

SANT NIRANKARI PUBIC SCHOOL
NIRANKARI COLONY, DELHI
HOLIDAYS HOMEWORK XII (COMMERCE with MATHS 2018-19)

ENGLISH

WRITING SECTION

- Q.1. Lack of job opportunities in the rural areas is forcing people to migrate to cities. Every big city thus has a number of slums in it. Life in these slums is miserable. Write a letter to the editor of a national newspaper on how we can improve the living conditions in these slums. You are Karan/Karuna, M 114, Mall Road Delhi.
- Q.2. Draft an application with bio data in about 120-150 words for the post of the Librarian in Vision Senior Secondary School, Calicut. You are Radhika/Rajeev from 21 Cherry Road, Madurai.
- Q.3. You are Isha/Ishan, the secretary of the Students' Forum of Sahrudaya Vidyalaya, Indranagar. You have planned an excursion to Jog Falls during the summer vacation. Write a letter to The Manager, Cox & Kings, for offering you a tour package. Give all necessary details about your trip.
- Q.4. You are Suresh/Sarika Jain of H no 20 Jawahar Nagar, Delhi. Two months ago you bought a desert cooler from M/S Cool Home Coolers, Delhi. Now you discover that it is not working properly. Write a letter to the Customer Care Manager complaining about the malfunctioning of the unit and asking them to repair and if required to replace it against warranty.
- Q.5. In the year to come you are going to celebrate your 18th birthday. Write an article in 150-200 words on joys and responsibilities of being eighteen. You are Navtej/Navita.
- Q.6. 'The policy of reservation of seats for admission to the professional courses is good for the deprived sections of society.' Write a debate in 150-200 words either for or against the motion.
- Q.7. Write a speech in 150-200 words on the topic : 'Discipline Shapes The Future Of A Student'. It is to be delivered in the morning assembly. You are Karen/Kashib.
- Q.8. Your school is organizing a Public Awareness Exhibition. In connection with it, prepare a poster to bring home the importance of Conservation of Electricity.
- Q.9. On the occasion of World Book Day, the school has decided to organize a Book Fair, Vishakha/Vishal, the secretary of the Book Club, wants to call a meeting of the office bearers of the club to discuss the arrangements for the fair. Write a notice in not more than 50 words.
- Q.10. You are manager, Infocom Network, C-3 Main Shopping Centre, Vasant Vihar, New Delhi. Draft an advertisement offering office furniture for sale, giving all necessary details.
- Q.11. Your company has launched a new pen READALL which in addition to working as a pen, can read the text in various languages. Draft an attractive advertisement in about 50 words, announcing the launch of the new pen, giving all relevant details.

LITERATURE

- Q.12. Dr. Sadao was a patriotic Japanese as well as a dedicated surgeon. How could he honour both the values?
- Q.13. How did the misadventure in YMCA swimming pool affect Douglas? What efforts did he make to conquer his old terror?
- Q.14. Do you think Jack shared an affinity with Roger Skunk? Explain.
- Q.15. How does M. Hamel prove to be an ideal teacher?

MATHEMATICS

MATRICES

1. Let $A = \begin{bmatrix} 3 & 2 & 5 \\ 4 & 1 & 3 \\ 0 & 6 & 7 \end{bmatrix}$ then express A as a sum of two matrices such that one is Symmetric and the other are skew symmetric.
2. If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ verify that $A^2 - 4A - 5I = 0$.
3. Using elementary transformations find the inverse of the following matrix

$$\begin{bmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ -2 & -4 & -5 \end{bmatrix}$$

4. Using elementary transformations find the inverse of the following matrix

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

5. Using elementary transformations find the inverse of the following matrix

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

6. Using elementary transformations find the inverse of the following matrix

$$\begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$$

7. Express the following matrix as the sum of symmetric and skew symmetric matrix

And verify your result $\begin{bmatrix} 3 & -2 & -4 \\ 3 & -2 & -5 \\ -1 & 1 & 2 \end{bmatrix}$

8. For the following matrices A and B verify that $(AB)' = B'A'$

$$A = \begin{bmatrix} 1 \\ -4 \\ 3 \end{bmatrix}; B = \begin{bmatrix} -1 & 2 & 1 \end{bmatrix}$$

9. Using elementary transformations find the inverse of the following matrix

$$\begin{bmatrix} 6 & 5 \\ 5 & 4 \end{bmatrix}$$

10. Using elementary transformations find the inverse of the following matrix

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

DETERMINANT

Using properties of determinant prove the following:

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

2. Using properties of determinant prove the following:

$$\begin{vmatrix} 1 + a^2 & ab & ac \\ ab & 1 + b^2 & bc \\ ca & cb & 1 + c^2 \end{vmatrix} = 1 + a^2 + b^2 + c^2$$

3. Using properties of determinant show that:

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

4. Solve for x: $\begin{vmatrix} 3x - 8 & 3 & 3 \\ 3 & 3x - 8 & 3 \\ 3 & 3 & 3x - 8 \end{vmatrix} = 0.$

5. Using properties of determinant prove that:

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

6. Solve the system of equation by inverse matrix method:

$$2X - 3Y + 5Z = 11, 3X + 2Y - 4Z = -5, X + Y - 2Z = -3$$

7. Using properties of determinant(Q7 TO Q12) prove that:

$$\begin{vmatrix} 1 & 1 + p & 1 + p + q \\ 2 & 3 + 2p & 4 + 3p + 2q \\ 3 & 6 + 3p & 10 + 6p + 3q \end{vmatrix} = 1$$

8. $\begin{vmatrix} x+y & x & x \\ 5x+4y & 4x & 2x \\ 10x+8y & 8x & 3x \end{vmatrix} = x^3$
9. $\begin{vmatrix} 1 & x & x^2 \\ x^2 & 1 & x \\ x & x^2 & 1 \end{vmatrix} = (1-x^3)^2$
10. $\begin{vmatrix} a+bx & c+dx & p+qx \\ ax+b & cx+d & px+q \\ u & v & w \end{vmatrix} = (1-x^2) \begin{vmatrix} a & c & p \\ b & d & q \\ u & v & w \end{vmatrix}$
11. $\begin{vmatrix} (b+c)^2 & ab & ac \\ ab & (a+c)^2 & bc \\ ca & cb & (a+b)^2 \end{vmatrix} = 2ab(a+b+c)^3$
12. $\begin{vmatrix} x & x^2 & 1+px^3 \\ y & y^2 & 1+py^3 \\ z & z^2 & 1+pz^3 \end{vmatrix} = (1+pxyz)(x-y)(y-z)(z-x)$ where p is any scalar.

Continuity and Differentiability

- If $y = \tan^{-1} \left[\frac{\sqrt{1+x}-\sqrt{1-x}}{\sqrt{1+x}+\sqrt{1-x}} \right]$ find $\frac{dy}{dx}$.
- For what values of k the following function is continuous:

$$F(x) = \begin{cases} 2x+1, & x < 2 \\ k, & x = 2 \\ 3x-1, & x > 2 \end{cases}$$
- If $y = \tan^{-1} \left[\frac{\sqrt{1+\sin x} + \sqrt{1-\sin x}}{\sqrt{1+\sin x} - \sqrt{1-\sin x}} \right]$, find $\frac{dy}{dx}$.
- If $y = \sin^{-1} \left[\frac{5x+12\sqrt{1-x^2}}{13} \right]$ find $\frac{dy}{dx}$.
- If $x = a(\cos \theta + \log \tan \frac{\theta}{2})$ and $y = a \sin \theta$ find the value of $\frac{dy}{dx}$ at θ .
- Find the value of a, b, c if f(x) defined as following is continuous at $x = 0$

$$F(x) = \begin{cases} \frac{\sin(a+1)x + \sin x}{x}, & x < 0 \\ c, & x = 0 \\ \frac{\sqrt{x+bx^2} - \sqrt{x}}{bx^{3/2}}, & \text{if } x > 0 \end{cases}$$

INVERSE TRIGONOMETRIC FUNCTION

- Prove that: $\tan\left(\frac{\pi}{4} + \frac{1}{2} \cos^{-1} \frac{a}{b}\right) + \tan\left(\frac{\pi}{4} - \frac{1}{2} \cos^{-1} \frac{a}{b}\right) = \frac{2b}{a}$.
- Solve for x: $\tan^{-1}(x+1) + \tan^{-1}(x-1) = \tan^{-1} \frac{8}{31}$.
- Prove that $2 \tan^{-1} \frac{1}{5} + \tan^{-1} \frac{1}{8} = \tan^{-1} \frac{8}{31}$.
- Prove that $\sin^{-1} \frac{12}{13} + \cos^{-1} \frac{4}{5} + \tan^{-1} \frac{63}{16} = \pi$
- Prove that: $\tan^{-1} \frac{1}{3} + \tan^{-1} \frac{1}{5} + \tan^{-1} \frac{1}{7} + \tan^{-1} \frac{1}{8} = \frac{\pi}{4}$
- Solve for X: $\tan^{-1} 2x + \tan^{-1} 3x = \frac{\pi}{4}$
- Solve for X: $\tan^{-1} \frac{x-1}{x-2} + \tan^{-1} \frac{x+1}{x+2} = \frac{\pi}{4}$
- Prove that: $2 \tan^{-1} \frac{1}{2} + \tan^{-1} \frac{1}{7} = \tan^{-1} \frac{31}{17}$
- Prove that $\tan^{-1} \frac{1}{2} + \tan^{-1} \frac{1}{5} + \tan^{-1} \frac{1}{8} = \frac{\pi}{4}$

ACCOUNTANCY

- Q 1. Do the text book questions of chapters 7 and 8 in your homework register.
- Q 2. Prepare theory notes from chapters 7 and 8.

ECONOMICS

All the students enjoy your holidays and do the following:

- Read the newspaper or listen to the news everyday and update yourself with the current news related to Economics.
- Learn and practice the syllabus done till now.
- Practice numerical of numerical based chapters.
- Collect information regarding Project for board.

BUSINESS STUDIES

1. Students are supposed to make one project(**20 MARKS**) from the topics already given to them in the class .The topics are:

- 1) Project-2 Principles of management (page 505 of the text book)
- 2) Project -4 Marketing Management (page 507 of the text book) (products allocation already given to the students.)
- 3) Project -3-Stock exchange
- 4) Project -1- Elements of Business Environment

PRESENTATION AND SUBMISSION OF PROJECT REPORT should be as per the instructions given in the page 509 of the text book

PHYSICAL EDUCATION

Maintain Record File :-

- 1.) Any one game of your choice with labelled diagram of field. Along with rules, terminologies and skills required, with player's photograph in playing position.
- 2.) Same as above for an Athletic Event, a Jumping Event and a Throwing Event.
- 3.) Yoga Asanas (Any 10) with diagrams, benefits and rules.