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CLASS XII (ASSIGNMENT)-SCIENCE

S.No.	SUBJECT	ASSIGNMENT
1	English Language	1) WRITE A COMPOSITION IN APPROXIMATELY 400-500 WORDS ON ANY TWO OF THE FOLLOWING TOPICS: a) SOMETIMES WE TAKE NATURE FOR GRANTED. NARRATE AN EXPERIENCE THAT MADE YOU APPRECIATE THE NATURAL WORLD. b) "FAITH IS TO BELIEVE WHAT WE DO NOT SEE AND THE REWORD OF THIS FAITH IS TO SEE WHAT WE BELIEVE." – EXPRESS YOUR VIEWS ON THE GIVEN STATEMENT. c) EYES . d) WRITE A SHORT STORY DEPLOYING THE LINE: " AS THE HOT WEATHER BEGAN , THE SHACKLES SETTLED ON HIM AND ATE INTO HIS FLESH." 2) AS THE MEMBER OF THE HOME SCIENCE CLUB OF YOUR SCHOOL, YOU HAVE BEEN GIVEN THE RESPONSIBILITY OF ORGANISING A BAKERY CARNIVAL TO RAISE FUNDS FOR PROVIDING WOOLEN CLOTHES TO THE UNDER PRIVILEDGED CHILDREN. WRITE A PROPOSAL STATING THE STEPS YOU WOULD TAKE TO SUCCESSFULLY ORGANISE THIS EVENT.

BENGALI (ASSIGNMENT)

করোনা ভাইরাসের ত্রাসে কাঁপছে গোটা বিশ্ব – রোগের উপসর্গ – কীভাবে প্রতিবিধান করা যেতে পারে– (WHO) এর বক্তব্য – সারা দেশ জুড়ে কী ধরনের ব্যবস্থা গ্রহণ করা হয়েছে – সমস্ত তথ্য দিয়ে রচনাটি লেখ।

HINDI CLASS 12 (ASSIGNMENT)

मुहावरे तथा अशुद्ध वाक्यों को शुद्ध करो, याद करे और लिखिये।

BIOLOGY

Q1.A pea plant which is homozygous for inflated pods (I) with round seed (R) is crossed with an another pea plant which is homozygous for constricted pods (i) with wrinkled seed (r). Answer the questions that follow:

a. Give the phenotype and genotype of the F_1 generation offspring.
b. Give the possible combination of the gametes that can be obtained from F_1 hybrid.
c. Write the phenotypic ratio of the F_2 generation.
d. Name and explain the law deduced by Mendel on the basis of the above research.

Q2.A homozygous tall plant (T) bearing red coloured flower (R) is crossed with a homozygous dwarf plant (t) bearing white coloured flowers (r).

a. Give the genotype and phenotype of the plant of F_1 generation.
b. Mention the possible combinations of gametes that can be obtained from F_1hybrid plant.
c. Which type of pollination has occurred to produce F_1generation?
d. State the Mendel's Law of Independent Assortment.

e. What is the phenotypic ratio obtained in F_2 generation?

Q3. Complete the following table.

Sl No	Name of the Disease	**Causative agent**	**Symptoms**	Preventive measure
1	Common cold			
2	Dengue			
3	Chikungunya			
4	Typhoid			
5	Pneumonia			
6	Amoebiasis			
7	Malaria			
8	Filariasis			
9	Ascariasis			
10	Ringworm			
11	Diphtheria			
12	Plague			

Complete the given diagrams of spotting and taxonomy in practical files.

COMPUTER SCIENCE

1.Simplify using law of Boolean algebra. At each step state clearly the laws used for simplificati ons.

F = x.y + x.z + x.y.z

2.For the selection in national level racing competition the selection committee has decided to select

fewcandidates who satisfies at least**one**of the following conditions:

- The candidate is a female not below 18 years of age and has won prize at the state level.
- The candidate is a male of 18 years or above and has won the prize at the state level.
- The candidate is a male who is a member of racing organization and also National level player.
- The candidate is a female who has qualified in inter-school racing competition of a state.

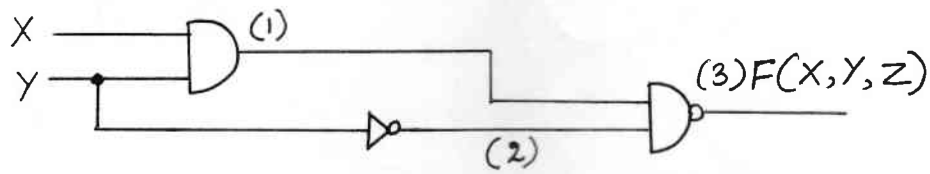
THE INPUTS ARE:

A - The candidate is a male (1 indicates yes and 0 indicates no)B - The candidate is 18 years and above (1 indicates yes and 0 indicates no)C - The candidate belongs to racing organization or/and National level player(1 indicates yes and 0 indicates no)D - The candidate is an inter-school state champion or state prize winner(1 indicates yes and 0 indicates no)

OUTPUT IS:

S : The candidate is selected [1 indicates she is selected and 0 indicates she is rejected](a) Draw the truth table for the inputs and outputs given above and write the**SOP** expr ession for S (A, B, C, D).

3.From the logic circuit diagram given below, name the outputs (1), (2) and (3). Finallyderive the Boolean expression and simplify it.Name and draw the logic gate.



4.Draw the truth table to prove the following proportional logic expression:
$A \Leftrightarrow B = (A \Leftrightarrow B) \wedge (B \Rightarrow A)$

5. State a difference between a Tautology and Contradiction.
6.Using truth table verify:
$(\sim p \Rightarrow q) \wedge p = (p \wedge \sim q) \vee (p \wedge q)$.

7.State the Commutative law and prove it with the help of a truth table.

8. Differentiate between Half Adder and Full Adder. Draw the logic circuit diagram for a Full Adder.

PHYSICS

Complete the four practicals for Class XII that you did in Class XI and make your new class XII practical file ready.

XII Chemistry

Solve the following:

1) Find the strength in g/litre of a soln of H_2SO_4, 12cc of which neutralises 15cc of N/10 NaOH soln.

2) What weight of $KMnO_4$ will be required to prepare 250 ml of its N/10 soln if eqv. wt. of $KMnO_4$ is 31.6.

3) 100 ml of 0.6 N $H_2C_2O_4$ & 300 ml 0.3 N HCl were mixed together. What will be the normality of resulting soln.

4) A bottle of commercial sulphuric acid (density 1.787 g/ml) is labelled as 86% by weight. Find its molarity. What volume of the acid has to be used to make 1 litre of 0.2 M H_2SO_4?

5) A metal weighing 0.43g was dissolved in 50ml N H_2SO_4. The unreacted H_2SO_4 reqd. 14.2 ml of N NaOH for neutralisation. Find out the equivalent weight of the metal.

6) Write the IUPAC names of the following compounds.

(i) $(CH_3)_2CHCH(Cl)CH_3$

(ii) $CH_3CH=C(Cl)CH_2CH(CH_3)_2$.

(iii) p-Cl $C_6H_4CH_2CH(CH_3)_2$.

(iv) m-Cl $CH_2C_6H_4CH_2C(CH_3)_3$.

v) $o-Br-C_6H_4\,CH(CH_3)_2\,CH_2CH_3$.

vi) $CHF_2\,CBrClF$.

vii) $ClCH_2C \equiv C\,CH_2Br$

viii) $(CCl_3)_3\,CCl$

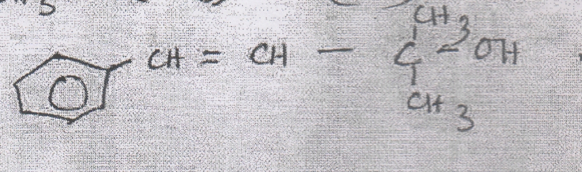
ix) $CH_3\,C(p-Cl\,C_6H_4)_2\,CH(Br)_3$.

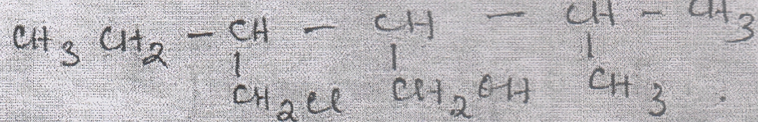
x) $(CH_3)_3\,C\,CH = C(Cl)\,C_6H_4\,I - p$.

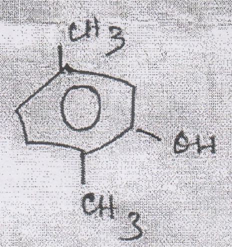
xi) $CH_3C(Cl)\,C_2H_5\,CH_2CH_3$

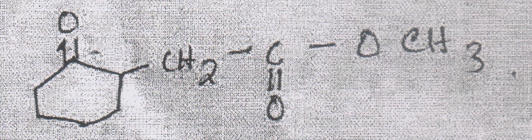
xii) $CH_3C(C_2H_5)_2\,CH_2Br$.

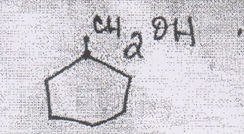
xiii) $CH_3\,CH(CH_3)\,CH(Br)\,CH_3$

xiv) 

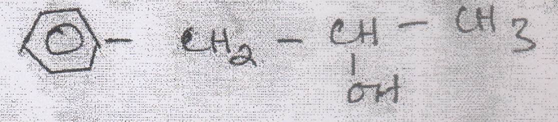
(xv) 

xvi) 

(xvii) 

(xviii) 

(xix) $CH_3CH_2\,O\,CH_2CH_2CH_3$

(xx) 

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XII ASSIGNMENT MATHEMATICS

MATRICES

A matrix can be written in compact form as $A=[a_{ij}]_{m\times n}$, when $1\leq i\leq m$; $1\leq j\leq n$, $i,j\in N$.
m= number of rows and n= number of coloumn.
No of elements m×n. a_{ij}represent an element in i-th row and j-thcoloumn.

Some Definition:

(i) Diagonal Matrix: A square matrix $A= [a_{ij}]_{m\times n}$is called diagonal matrix if all non-diagonal elements are zero.

i.e. $a_{ij}= 0$ for $i\neq j$. like $\begin{bmatrix}1 & 0 & 0\\0 & 5 & 0\\0 & 0 & -2\end{bmatrix}$

(ii) Scelar Matrix: A square matrix $A = [a_{ij}]_{m\times n}$ is called scelar matrix if all the non-diagonal elements are zero and the diagonal elements are equal.

$a_{ij} = o$ if $i\neq j$,

$= k$ if $i=j$, where k is constant

(iii) Identity/ Unit Matrix: A square matrix $A = [a_{ij}]_{m\times n}$ is called identity matrix if

$a_{ij}= 0$ if $i\neq j$

$= 1$ if $i=j$

(iv) Transpose of a Matrix:To obtain the transpose of a square matrix , rows are changed into coloumns and coloumns are changed into rows.

let$A=[a_{ij}]_{m\times n}$, then $A^T = [a_{ij}]_{n\times m}$ where A^T denotes the transpose of A.
We can take Transpose of rectangular matrix also.

Properties of Transpose of Matrices

(i) $(A^T)^T=A$
(ii) $(A+B)^T= A^T+B^T$
(iii) $(A-B)^T= A^T-B^T$
(iv) $(AB)^T=B^TA^T$
(v) $(KA)^T= K.A^T$

Symmetric Matrix : A square matrix is said to be Symmetric matrix if $A^T=A$.
Skew-Symmetric Matrix: A square matrix is said to be Skew-Symmetric Matrix if $A^T= -A$.
A SQUARE MATRIX CAN BE EXPRESSED AS SUM OF A SYMMETRIC AND SKEW-SYMMETRIC MATRIX.

Determinant

Determinant of a square matrix of order 1
$A=[a_{11}]$. $|A|= a_{11}$wgere |A| denote the determinant value of corresponding square matrix A.

Determinant of a square matrix of order 2

$A = \begin{bmatrix}a_{11} & a_{12}\\a_{21} & a_{22}\end{bmatrix}$ $|A|= a_{11}.a_{22} - a_{21}.a_{12}$

Determination of a square matrix of order of order3

$A = \begin{bmatrix}a_{11} & a_{12} & a_{13}\\a_{21} & a_{22} & a_{23}\\a_{31} & a_{32} & a_{33}\end{bmatrix}$ $|A| = a_{11}(a_{22}.a_{33} - a_{23}.a_{32}) - a_{12}(a_{21}.a_{33} - a_{23}.a_{31})+ a_{13}(a_{21}.a_{32} - a_{22}.a_{31})$.

(i) For any square matrix A of order n, $|KA| = K^n|A|$, where K is scelar
(ii) For any square matrix of order n, $|A^T|=|A|$.
(iii) For any two matrices A and B of same order $|AB| = |A|.|B|$.

Singular and Non-Singular Matrix

A square matrix A is Singular if $|A| = 0$

A square matrix A is non-singular if $|A| \neq 0$.

Adjoint : Let $A = [a_{ij}]$ be a square matrix of order n , then we define adjoint of A as $adjA = [A_{ij}]^T$, where A_{ij} denotes the cofactor of a_{ij} in A.

Let $A = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix}$ then $adjA = \begin{bmatrix} A_{11} & A_{12} & A_{13} \\ A_{21} & A_{22} & A_{23} \\ A_{31} & A_{32} & A_{33} \end{bmatrix}$

Some Important results on adjoint:

(i) $A(adjA) = (adjA)A = |A|.I_n$

(ii) $|adjA| = |A|^{n-1}$

(iii) $|A(adjA)| = |A|^n$

(iv) $adj(A^T) = (adjA)^T$

(v) $adj(AB) = (adjA)(adjB)$

Solve the following sums:

1. Construct a 2*2 matrix whose elements a_{ij} are given by
$a_{ij} = \begin{cases} \frac{|-3i+j|}{2} \\ (i+j) \end{cases}$
2. Find values of a,b,c,d from one following equation
$\begin{bmatrix} 2a+b & a-2b \\ 5c-d & 4c+3d \end{bmatrix} = \begin{bmatrix} 4 & -3 \\ 11 & 24 \end{bmatrix}$
3. If X and Y are 2*2 matrix , then solve for X and Y
$2X+3Y = \begin{bmatrix} 2 & 3 \\ 4 & 0 \end{bmatrix}$, $3X+2Y = \begin{bmatrix} -2 & 2 \\ 1 & -5 \end{bmatrix}$.
4. If $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$, show that $A^2 - 3I = 2A$.
5. If $(A-2I)(A-3I) = 0$, where $A = \begin{bmatrix} 4 & 2 \\ -1 & x \end{bmatrix}$, and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, find the value of x.
6. If $A = \begin{bmatrix} 3 & 1 \\ 7 & 5 \end{bmatrix}$, find the value of x and y such that $A^2 + xI_2 = yA$.
7. If $[x \quad -5 \quad -1] \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix} \begin{bmatrix} x \\ 4 \\ 1 \end{bmatrix} = 0$, find x.
8. If $M(\Theta) = \begin{bmatrix} \cos\Theta & \sin\Theta \\ -\sin\Theta & \cos\Theta \end{bmatrix}$, then show that $M(x).M(y) = M(x+y)$.
9. If $A = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$, prove that $A^3 - 6A^2 + 7A + 2I = 0$.
10. For, $A = \begin{bmatrix} 1 \\ -4 \\ 3 \end{bmatrix}$ and $B = [-1 \quad 2 \quad 1]$, verify $(AB)^T = B^T.A^T$.
11. Express matrix $A = \begin{bmatrix} 3 & 5 \\ 7 & 9 \end{bmatrix}$, as sum of symmetric and skew symmetric matrix.
12. If A and B are symmetric matrix , then prove that
    (i) AB – BA is skew symmetric matrix.
    (ii) AB + BA is symmetric matrix.
13. If A is a square matrix such that $A^TA = I$, find value of $|A|$.
14. If A is a square of order 3 with $|A| = 4$, find value of $|-2A|$.

15. If A = $\begin{bmatrix} 5 & a \\ b & 0 \end{bmatrix}$ and A is symmetric matrix, show that a = b.

16. If the matrix A = $\begin{bmatrix} 6 & x & 2 \\ 2 & -1 & 2 \\ -10 & 5 & 2 \end{bmatrix}$ is singular matrix , find value of x.

17. If A = $\begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}$, find x such that $A^2 = xA - 2I$. Hence find A^{-1}.

18. If A is a square matrix of order 3×3 and |A| = 5 find |adjA|.

19. If A is a skew symmetric matrix of order 3 find the value of |A|.

20. Find the adjA = $\begin{bmatrix} -1 & -2 & -2 \\ 2 & 1 & -2 \\ 2 & -2 & 1 \end{bmatrix}$ and hence verify A(adjA) =$|A|I_3$.

21. If A = $\begin{bmatrix} cosx & sinx \\ -sinx & cosx \end{bmatrix}$and A(adjA) = K$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, find the value of K.

22. If for any 2×2 square matrix A , A(adjA)= $\begin{bmatrix} 8 & 0 \\ 0 & 8 \end{bmatrix}$, find the value of |A|.

23. There are two values of 'a' which any determinant $\begin{vmatrix} 1 & -2 & 5 \\ 2 & a & -1 \\ 0 & 4 & 2a \end{vmatrix} = 86$. Find the sum of these two values of 'a'.

Invertible Matrix and Inverse of a Matrix

Let A be a square matrix of order n. If there exists a square matrix B of same order n such that $AB = BA = I_n$, then A is invertible matrix. The matrix B is called inverse mtrix of A and is denoted by A^{-1}.

Few important results :

(i) $(AB)^{-1} = B^{-1}A^{-1}$

(ii) $(A^T)^{-1} = (A^{-1})^T$

(iii) $(A^{-1})^{-1} = A$

(iv) $A^{-1}A = AA^{-1} = I$

(v) $(KA)^{-1} = \frac{1}{K}(A^{-1})$

(vi) $A^{-1} = \frac{1}{|A|}(adjA)$

(vii) $|A^{-1}| = \frac{1}{|A|}$

Sums based on Inverse :

1. Solve the matrix equation $\begin{bmatrix} 5 & 4 \\ 1 & 1 \end{bmatrix}A = \begin{bmatrix} 1 & -2 \\ 1 & 3 \end{bmatrix}$
   (i) by using concept inverse (ii) without using concept of inverse
2. Find the inverse of matrix = $\begin{bmatrix} 1 & 0 & 2 \\ -2 & 1 & 0 \\ 0 & -1 & 2 \end{bmatrix}$
3. If the matrix A = $\begin{bmatrix} 2 & 3 \\ 5 & -2 \end{bmatrix}$, show that $A^{-1} = \frac{1}{19}A$.
4. For what value of x the matrix = $\begin{bmatrix} 5-x & x+1 \\ 2 & 4 \end{bmatrix}$ is singular.
5. For what value(s) of K the matrix $\begin{bmatrix} 4 & k \\ 2 & 1 \end{bmatrix}$ has no inverse.
6. If A = $\begin{bmatrix} 1 & 2 \\ 4 & 2 \end{bmatrix}$, then find the value of K if |2A| = K|A|.
7. If A is a square matrix of order 3 and |A| = 7, write the value of |adjA|.
8. If A= $\begin{bmatrix} 2 & 3 \\ 1 & -4 \end{bmatrix}$ and B= $\begin{bmatrix} 1 & -2 \\ -1 & 3 \end{bmatrix}$, then find $(AB)^{-1}$.
9. Find the inverse of matrix A = $\begin{bmatrix} 3 & -1 & 1 \\ -15 & 6 & -5 \\ 5 & -2 & 2 \end{bmatrix}$ and hence show that $A^{-1}A = I$.