DELHI PUBLIC SCHOOL GANDHINAGAR

HOLIDAY HOMEWORK

CLASS XII (COMMERCE)

ACADEMIC SESSION 2022-23

ENGLISH

1.Prepare a one minute speech on either of the topics
*Social media is a necessary evil.
*Paperbacks vs E-books
*Fear of Missing Out(FOMO): Is it real or not?
* My favourite fictional character
*Beauty lies in the eyes of the beholder
* Why humans should colonize Mars?
*The best lesson I have learned
*Animal testing should be banned

2. Prepare a draft for the essay in Annual Project.
The topic of the essay should be inspired by any of the following:-

1. A Book -- a book review to be written in complete detail about the author, writing style, critical analysis, etc.
2. Inspiration from an interview/ newspaper/ article/ talk/ speech
3. Inspiration from the text (NCERTtextbooks)

Some chapters and the topics which can be chosen:-

- Lost Spring - slum children, child labour
- Indigo - Ideologies of Mahatma Gandhi, struggle of Indian independence. condition of farmers
- Deep Water - All we have to fear is fear itself
- My Mother at Sixty-six - the condition of old parents, old age homes
- A Roadside Stand - the condition of slum children
- A Thing of Beauty - nature, India's natural beauty
- Aunt Jennifer's Tigers - patriarchy, female foeticide, patriarchy in India

ACCOUNTANCY

Completion of Draft of Specific Project based on Accounting Ratios

1. Select a Company for analysis of Financial Statements.
2. Write the Introduction, HIstory of the Company Selected.
3. Write the Financial Statements - Statement of P & L, Balance Sheet and Cash Flow Statement.

Solve the Question Bank of following Chapters:(QB will be mailed to all students)

1. Fundamentals of Partnership Firms
2. Reconstitution of Partnership Firms (Change in P & L Sharing Ratio & Goodwill)

BUSINESS STUDIES

Completion of Draft -1 of Project Work: (Any one)

1. Principles of Management: Complete the questionnaire survey along with pictures of the company
2. Business Environment: Collect relevant information pertaining to PESTL (Political, Economical, Social, Technological & Legal) elements for the chosen topic
3. Stock Exchange: List the opening and closing balance of the 5 chosen companies for 20 working days

4. Marketing Management: Design the following aspects of the chosen product:-
    - Product features
    - Brand name
    - Logo
    - Tagline
    - USP
    - 5 competitors
    - Patents and Licenses required.

ECONOMICS

Prepare a draft of the topic as discussed in the class selected for the board project:
The draft should include
a) Introduction
b) Content of the topic
c) Case Study
d) My views about the topic.
e) Conclusion.
f) Bibliography

INFORMATICS PRACTICES

Visit shops/business places, communities or other organizations in your locality and enquire about the functioning of the organization, and how data are generated, stored and managed. Take the data stored in a csv or database file and analyze it using Python libraries.
If an organization is maintaining data offline, then create a database using MySQL and store the data in tables.

PHYSICAL EDUCATION

Write in Practical Book

** Procedure for Asanas, Benefits & Contraindication for **any two** Asanas for each lifestyle disease. [with your own photographs]

Obesity: Procedure, Benefits & Contraindications for Tadasana, Katichakrasana, Pavanmuktasana, Matsayasana, Halasana, Pachimottansana, Ardha – Matsyendrasana, Dhanurasana, Ushtrasana, Suryabedhan pranayama.

Diabetes: Procedure, Benefits & Contraindications for Katichakrasana, Pavanmuktasana,Bhujangasana, Shalabhasana, Dhanurasana, Supta-vajarasana, Paschimottanasana, Ardha-Mastendrasana, Mandukasana, Gomukasana, Yogmudra, Ushtrasana, Kapalabhati.

Asthma: Procedure, Benefits & Contraindications for Tadasana, Urdhwahastottansana, UttanMandukasana, Bhujangasana, Dhanurasana, Ushtrasana, Vakrasana, Kapalbhati, Gomukhasana Matsyaasana, Anuloma-Viloma.

Hypertension: Procedure, Benefits & Contraindications for Tadasana, Katichakransan, Uttanpadasana, Ardha Halasana, Sarala Matyasana, Gomukhasana, UttanMandukasana, Vakrasana, Bhujangasana, Makarasana, Shavasana, Nadishodhanapranayam, Sitlipranayam.

APPLIED MATHEMATICS :

Choose the correct option (Q.1 to Q.10).

1. If $\begin{vmatrix} 2x & 5 \\ 8 & x \end{vmatrix} = \begin{vmatrix} 6 & -2 \\ 7 & 3 \end{vmatrix}$, then x equals to

   (a) 3 (b) ± 3 (c) ± 6 (d) 6

2. If A is a square matrix such that $A^2 = A$, then $(I + A)^3 - 7A$ is equal to

   (a) A (b) $I - A$ (c) I (d) $3A$

3. If A is a matrix of order $m \times n$ and B is a matrix such that AB' and $B'A$ are both defined, then order of matrix B is

   (a) $m \times m$ (b) $n \times n$ (c) $n \times m$ (d) $m \times n$

4. If $A = \begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$, then for what value of α, A is an identity matrix?

   (a) $0°$ (b) $90°$ (c) $45°$ (d) $30°$

5. If a matrix has 18 elements, how many possible orders it can have?

   (a) 4 (b) 6 (c) 8 (d) 9

6. If $\Delta = \begin{vmatrix} 5 & 3 & 8 \\ 2 & 0 & 1 \\ 1 & 2 & 3 \end{vmatrix}$, then the cofactor of the element a_{23} is

   (a) -5 (b) 0 (c) -7 (d) 7

7. If A is a skew symmetric matrix of order 3×3, then the value of $|A|$ is

   (a) -1 (b) 0 (c) 1 (d) 2

8. If A and B are square matrices of the same order 3, such that $|A| = 2$ and $AB = 2I$, then $|B| =$

   (a) 2 (b) 9 (c) 8 (d) 4

9. The number of possible matrices of order 2×2 with each entry 0, 1 or 2 is

   (a) 9 (b) 27 (c) 81 (d) 16

10. If the points $(0, 0)$, $(\lambda, 1)$ and $(8, 1)$ are collinear, then $\lambda =$

    (a) 2 (b) -8 (c) 8 (d) 0

Fill in the blanks (Q.11 to Q.15).

11. Let A be a matrix of order 3×3 and $k = 3$, then $|kA| =$_____.

12. If A is a symmetric matrix, then A^3 is a _____ matrix.

13. If $\begin{bmatrix} 15 & x+y \\ 2 & y \end{bmatrix} = \begin{bmatrix} 15 & 8 \\ x-y & 3 \end{bmatrix}$, then the value of x is _____.

14. If $\begin{vmatrix} x & \sin\theta & \cos\theta \\ -\sin\theta & -x & 1 \\ \cos\theta & 1 & x \end{vmatrix} = 8$, then the value of x is_____.

15. If $A = \begin{bmatrix} 2 & 2 \\ -3 & 1 \\ 4 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & 2 \\ 1 & 3 \\ 0 & 4 \end{bmatrix}$, such that $A + B + C$ is a zero matrix, then $C =$ _____.

Answer the following questions (Q.16 to Q.20).

16. Evaluate: $\begin{vmatrix} \cos 15° & \sin 15° \\ \sin 75° & \cos 75° \end{vmatrix}$

17. Find the value of x, if $\begin{bmatrix} 3x + y & -y \\ 2y - x & 3 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ -5 & 3 \end{bmatrix}$

18. Write the value of the determinant: $\begin{vmatrix} a-b & b-c & c-a \\ b-c & c-a & a-b \\ c-a & a-b & b-c \end{vmatrix}$

19. If $\begin{bmatrix} a+b & 2 \\ 5 & b \end{bmatrix} = \begin{bmatrix} 6 & 5 \\ 2 & 2 \end{bmatrix}'$, then find a.

20. Find the minor of the element of second row and the second column in the following determinant.

$$\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$$

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

22. For what value of x, the matrix $\begin{bmatrix} 5 - x & x + 1 \\ 2 & 4 \end{bmatrix}$ is singular?

23. Find the product matrix: $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} [2 \quad 3 \quad 4]$.

24. For a 2×2 matrix A = $[a_{ij}]$, whose elements are given by $a_{ij} = \frac{(i+2j)^2}{4}$, write the value of a_{21}

25. If $3A - B = \begin{bmatrix} 5 & 0 \\ 1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 3 \\ 2 & 5 \end{bmatrix}$, then find the matrix A.

26. If $\begin{vmatrix} x+1 & x-1 \\ x-3 & x+2 \end{vmatrix} = \begin{vmatrix} 4 & -1 \\ 1 & 3 \end{vmatrix}$, then write the value of x.

27. For what value of x, is the matrix A = $\begin{bmatrix} 0 & 1 & -2 \\ -1 & 0 & 3 \\ x & -3 & 0 \end{bmatrix}$ a skew-symmetric matrix?

28. If $A = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$, then for any natural number n, find the value of Det(A^n).

29. If matrix A = $\begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$ and $A^2 = kA$, then find the value of k.

30. Write the value of the determinant $\begin{vmatrix} p & p+1 \\ p-1 & p \end{vmatrix}$

31. Use elementary column operation $C_2 \to C_2 - 2C_1$ in the matrix equation

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

32. What positive value of x makes the following pair of determinants equal?

$$\begin{vmatrix} 2x & 3 \\ 5 & x \end{vmatrix}, \begin{vmatrix} 16 & 3 \\ 5 & 2 \end{vmatrix}$$

33. If area of triangle is 35 sq. units with vertices $(2, -6), (5, 4)$ and $(k, 4)$, then find k.

34. Find the equation of a line joining the points $(-1, 2)$ and $(-3, 6)$, using determinants.

35. Show that the null matrix is both symmetric as well as skew symmetric.

36. If $A = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$, then find the value of $A^2 - 3A + 2I$.

37. For the matrices A and B, verify that $(AB)' = B'A'$, if $A = \begin{bmatrix} 1 \\ -4 \\ 3 \end{bmatrix}$ and $B = [-1 \quad 2 \quad 1]$.

38. Find the inverse of the following matrix using elementary row operations:

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

39. Using elementary column transformations, find the inverse of the matrix $\begin{bmatrix} 1 & 3 & -2 \\ -3 & 0 & -1 \\ 2 & 1 & 0 \end{bmatrix}$.

40. A total amount of ₹7,000 is deposited in three different savings bank accounts with annual interest rates of 5%, 8% and $8\frac{1}{2}$ % respectively. The total annual interest from these three accounts is ₹550. Equal amounts have been deposited in the 5% and 8% savings accounts. Find the amount deposited in each of the three accounts, with the help of matrices.

42. Express the matrix $X = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$ as the sum of a symmetric and a skew symmetric matrix.

43. Show that all the diagonal elements of a skew symmetric matrix are zero.

44. Using properties of determinants, prove that $\begin{vmatrix} -a^2 & ab & ac \\ ba & -b^2 & bc \\ ca & cb & -c^2 \end{vmatrix} = 4a^2b^2c^2$

45. Using the properties of determinants, prove that:

$$\begin{vmatrix} (a+1)(a+2) & a+2 & 1 \\ (a+2)(a+3) & a+3 & 1 \\ (a+3)(a+4) & a+4 & 1 \end{vmatrix} = -2$$

46. Using properties of determinants, prove the following:

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

47. Using properties of determinants, prove the following:

$$\begin{vmatrix} a+x & y & z \\ x & a+y & z \\ x & y & a+z \end{vmatrix} = a^2(a+x+y+z)$$

48. Using properties of determinants, prove the following:

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

49. Using properties of determinants, solve the following for x:

$$\begin{vmatrix} x-2 & 2x-3 & 3x-4 \\ x-4 & 2x-9 & 3x-16 \\ x-8 & 2x-27 & 3x-64 \end{vmatrix} = 0$$

50. Using properties of determinants, prove the following:

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