

CHAPTER 3 & 4

MATRICES AND DETERMINANTS

VERY SHORT ANSWER TYPE QUESTIONS (1 Mark)

1. If $\begin{bmatrix} x+3 & 4 \\ y-4 & x+y \end{bmatrix} = \begin{bmatrix} 5 & 4 \\ 3 & 9 \end{bmatrix}$, find x and y .
2. If $A = \begin{bmatrix} i & 0 \\ 0 & -i \end{bmatrix}$ and $B = \begin{bmatrix} 0 & i \\ i & 0 \end{bmatrix}$, find AB .
3. Find the value of $a_{23} + a_{32}$ in the matrix $A = [a_{ij}]_{3 \times 3}$
where $a_{ij} = \begin{cases} |2i - j| & \text{if } i > j \\ -i + 2j + 3 & \text{if } i \leq j \end{cases}$.
4. If B be a 4×5 type matrix, then what is the number of elements in the third column.
5. If $A = \begin{bmatrix} 5 & 2 \\ 0 & 9 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 6 \\ 0 & -1 \end{bmatrix}$ find $3A - 2B$.
6. If $A = \begin{bmatrix} 2 & -3 \\ -7 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 2 & -6 \end{bmatrix}$ find $(A+B)'$.
7. If $A = [1 \ 0 \ 4]$ and $B = \begin{bmatrix} 2 \\ 5 \\ 6 \end{bmatrix}$ find AB .
8. If $A = \begin{bmatrix} 4 & x+2 \\ 2x-3 & x+1 \end{bmatrix}$ is symmetric matrix, then find x .
9. For what value of x the matrix $\begin{bmatrix} 0 & 2 & -3 \\ -2 & 0 & -4 \\ 3 & 4 & x+5 \end{bmatrix}$ is skew symmetric matrix.
10. If $A = \begin{bmatrix} 2 & 3 \\ 1 & 0 \end{bmatrix} = P + Q$ where P is symmetric and Q is skew-symmetric matrix, then find the matrix Q .

11. Find the value of $\begin{vmatrix} a + ib & c + id \\ -c + id & a - ib \end{vmatrix}$
12. If $\begin{vmatrix} 2x + 5 & 3 \\ 5x + 2 & 9 \end{vmatrix} = 0$, find x .
13. For what value of k , the matrix $\begin{bmatrix} k & 2 \\ 3 & 4 \end{bmatrix}$ has no inverse.
14. If $A = \begin{bmatrix} \sin 30^\circ & \cos 30^\circ \\ -\sin 60^\circ & \cos 60^\circ \end{bmatrix}$, what is $|A|$.
15. Find the cofactor of a_{12} in $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$.
16. Find the minor of a_{23} in $\begin{vmatrix} 1 & 3 & -2 \\ 4 & -5 & 6 \\ 3 & 5 & 2 \end{vmatrix}$.
17. Find the value of P , such that the matrix $\begin{bmatrix} -1 & 2 \\ 4 & P \end{bmatrix}$ is singular.
18. Find the value of x such that the points $(0, 2)$, $(1, x)$ and $(3, 1)$ are collinear.
19. Area of a triangle with vertices $(k, 0)$, $(1, 1)$ and $(0, 3)$ is 5 unit. Find the value (s) of k .
20. If A is a square matrix of order 3 and $|A| = -2$, find the value of $|-3A|$.
21. If $A = 2B$ where A and B are square matrices of order 3×3 and $|B| = 5$, what is $|A|$?
22. What is the number of all possible matrices of order 2×3 with each entry 0, 1 or 2.
23. Find the area of the triangle with vertices $(0, 0)$, $(6, 0)$ and $(4, 3)$.
24. If $\begin{vmatrix} 2x & 4 \\ -1 & x \end{vmatrix} = \begin{vmatrix} 6 & -3 \\ 2 & 1 \end{vmatrix}$, find x .

25. If $A = \begin{bmatrix} x+y & y+z & z+x \\ z & x & y \\ 1 & 1 & 1 \end{bmatrix}$, write the value of $\det A$.
26. If $A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$ such that $|A| = -15$, find $a_{11} C_{21} + a_{12} C_{22}$ where C_{ij} is cofactors of a_{ij} in $A = [a_{ij}]$.
27. If A is a non-singular matrix of order 3 and $|A| = -3$ find $|\text{adj } A|$.
28. If $A = \begin{bmatrix} 5 & -3 \\ 6 & 8 \end{bmatrix}$ find $(\text{adj } A)$
29. Given a square matrix A of order 3×3 such that $|A| = 12$ find the value of $|A \text{ adj } A|$.
30. If A is a square matrix of order 3 such that $|\text{adj } A| = 8$ find $|A|$.
31. Let A be a non-singular square matrix of order 3×3 find $|\text{adj } A|$ if $|A| = 10$.
32. If $A = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}$ find $|(A^{-1})^{-1}|$.
33. If $A = \begin{bmatrix} -1 & 2 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 \\ -4 \\ 0 \end{bmatrix}$ find $|AB|$.

SHORT ANSWER TYPE QUESTIONS (4 MARKS)

34. Find x, y, z and w if $\begin{bmatrix} x-y & 2x+z \\ 2x-y & 3x+w \end{bmatrix} = \begin{bmatrix} -1 & 5 \\ 0 & 13 \end{bmatrix}$.
35. Construct a 3×3 matrix $A = [a_{ij}]$ whose elements are given by
- $$a_{ij} = \begin{cases} 1+i+j & \text{if } i \geq j \\ \frac{|i-2j|}{2} & \text{if } i < j \end{cases}$$

36. Find A and B if $2A + 3B = \begin{bmatrix} 1 & -2 & 3 \\ 2 & 0 & -1 \end{bmatrix}$ and $A - 2B = \begin{bmatrix} 3 & 0 & 1 \\ -1 & 6 & 2 \end{bmatrix}$.

37. If $A = \begin{bmatrix} -1 \\ 2 \\ 3 \end{bmatrix}$ and $B = \begin{bmatrix} -2 & -1 & -4 \end{bmatrix}$, verify that $(AB)' = B'A'$.

38. Express the matrix $\begin{bmatrix} 3 & 3 & -1 \\ -2 & -2 & 1 \\ -4 & -5 & 2 \end{bmatrix} = P + Q$ where P is a symmetric and Q is a skew-symmetric matrix.

39. If $A = \begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix}$, then prove that $A^n = \begin{bmatrix} \cos n\theta & \sin n\theta \\ -\sin n\theta & \cos n\theta \end{bmatrix}$ where n is a natural number.

40. Let $A = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 5 & 2 \\ 7 & 4 \end{bmatrix}$, $C = \begin{bmatrix} 2 & 5 \\ 3 & 8 \end{bmatrix}$, find a matrix D such that $CD - AB = O$.

41. Find the value of x such that $\begin{bmatrix} 1 & x & 1 \end{bmatrix} \begin{bmatrix} 1 & 3 & 2 \\ 2 & 5 & 1 \\ 15 & 3 & 2 \end{bmatrix} \begin{bmatrix} 1 \\ 2 \\ x \end{bmatrix} = 0$

42. Prove that the product of the matrices

$$\begin{bmatrix} \cos^2 \theta & \cos \theta \sin \theta \\ \cos \theta \sin \theta & \sin^2 \theta \end{bmatrix} \text{ and } \begin{bmatrix} \cos^2 \phi & \cos \phi \sin \phi \\ \cos \phi \sin \phi & \sin^2 \phi \end{bmatrix}$$

is the null matrix, when θ and ϕ differ by an odd multiple of $\frac{\pi}{2}$.

43. If $A = \begin{bmatrix} 5 & 3 \\ 12 & 7 \end{bmatrix}$ show that $A^2 - 12A - I = 0$. Hence find A^{-1} .

44. If $A = \begin{bmatrix} 2 & 3 \\ 4 & 7 \end{bmatrix}$ find $f(A)$ where $f(x) = x^2 - 5x - 2$.

45. If $A = \begin{bmatrix} 4 & 3 \\ 2 & 5 \end{bmatrix}$, find x and y such that $A^2 - xA + yI = 0$.

46. Find the matrix X so that $X \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} = \begin{bmatrix} -7 & -8 & -9 \\ 2 & 4 & 6 \end{bmatrix}$.

47. If $A = \begin{bmatrix} 2 & 3 \\ 1 & -4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -2 \\ -1 & 3 \end{bmatrix}$ then show that $(AB)^{-1} = B^{-1}A^{-1}$.

48. Test the consistency of the following system of equations by matrix method :

$$3x - y = 5; 6x - 2y = 3$$

49. Using elementary row transformations, find the inverse of the matrix

$$A = \begin{bmatrix} 6 & -3 \\ -2 & 1 \end{bmatrix}, \text{ if possible.}$$

50. By using elementary column transformation, find the inverse of $A = \begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$.

51. If $A = \begin{bmatrix} \cos \alpha & -\sin \alpha \\ \sin \alpha & \cos \alpha \end{bmatrix}$ and $A + A' = I$, then find the general value of α .

Using properties of determinants, prove the following : Q 52 to Q 59.

52.
$$\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix} = (a+b+c)^3$$

53.
$$\begin{vmatrix} x+2 & x+3 & x+2a \\ x+3 & x+4 & x+2b \\ x+4 & x+5 & x+2c \end{vmatrix} = 0 \text{ if } a, b, c \text{ are in A.P.}$$

54.
$$\begin{vmatrix} \sin \alpha & \cos \alpha & \sin(\alpha + \delta) \\ \sin \beta & \cos \beta & \sin(\beta + \delta) \\ \sin \gamma & \cos \gamma & \sin(\gamma + \delta) \end{vmatrix} = 0$$

$$55. \begin{vmatrix} b^2 + c^2 & a^2 & a^2 \\ b^2 & c^2 + a^2 & b^2 \\ c^2 & c^2 & a^2 + b^2 \end{vmatrix} = 4a^2b^2c^2.$$

$$56. \begin{vmatrix} b+c & c+a & a+b \\ q+r & r+p & p+q \\ y+z & z+x & x+y \end{vmatrix} = 2 \begin{vmatrix} a & b & c \\ p & q & r \\ x & y & z \end{vmatrix}.$$

$$57. \begin{vmatrix} a^2 & bc & ac + c^2 \\ a^2 + ab & b^2 & ac \\ ab & b^2 + bc & c^2 \end{vmatrix} = 4a^2b^2c^2.$$

$$58. \begin{vmatrix} x+a & b & c \\ a & x+b & c \\ a & b & x+c \end{vmatrix} = x^2(x+a+b+c).$$

59. Show that :

$$\begin{vmatrix} x & y & z \\ x^2 & y^2 & z^2 \\ yz & zx & xy \end{vmatrix} = (y-z)(z-x)(x-y)(yz+zx+xy).$$

60. (i) If the points (a, b) , (a', b') and $(a-a', b-b')$ are collinear. Show that $ab' = a'b$.

(ii) If $A = \begin{bmatrix} 2 & 5 \\ 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & -3 \\ 2 & 5 \end{bmatrix}$ verify that $|AB| = |A||B|$.

61. Given $A = \begin{bmatrix} 0 & -1 & 2 \\ 2 & -2 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 1 \\ 1 & 0 \\ 1 & 1 \end{bmatrix}$. Find the product AB and

also find $(AB)^{-1}$.

62. Solve the following equation for x .

$$\begin{vmatrix} a+x & a-x & a-x \\ a-x & a+x & a-x \\ a-x & a-x & a+x \end{vmatrix} = 0.$$

63. If $A = \begin{bmatrix} 0 & -\tan \frac{\alpha}{2} \\ \tan \frac{\alpha}{2} & 0 \end{bmatrix}$ and I is the identity matrix of order 2, show that,

$$I + A = (I - A) \begin{bmatrix} \cos \alpha & -\sin \alpha \\ \sin \alpha & \cos \alpha \end{bmatrix}$$

64. Use matrix method to solve the following system of equations : $5x - 7y = 2$, $7x - 5y = 3$.

LONG ANSWER TYPE QUESTIONS (6 MARKS)

65. Obtain the inverse of the following matrix using elementary row operations

$$A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}.$$

66. Use product $\begin{bmatrix} 1 & -1 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix} \begin{bmatrix} -2 & 0 & 1 \\ 9 & 2 & -3 \\ 6 & 1 & -2 \end{bmatrix}$ to solve the system of equations

$$x - y + 2z = 1, 2y - 3z = 1, 3x - 2y + 4z = 2.$$

67. Solve the following system of equations by matrix method, where $x \neq 0$, $y \neq 0$, $z \neq 0$

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

68. Find A^{-1} , where $A = \begin{bmatrix} 1 & 2 & -3 \\ 2 & 3 & 2 \\ 3 & -3 & -4 \end{bmatrix}$, hence solve the system of linear equations :

$$x + 2y - 3z = -4$$

$$2x + 3y + 2z = 2$$

$$3x - 3y - 4z = 11$$

69. The sum of three numbers is 2. If we subtract the second number from twice the first number, we get 3. By adding double the second number and the third number we get 0. Represent it algebraically and find the numbers using matrix method.
70. Compute the inverse of the matrix.

$$A = \begin{bmatrix} 3 & -1 & 1 \\ -15 & 6 & -5 \\ 5 & -2 & 5 \end{bmatrix} \text{ and verify that } A^{-1} A = I_3.$$

71. If the matrix $A = \begin{bmatrix} 1 & 1 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix}$ and $B^{-1} = \begin{bmatrix} 1 & 2 & 0 \\ 0 & 3 & -1 \\ 1 & 0 & 2 \end{bmatrix}$, then compute $(AB)^{-1}$.

72. Using matrix method, solve the following system of linear equations :

$$2x - y = 4, 2y + z = 5, z + 2x = 7.$$

73. Find A^{-1} if $A = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$. Also show that $A^{-1} = \frac{A^2 - 3I}{2}$.

74. Find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$ by using elementary column transformations.

75. Let $A = \begin{bmatrix} 2 & 3 \\ -1 & 2 \end{bmatrix}$ and $f(x) = x^2 - 4x + 7$. Show that $f(A) = 0$. Use this result to find A^5 .

76. If $A = \begin{bmatrix} \cos \alpha & -\sin \alpha & 0 \\ \sin \alpha & \cos \alpha & 0 \\ 0 & 0 & 1 \end{bmatrix}$, verify that $A \cdot (\text{adj } A) = (\text{adj } A) \cdot A = |A| I_3$.

77. For the matrix $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$, verify that $A^3 - 6A^2 + 9A - 4I = 0$, hence find A^{-1} .

78. Find the matrix X for which

$$\begin{bmatrix} 3 & 2 \\ 7 & 5 \end{bmatrix} \cdot X \cdot \begin{bmatrix} -1 & 1 \\ -2 & 1 \end{bmatrix} = \begin{bmatrix} 2 & -1 \\ 0 & 4 \end{bmatrix}$$

79. By using properties of determinants prove the following :

$$\begin{vmatrix} 1+a^2-b^2 & 2ab & -2b \\ 2ab & 1-a^2+b^2 & 2a \\ 2b & -2a & 1-a^2-b^2 \end{vmatrix} = (1+a^2+b^2)^3.$$

$$80. \begin{vmatrix} (y+z)^2 & xy & zx \\ xy & (x+z)^2 & yz \\ xz & yz & (x+y)^2 \end{vmatrix} = 2xyz(x+y+z)^3.$$

$$81. \begin{vmatrix} a & a+b & a+b+c \\ 2a & 3a+2b & 4a+3b+2c \\ 3a & 6a+3b & 10a+6b+3c \end{vmatrix} = a^3.$$

$$82. \text{ If } x, y, z \text{ are different and } \begin{vmatrix} x & x^2 & 1+x^3 \\ y & y^2 & 1+y^3 \\ z & z^2 & 1+z^3 \end{vmatrix} = 0. \text{ Show that } xyz = -1.$$

83. If x, y, z are the 10th, 13th and 15th terms of a G.P. find the value of

$$\Delta = \begin{vmatrix} \log x & 10 & 1 \\ \log y & 13 & 1 \\ \log z & 15 & 1 \end{vmatrix}.$$

84. Using the properties of determinants, show that :

$$\begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix} = abc \left(1 + \frac{1}{a} + \frac{1}{b} + \frac{1}{c} \right) = abc + bc + ca + ab$$

85. Using properties of determinants prove that

$$\begin{vmatrix} -bc & b^2 + bc & c^2 + bc \\ a^2 + ac & -ac & c^2 + ac \\ a^2 + ab & b^2 + ab & -ab \end{vmatrix} = (ab + bc + ca)^3$$

86. If $A = \begin{bmatrix} 3 & 2 & 1 \\ 4 & -1 & 2 \\ 7 & 3 & -3 \end{bmatrix}$, find A^{-1} and hence solve the system of equations

$$3x + 4y + 7z = 14, 2x - y + 3z = 4, x + 2y - 3z = 0.$$

ANSWERS

1. $x = 2, y = 7$

2. $\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$

3. 11.

4. 4

5. $\begin{bmatrix} 9 & -6 \\ 0 & 29 \end{bmatrix}$.

6. $\begin{bmatrix} 3 & -5 \\ -3 & -1 \end{bmatrix}$.

7. $AB = [26]$.

8. $x = 5$

9. $x = -5$

10. $\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$.

11. $a^2 + b^2 + c^2 + d^2$.

12. $x = -13$

13. $k = \frac{3}{2}$

14. $|A| = 1$.

15. 46

16. -4

$$17. \quad P = -8$$

$$18. \quad x = \frac{5}{3}.$$

$$19. \quad k = \frac{10}{3}.$$

$$20. \quad 54.$$

$$21. \quad 40.$$

$$22. \quad 729$$

$$23. \quad 9 \text{ sq. units}$$

$$24. \quad x = \pm 2$$

$$25. \quad 0$$

$$26. \quad 0$$

$$27. \quad 9$$

$$28. \quad \begin{bmatrix} 8 & 3 \\ -6 & 5 \end{bmatrix}.$$

$$29. \quad 1728$$

$$30. \quad |A| = 9$$

$$31. \quad 100$$

$$32. \quad 11$$

$$33. \quad |AB| = -11$$

$$34. \quad x = 1, y = 2, z = 3, w = 4$$

$$35. \quad \begin{bmatrix} 3 & 3/2 & 5/2 \\ 4 & 5 & 2 \\ 5 & 6 & 7 \end{bmatrix}.$$

$$36. \quad A = \begin{bmatrix} \frac{11}{7} & -\frac{9}{7} & \frac{9}{7} \\ \frac{1}{7} & \frac{18}{7} & \frac{4}{7} \\ \frac{1}{7} & \frac{18}{7} & \frac{4}{7} \end{bmatrix}, \quad B = \begin{bmatrix} -\frac{5}{7} & -\frac{2}{7} & \frac{1}{7} \\ \frac{4}{7} & -\frac{12}{7} & -\frac{5}{7} \\ \frac{4}{7} & -\frac{12}{7} & -\frac{5}{7} \end{bmatrix}$$

$$40. \quad D = \begin{bmatrix} -191 & -110 \\ 77 & 44 \end{bmatrix}.$$

$$41. \quad x = -2 \text{ or } -14$$

$$43. \quad A^{-1} = \begin{bmatrix} -7 & 3 \\ 12 & -5 \end{bmatrix}.$$

$$44. \quad f(A) = 0$$

$$45. \quad x = 9, y = 14$$

$$46. \quad x = \begin{bmatrix} 1 & -2 \\ 2 & 0 \end{bmatrix}.$$

48. Inconsistent

49. Inverse does not exist.

50. $A^{-1} = \begin{bmatrix} 2 & -1 \\ -5 & 3 \end{bmatrix}.$

51. $\alpha = 2n\pi \pm \frac{\pi}{3}, n \in \mathbb{Z}$

61. $AB = \begin{bmatrix} 1 & 2 \\ -2 & 2 \end{bmatrix}, (AB)^{-1} = \frac{1}{6} \begin{bmatrix} 2 & -2 \\ 2 & -1 \end{bmatrix}.$

62. $0, 3a$

64. $x = \frac{11}{24}, y = \frac{1}{24}.$

65. $A^{-1} = \begin{bmatrix} \frac{1}{2} & -\frac{1}{2} & \frac{1}{2} \\ -4 & 3 & -1 \\ \frac{5}{2} & -\frac{3}{2} & \frac{1}{2} \end{bmatrix}.$

66. $x = 0, y = 5, z = 3$

67. $x = \frac{1}{2}, y = \frac{1}{3}, z = \frac{1}{5}$

68. $A^{-1} = -\frac{1}{67} \begin{bmatrix} -6 & 17 & 13 \\ 14 & 5 & -8 \\ -15 & 9 & -1 \end{bmatrix}$

69. $x = 1, y = -2, z = 2$

70. $A^{-1} = \begin{bmatrix} 2 & 0 & -1 \\ 5 & 1 & 0 \\ 0 & 1 & 3 \end{bmatrix}$

71. $(AB)^{-1} = \frac{1}{19} \begin{bmatrix} 16 & 12 & 1 \\ 21 & 11 & -7 \\ 10 & -2 & 3 \end{bmatrix}.$

72. $x = 3, y = 2, z = 1.$

73. $A^{-1} = \frac{1}{2} \begin{bmatrix} -1 & 1 & 1 \\ 1 & -1 & 1 \\ 1 & 1 & -1 \end{bmatrix}.$

74. $A^{-1} = \begin{bmatrix} 3 & 2 & 6 \\ 1 & 1 & 2 \\ 2 & 2 & 5 \end{bmatrix}$

$$75. \quad A^5 = \begin{bmatrix} -118 & -93 \\ 31 & -118 \end{bmatrix}.$$

$$77. \quad A^{-1} = \frac{1}{4} \begin{bmatrix} 3 & 1 & -1 \\ 1 & 3 & 1 \\ -1 & 1 & 3 \end{bmatrix}.$$

$$78. \quad X = \begin{bmatrix} -16 & 3 \\ 24 & -5 \end{bmatrix}.$$

$$83. \quad 0$$

$$86. \quad x = 1, y = 1, z = 1.$$

CLASS- XII
SUBJECT- ENGLISH
HOLIDAYS HOME WORK

ENGLISH

11. Read newspaper daily and cut samples of the following & paste them in the fair notebook of English

underlining it with the holidays homework a) 3 reports

b) 3 articles

c) 3 posters

2. Write a letter to the editor of a national daily highlighting the neglect of our national monuments and how these are being damaged in the present day world.

3. Write an article on the topic 'how Google controls the life of an average person' (150-200 words)

4. Learn and revise all the syllabus of periodic test -1

5. Suggested topics for project

1. Investigation on the result of students' reading habits on their academic performance in external examinations. (CBSE)

2. Linguistic Chauvinism in India

3. War and its ramifications

4. Gandhism: Obsolete or Relevant

5. Life on children in slum area

6. Child labour in my city

Any other topic with teacher's discussion.

THE PROJECT – PORTFOLIO MUST INCLUDE THE FOLLOWING:

I. Cover Page – Title of Project

II. School details & detail of students

III. Statement of Purpose / objectives / goals.

IV. Acknowledgement

V. Certificate of completion under the guidance of the teacher.

VI. Action Plan for the Project

VII. Questionnaires for interview

VIII. A 'Report' on the Topic opted for.

IX. List of resources / bibliography

2. **INCLUSIONS:** Photographs that capture the positive learning experience of the student

HISTORY

1. Collect five different kinds of currency notes and coins in circulation today. Describe what you see in front and back. Prepare a report on common features as well as the differences in terms of pictures, script, size, language, signature or any other element that you find significant.

2. Prepare the history project as per the topic/ instructions given in class. Students should prepare the project under the following headings

*Cover page *project synopsis

* index *acknowledgement

*data/map work *explanation and interpretation *bibliography*

3. Learn all the ans. Of attached assignments of Ch.1&2. & Find the mcq of Ch.1&2

Group 1 Roll no.1 to 7 Ch.1

Group 2 Roll no.8 to 14 Ch.2

(10 mcq each stu.)

Assignment -1

Ch- 1 history

- Que 1 Write the most unique features of the Harappan civilisation ?
- Que 2 One of the most distinctive features of Harappan cities was the carefully planned drainage system "justify the statement ?
- Que 3 Describe the bases on which archeologist identify a centre of craft production in the Harappan civilisation ?
- Que 4 "The burials in the Harappan sites revealed the economic and social difference among the people living within a particular culture" Justify the statement ?
- Que 5 What evidence has been put forward to explain the collapse of Harappan civilization?
- Que 6 "Different methods of irrigation were developed for agriculture in the Harappan sites" justify the statement?
- Que 7 Explain techniques of craft production special in Bead making at the Harappan sites of Lothal and Chanhu Daro ?
- Que 8 Write the main features of a great bath?
- Que 9 Prove with the help of example that the Harappan has established their contacts with West Asia for exchange of artifacts?
- Que 10 Explain Harappan script is considered as an Enigmatic script ?
- Que 11 "There are indications of complex decisions being taken and implemented in Harappan society" justify the statement?
- Que 12 How archaeologists have used evidence from material remains to piece together parts of fascinating history?
- Que 13 John Marshall's stint as director general of ASI marked a major change in Indian archaeology?
- Que 14 "Over the decades new issues have assumed importance in Harappan" explain ?
- Que 15 Early archaeologists thought that certain objects which seemed unusual or unfamiliar may have had a religious significance" justify the statement ?
- Que 16 Many reconstruction of Harappan religion are made on assumption of archaeological interpretation?
- Que 17 Describe the main features of residential buildings of Mohenjo-daro?
- Que 18 Examine the problem faced by archaeologists in the interpretation of religious practices of Harappa ?
- Que 19 Describe the different arguments given by archaeologists over the central authority of Harappa ?
- Que 20 Mention the two changes that were observed after 1900 BCE in Harappan civilization what could have brought these changes?

Assignment---2

Ch.2 History

- Q.1- The mid- first century millennium is often regarded as a major turning point in world history . Justify?
- Q.2- Who was James Prinsep? Write the main features of its inscriptions
- Q.3- The sixteenth century BCE often regarded as a major turning point in early Indian history?
- Q.4- State the main features of Mahajanpadas.
- Q.5- How did Magadha become the powerful Mahajanpadas ?
- Q.6- Describe the variety of sources to reconstruct the history of Mauryan empire.
- Q.7- Describe main features of administration

POL SCIENCE

Prepare the project file on any topic of both books with the following guidelines.

1. The total length of the project report should not be more than 15-20 pages.
Written pages of A4 sizesheet.
2. The project report should be hand written and credit will be awarded to original drawings, illustrations, and creative use of eco-friendly material.
3. It should be well searched based on facts and figures , newspaper clippings and pictures.
4. The project report should be presented in a neatly bound simple folder.
5. The project report should be developed and presented in this order:(other than 15pages)
 - a. Cover page showing title, student information, school and year.
 - b. List of contents with page no.
 - c. Certificate page
 - d. Acknowledgements(Acknowledging the institution, offices and libraries visited and persons who have helped)
 - e. Chapters with relevant headings
 - f. Summary and conclusions based on findings
 - g. Bibliography: should have the title, author, publisher, and if a website used then the name of the website with link
 - h. After bibliography put the page of project evaluation report where the examiner can give marks, sign with date likewise:
 - (i) Name of External Examiner _____ Sign _____ Date _____
 - (ii) Name of the Internal Examiner _____ Sign _____ Date _____

TOPICS FOR MODEL

(MAKE ANY ONE MODEL)

- A. Timeline of European integration.
- B. Berlin wall
- C. Parliament house
- D. Sardar Vallabh Bhai Patel
- E. Flags of South East Asia with currencies

NOTE: Do these assignments in a separate register. Answers you will get from study material.

CHAPTER:2 THE END OF BIPOLARITY

Q1. What was Soviet Union?

Q2. Who was Gorbachev? What were the three factors that forced him to initiate reforms in the USSR?

Q3. What were the causes for Soviet Union disintegration? Q4. Write the causes,

consequences and end of Gulf War? Q5. What was 9/11

and Operation Enduring Freedom?

Q6. Write the Brezhnev Doctrine (1968)?

Q7. What was Arab Spring?

Q8. Was Arab Spring a success or failure?

Q9. Mark the following places on political map of world and answer the following questions :

(I) Name the three Baltic republics that became UN members in September 1991 and locate them marking 1,2,3.

(II) Which republics are oil and gas produce?

CHAPTER:4 ALTERNATIVE CENTERS OF POWER

Q1. What makes Japan a new or alternative center of

power? Q2. Write about membership and flag of

European Union.

Q3. Explain the membership, flag and establishment of ASEAN.

Q4. Write the objectives of ASEAN. What are the components of ASEAN Vision

2020? Q5. What do you mean by SAARC? Write its importance.

Q6. Write 3 principles and 3 objectives of SAARC.

Q7. Write the establishment and membership of

BRICS. Q8. Write the objectives of BRICS.

I.P

1. Revise Series and DataFrame practical questions.

2. Assignment:

1. Fill in the blanks :

```
# Series Creation from List with custom indexing
import pandas as pd
l1=[11,12,13,14]
series1=pd.Series(l1, _____=["1st","2nd","3rd","4th"])
print(series1)
```

- a. row
- b. index
- c. row_index
- d. Any above option

2. While trying to create series from dictionary, keys of dictionary become index.

- a. True
- b. False
- c. Depends on Python Version

d. Depends on Machine Configuration

3. Predict data elements of series1 :

```
# Series Creation from Scalar Value with custom indexing
import pandas as pd
series1=pd.Series(5,index=["A","B","C","D"])
print(series1)
```

- a. 5,1,1,1
- b. 5,0,0,0
- c. 5,1,5,1
- d. 5,5,5,5

4. Which index, data elements will be printed by below code as output :

```
# Selection
import pandas as pd
l1=[11,12,13,14]
s1=pd.Series(l1)
print(s1.loc[2:])
```

- a. Data : 12,13,14 along with series-index 1,2,3
- b. Data : 13,14 along with series-index 'C','D'
- c. Data : 13,14 along with series-index 2,3
- d. Data : 12,13,14 along with series-index 'B','C','D'

```
s1=pd.Series(l1, index=['I', 'II', 'III', 'IV'])
print(s1._____['II':])
```

are, identify which attribute can be used

II	12
III	13
IV	14

- a. loc
- b. iloc
- c. loc or iloc
- d. Neither loc nor loc

What will be the output of following code- import pandas as pd
s1=pd.Series([1, 2, 2, 7, 'Sachin', 77.5]) print(s1.head())

- a. Last data elements of series along with its indices i.e. -1.
- b. First data element of series along with its indices i.e. 0.
- c. Entire series
- d. First five data elements of series along with its indices i.e. 0,1,2,3,4 respectively

Series is 1-D labelled array having two parts i.e. Index, Data. We can create series from:

- a. Python Sequence , Dictionary
- b. All 4 (ie Python Sequence , Dictionary , Scalar value , Numpy Array)
- c. Scalar value , Numpy Array
- d. None of stated option.

```
import pandas as pd
l1=[11,12,13,14,15]
s1=pd.Series(l1, index=['a','b','c','d','e'])
```

Python command can be used

- a. s1.iloc[1:3] or s1.loc['b': 'd']

PHYSICAL EDUCATION

1. Revise Chapter-1,2 and 3 and complete your notebook.
2. Do the following Practical in Practical File :
 - SAI Khelo India Test for School Children.
 - Perform any two asanas used to cure Obesity, Asthma, Hypertension, Diabetes and Back pain (2 for each). Paste your pictures on LHS and briefly explain the procedure, benefits and contraindications for them.
3. Evaluate yourself for the following tests and do practice daily:
 - Sit and Reach Test
 - Sit-Ups Test
 - Push-Ups for boys
 - Modified push-ups for girls
 - 50 mts. standing start
 - Partial curl ups
 - 600m run/walk
4. Do **any one** of the following activity:
 - Prepare a model comparing the knockout and league fixture for 11 teams.
 - Prepare a chart/model on postural deformities- Kyphosis, Lordosis and Scoliosis.
 - Prepare a chart/model on postural deformities-Flat foot, Knock-knee and Bow Legs.
 - Prepare a project file on IPL Teams 2023.

