a, b) : |a - b| \text{ is even}\}$, is an equivalence relation.

Show that all the elements of $\{1, 3, 5\}$ are related to each other and all the elements of $\{2, 4\}$ are related to each other, but no element of $\{1, 3, 5\}$ is related to any element of $\{2, 4\}$.

Q2. Prove that the relation R on the set $N \times N$ defined by $(a, b) R (c, d) \Leftrightarrow a + d = b + c \quad \forall (a, b), (c, d) \in N \times N$ is an equivalence relation.

Q3. Show that the relation R defined by $R = \{(a, b) : a + b \text{ is divisible by } 3; a, b \in Z\}$ is an equivalence relation.

Q4. If $f(x) = e^x$ and $g(x) = \log_e x$ ($x > 0$), find $f \circ g$ and $g \circ f$. Is $f \circ g = g \circ f$?

Q5. If $f(x) = \sqrt{x}$ ($x \geq 0$) and $g(x) = x^2 - 1$ are two real functions, find $f \circ g$ and $g \circ f$. Is $f \circ g = g \circ f$?

Q6. Determine which of the following binary operations are associative and which are commutative:

(a) $*$ on N defined by $a * b = 1$ for all $a, b \in N$.

(b) $*$ on Q defined by $a * b = \frac{a+b}{2}$ for all $a, b \in Q$.

Q7. If binary operation $*$ on the set Z of integers is defined by $a * b = a + 2b^2$ find the value of $a * b$.

9) If $A = \begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$, find A^{-1} and hence solve the system of linear equations.

$$2x - 3y + 5z = 11, \quad 3x + 2y - 4z = -5, \quad x + y + 2z = -3$$

10) Solve.

a) $x + y + z = 6$
 $x + 2z = 7$
 $3x + y + z = 12$

b) $8x + 4y + 3z = 18$
 $2x + y + z = 5$
 $x + 2y + z = 5$

c) $\frac{2}{x} - \frac{3}{y} + \frac{3}{z} = 10$
 $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 10$
 $\frac{3}{x} - \frac{1}{y} + \frac{2}{z} = 13$

11) Find the inverse of following matrices by using elementary row transformation.

a) $\begin{bmatrix} 2 & -1 & 4 \\ 4 & 0 & 2 \\ 3 & -2 & 7 \end{bmatrix}$

b) $\begin{bmatrix} 3 & 0 & -1 \\ 2 & 3 & 0 \\ 0 & 4 & 1 \end{bmatrix}$

12) If $A = \begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}$, find the value of λ so that

$$A^2 = \lambda A - 2I. \text{ Hence, find } A^{-1}.$$

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

14) Find the inverse of the matrix $A = \begin{bmatrix} a & b \\ c & \frac{1+bc}{a} \end{bmatrix}$ and

$$\text{show that } aA^{-1} = (a^2 + bc + 1)I - aA.$$

15) Show that $A = \begin{bmatrix} 2 & -3 \\ 3 & 4 \end{bmatrix}$ satisfies the equation $x^2 - 6x + 17 = 0$

Hence find A^{-1} .

16) If A is an invertible matrix of order 3 and $|A| = 5$ then find $|\text{adj}(A)|$.

Accountancy Project topics and guidelines:

CLASS - XII Subject - Accountancy.

COMPREHENSIVE PROJECTS

1.

A student will work on a comprehensive problem of accounts. He is expected to pass journal entries, prepare ledger accounts, trial balance and prepare the financial statements (or final accounts). These accounts may pertain to sole proprietorship or partnership firms or that of a joint stock company. These financial statements should be analysed by using analytical tools like ratio analysis and cash flow statement so that meaningful conclusions can be drawn from the point of view of profitability and financial soundness of the firm.

PROJECT NO. 1

Mr. Rahul had 1,000 shares of Reliance Ltd. of Rs. 10 each. In March, 2009, he sold his shares @ Rs. 980 each and decided to set up a manufacturing business of marbles on 1 April, 2009 under the name of Rahul Marble House at Kishangarh (Raj). He decided that all transactions should be made through bank and deposited the whole money in U.C.O. Bank. He purchased a running factory of marbles consisting of Factory Land and Building Rs. 4,00,000, Plant and Machinery Rs. 3,50,000, Furniture Rs. 50,000, Stock Rs. 90,000 but agreed to pay 9,50,000 as purchase consideration. He later approached his banker for a loan to meet the working capital requirement. Bank advanced loan amounting to Rs. 4,00,000 @ 10% p.a. His transactions for the year ending 31st. March, 2010 were as follows :

	Rs.
Total Purchases (Rs. 4,10,000 in Cash)	12,40,000
Total Sales (Rs. 5,25,000 in Cash)	20,50,000
Wages	2,30,000
Carriage	20,500
Power and Lighting	15,500
Salary of Staff and Manager	1,25,000
Postage and Call	4,200
Printing and Stationery	3,800
Advertising	16,700
Debtors Paid	12,10,000
Insurance Premium	12,100
Conveyance	13,200
Paid to Creditors	6,50,000
Drawings during the year @ Rs. 5,000 p.m.	60,000

You are required to :

(1) Journalise above transactions and post them into ledger accounts and prepare Trial Balance.

Additional Information :

- (i) Closing Stock Rs. 1,10,000
 - (ii) Depreciate Land and Building by 5% and Plant and Machinery and Furniture by 10%.
 - (iii) Outstanding Salary Rs. 8,000 and outstanding wages Rs. 15,000.
 - (iv) Prepaid Insurance premium Rs. 1,200.
- (2) Prepare financial statements for the year 2009-10.
- (3) Compare and comment on the profitability and short term solvency of the enterprise when similar firms earn Gross Profit @ 23% and Net Profit @ 10%.

OR

ARVIND AUTO AGENCY

2. Title of the Project. Analysis of the Financial Position of Arvind Auto Agency.

Mr. Arvind has good amount of savings. He wanted to start a business which can give him a good margin of profit. He planned to start an Auto agency to Purchase and sell Scooters and Motorcycles. According to his calculations there was a capital requirement of Rs. 75,00,000 [75 lakhs]. His savings was not sufficient for this business so he decided to take a loan from the bank for Rs. 60,00,000 [60 lakhs] on the security of his own house. The loan was sanctioned on 15th March, 2007.

After sanctioning of loan he purchased the required fixed assets for this business which are as follows :

- (i) Office Premises Rs. 37,50,000 (37,50,000)
- (ii) Office Equipment Rs. 3,60,000
- (iii) Furniture and fittings Rs. 3,90,000.

Mr. Arvind has done all the transactions through Bank. All the sales were made on cash basis and same cash is deposited in the bank. On the other hand all the expenses were also made by cheque. Purchases were also through cheque. However the purchase made of March 2008 was done on credit basis.

Following transactions were made during the year.

	Rs.
1. Cash Purchases	37,20,000
2. Credit Purchases	3,00,000
3. Sales (All on cash Basis)	47,70,000
4. Water and Electricity Expenses	39,000
5. Mobile Courier Expenses	17,700
6. Salaries	1,95,000
7. Sales Promotion Expenses	18,000
8. Trade Expenses	9,000
8. Miscellaneous Expenses	52,500
9. Printing and Stationery	6,000

Some of the expenses for the month of March 2008 were not paid yet.

These are as follows :

1. Water and Electricity	2,400
2. Salaries	20,100
3. Mobile Expenses	900

On 31st March, 2008, the stock in hand was Rs. 8,70,000. The stock for unused stationary was Rs. 1,500. Office premises was to be charged depreciation of 2%, where as 10% depreciation was charged on office equipment and furniture.

Now to Judge the short-term solvency and efficiency to know the overall profitability of this auto business, we have to analyse the financial statements of this business. But to analyse the financial statements or we can say to make available the financial statements of this Auto Agency, following steps will be taken.

Steps :

1. First of all we have to record all the financial transactions of this auto agency. It means first of all we have to prepare **Journal**.
2. After Journalising (recording) all the financial transactions **Ledger Posting** will be done.
3. With the help of balance of all the ledger accounts next step will be preparation of **Trial-balance**.
Now with the help of Trial Balance, further statements will be prepared and Analysis will be done from those statement to Judge the solvency, profitability and efficiency of this auto agency. So further steps will be
4. Preparation of Trading and **Profit and Loss Account** with the help of Trial-balance.
5. Preparation of **Balance-sheet** with the help of Trading and Profit and Loss Account and other information available.
6. After Preparing the Financial Statements in the form of Trading and Profit and Loss Account and Balance-sheet we will analyse the performance of this auto agency with the help of one of the most important tools of analysis i.e. **Ratio Analysis**.

Project for Board examination (2011-12)

General Instruction:

1. Attempt any one Comprehensive Problem.
2. The Project should be attempted in interleaved sheets.

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