Venkateshwar International School
Sector-18, Dwarka, New Delhi-78
Summer Vacations Holiday Homework (2019-2020)
Class – XII

<u>COMMERCE STREAM</u>

Happy Holidays!

Dear Parents

Holidays are about experiences and people,

and tuning into what you feel like doing at that moment.

It's time to Relax, Reflect and Recharge!

Summer Vacation is a welcome break. A break from studies and explanations. It is about learning new things and engaging children in various scholastics and co-scholastic areas. Keeping this in mind, our teachers have designed and framed interesting project work / assignments to be completed during Summer Vacations to encourage in depth learning, clearing concepts and preparing ground for improved academic output. As parents, kindly motivate and lend support to your children and ensure that they complete the given work well-in-time and to the best of their ability. Your encouragement can actually make a huge difference to the ultimate learning outcome of their projects.

Unit Test-2 for Class XII and Unit Test-1 for Class XI will commence from 24 June, 2019. The date-sheet and syllabus for the same has already been given and is also available on the Shaurya Dashboard.

We at Sri VIS wish you a very Happy 'World Environment Day ', to be celebrated on June 05, 2019. Let's pledge to save the environment and plant more trees!

WISH YOU VERY ENJOYABLE HOLIDAYS!

ENGLISH

I. Writing Skills

1. Due to the invasion of social media, the young generation has become overtly self obsessed. Write an article in not more than 150-200 words on "Millennials are stuck with narcissist label". You are Anubhav/ Anubha, a social activist.
2. "Indian Democracy and the role of urban youth". Write a speech to be delivered on the occasion of Student Council Meeting, addressing the newly inducted members to the Council. You are the Head Boy/ Girl of Amrita Vidyalaya, Chennai.(150-200 words.)
3. Draft a poster on the theme, "Choking Cities-A Real Threat" on behalf of SOS Eco Club, Birla Vidya Niketan, Pushp Vhar, Delhi.
4. Amrita Vidyalaya, Chennai had organized a seminar on "Financial Literacy- an essential skill for the youngsters" in their school. The Keynote Speaker on the day was Ex-RBI Governor, Mr. Raghuram Rajan. Write a detailed report of the event for the newspaper. Include all the important happenings of the event.   (150-200 words)

II. Read : Journey To the End of the Earth.(Vistas) . Research about contemporary Antarctica Missions undertaken by Indian Scientists. Record the findings (of any ONE)briefly. Paste a few relevant pictures of the mission as well.

III. Read any two books from the list given below. Prepare critical analysis on them for Speaking Activity in class.

   a) The Hate you give by Angie Thomas
   b) Nineteen Eighty - four by George Orwell
   c) The White Tiger by Aravind Adiga
   d) Pashmina by Nidhi Chanani
   e) Untouchable by Mulk Raj Anand

IV. Revise the syllabus of UT 2. Read all the Literature Texts included in it thoroughly.

NOTE: All written work to be attempted in English Notebooks only.

MATHEMATICS

Complete worksheets attached of the following chapters :
Ch-1   Relations & Functions
Ch-2   Inverse Trigonometric Functions
Ch-3   Matrices
Ch-4   Determinants from NCERT Exemplar.

Do activity 1-6 in the activity file. (Activity sheets distributed in class)

Q1. If $f(x) = 2x-3$. Write $f^{-1}(5)$

Q2. Check whether a relation R = {(a, b): a< b^3, a, b $\in$ N} is transitive or not. Justify

Q3. Is the function $f : N \rightarrow N$ given by $f(1) = f(2) = 1$ and $f(x) = x - 1$, for every $x > 2$ one-one? Justify

Q4. Check whether the relation R on the set $A = \{1, 2, 3\}$ given by $R = \{(1, 2), (2, 1)\}$ is transitive or not. Give reasons

Q5. If $f : R \rightarrow R$ is given by $f(x) = (3 - x^3)^{\frac{1}{3}}$, then find $fof(x)$.

Q6. If $f(x) = 2x+5$ and $g(x) = x – 1$. Find fog(2)

Q7. If $f(x) = |x|$ and $g(x) = [x-1]$ where [.] denotes greatest integer function. Find fog (-2.5)

Q8. Write the number of one – one functions from {1,2,3} to itself.

Q9. Let * be binary operation defined on N as a*b = H.C.F(a,b). Find 16* 20

Q10. Let R be relation defined on R as (a, b) iff $1+ab > 0$. Is R reflexive ?

Q11. R = {(a,b) : a+b = 6, a,b $\in$ **{1,2,3,4}}. Write range of R.**

Q12. Write the domain of $f(x) = \dfrac{1}{x^2-4}$.

Q13. Write the range of $f(x) = \dfrac{x-1}{|x-1|}$.

Four/Six marks questions

Q14. Let R be relation defined on N X N as R = {(a,b)R(c,d) iff a+d= b+c}. Show that R is an equivalence relation. Also write equivalence class of (2, 5)

Q15. Let R be relation defined on R as R = {(a,b): |a-b| is divisible by 5}. Show that R is an equivalence relation.

Q16. Show that f: R→R defined as $f(x) = 7-2x^3$ is bijective.

Q17. Show that f: R→R defined as $f(x) = \dfrac{3x+5}{2}$ is invertible. Hence find f^{-1}.

Q18. Show that $f(1/x) = -f(x)$, where $f(x) = x^2 – x^{-2}$.

Q19. Let f: N→N be defined as $f(x) = x + 1$, x is odd . Show that f is onto. Hence find f^{-1} .
$\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad x – 1$, x is even

Q20. Let A = R – {3} and B = R – {1}. Let f: A → B be defined as $f(x) = \dfrac{x-2}{x-3}$. Define g: B → A such that fog = gof = I

Q21. Show that f: $R_* \rightarrow$ [-5,∞) defined as $f(x) = 9x^2 + 6x – 5$ is invertible. Hence find f^{-1}.
$\quad\quad$ (R_* is set of non negative real numbers)

Q22. If the function f : R→R be defined as f(x) = 2x-3 and g : R→R as g(x) = x^3+5 then
Find the value of $(fog)^{-1}(x)$ CBSE 2015

Q14. Let R be set of real numbers and f and g be functions defined from R to R as
f(x) = 3x+2 and g(x) = $\frac{x}{x^2+1}$, then find
i)fog   ii) gof   iii)gog

Q31. Let R be relation defined on A XA (A= {1,2,3-----,9} as R = {(a,b)R(c,d)
iff ad(b+c)= bc(a+d}. Show that R is an equivalence relation.

Inverse trigonometric function
One Mark Questions
Q1. Write the principle value of following.

a) $\cos^{-1} \cos \frac{7\pi}{6}$ b) $\sin^{-1} \sin \frac{3\pi}{5}$ c) $\cos^{-1} (\frac{-1}{2})$ d) $\tan^{-1}(-1)$

e) $\sin^{-1}\tan\frac{3\pi}{4}$ f) $\cos^{-1} \cos \frac{-\pi}{4}$ g) $\sec^2(\tan^{-1}2)$ h) $\cot^{-1} \cot \frac{-\pi}{4}$

Q2. If sin { $\sin^{-1}\frac{1}{5}$ + $\cos^{-1}$ x } = 1 . Find x

Q3. Evaluate : a) $\sin[\frac{\pi}{3} - \sin^{-1} (\frac{-1}{2})]$ b) $\cos^{-1} \cos (\frac{2\pi}{3})$ + $\sin^{-1}\sin(\frac{2\pi}{3})$

Two Mark Questions

Q4. Draw the graph of $\sin^{-1}$x and write range of $\sin^{-1}$x other than principle branch.

Q5. Simplify the following expressions:

a) $\tan^{-1} \frac{\sqrt{1-cosx}}{\sqrt{1+cosx}}$ b)* $\cot^{-1} \frac{ab+1}{a-b}$ + $\cot^{-1} \frac{bc+1}{b-c}$ + $\cot^{-1} \frac{ac+1}{c-a}$ a > b > c > 0

c) $\tan^{-1} \frac{x}{y}$ - $\tan^{-1} \frac{x-y}{x+y}$ d) $\tan^{-1} \frac{x-1}{x+1}$ + $\tan^{-1} \frac{x+1}{x-1}$

e) $\tan^{-1} \frac{x}{\sqrt{a^2-x^2}}$ f) $\cos\left(2\tan^{-1} \frac{\sqrt{1-x}}{\sqrt{1+x}}\right)$

g) $\sin^{-1}\left(\frac{x}{\sqrt{9+x^2}}\right)$ h) $\csc^{-1} \frac{\sqrt{a^2+x^2}}{x}$

Four marks questions

Q6. Prove the following:

a) $\cos\left(\tan^{-1} \frac{-4}{3} + \sin^{-1} \frac{12}{13}\right)$ = $\frac{63}{65}$ b) $4\tan^{-1}\frac{1}{5} - \tan^{-1} \frac{1}{70} + \tan^{-1} \frac{1}{99} = \frac{\pi}{4}$

c) $\tan^{-1} 1 + \tan^{-1} 2 + \tan^{-1} 3 = 2(\cot^{-1} 1 + \cot^{-1} 2 + \cot^{-1} 3)$

d) $\sin^{-1} \frac{4}{5} + \sin^{-1} \frac{5}{13} + \sin^{-1} \frac{16}{65} = \frac{\pi}{2}$ e) $\tan^{-1} \frac{1}{4} + \tan^{-1} \frac{2}{9} = \frac{1}{2} \cos^{-1} \frac{3}{5}$

f) $\sin^{-1} \frac{4}{5} + 2\tan^{-1} \frac{1}{3} = \frac{\pi}{2}$ g) $\sin^{-1} \frac{12}{13} + \cos^{-1} \frac{4}{5} + \tan^{-1} \frac{63}{16} = \pi$

Q7. Draw the graph of $g(x) = \text{cosec}^{-1}x$.

Q8. Simplify the following inverse trigonometric expressions:

a) $\cot^{-1}(\sqrt{1+x^2} + x)$
b) $\tan^{-1}\dfrac{\cos x}{1+\sin x}$

c) $\tan\left(\dfrac{\pi}{4} + \dfrac{1}{2}\cos^{-1}\dfrac{a}{b}\right) + \tan\left(\dfrac{\pi}{4} - \dfrac{1}{2}\cos^{-1}\dfrac{a}{b}\right)$ CBSE 2017

d) $\sin^{-1}\left(\dfrac{3x - 4\sqrt{1-x^2}}{5}\right)$
e) $\tan^{-1}\dfrac{\sqrt{1+x^2} + \sqrt{1-x^2}}{\sqrt{1+x^2} - \sqrt{1-x^2}}$

Q9. Solve for x :

a) $\tan(\cos^{-1}x) = \sin(\cot^{-1}\dfrac{1}{2})$
b) $\tan^{-1}\dfrac{x-1}{x-2} + \tan^{-1}\dfrac{x+1}{x+2} = \dfrac{\pi}{4}$

c) $\cos^{-1}\dfrac{x^2-1}{x^2+1} + \tan^{-1}\dfrac{2x}{x^2-1} = \dfrac{2\pi}{3}$
d) $\tan^{-1}\dfrac{1+x}{1-x} = \dfrac{\pi}{4} + \tan^{-1}x$

e) $\sin^{-1}(1-x) - 2\sin^{-1}x = \dfrac{\pi}{2}$
f) $\tan^{-1}(x+1) + \tan^{-1}(x-1) = \tan^{-1}\dfrac{8}{31}$

g) $\sin\cot^{-1}(x+1) = \cos(\tan^{-1}x)$ CBSE 2015
h) $(\tan^{-1}x)^2 + (\cot^{-1}x)^2 = \dfrac{5\pi^2}{8}$ CBSE2015

Q10. Show that $\dfrac{1}{2}\tan^{-1}x = \cos^{-1}\left(\sqrt{\dfrac{\sqrt{1+x^2}+1}{2\sqrt{1+x^2}}}\right)$

Q11. Show that $4\tan^{-1}x = \tan^{-1}\dfrac{4x(1-x^2)}{1-6x^2+x^4}$

Q12. Show that $2\tan^{-1}\left(\sqrt{\dfrac{x-y}{x+y}}\ \tan\dfrac{\theta}{2}\right) = \cos^{-1}\left(\dfrac{y+x\cos\theta}{x+y\cos\theta}\right)$

Q13. If $\cos^{-1}\dfrac{x}{a} + \cos^{-1}\dfrac{y}{b} = z$. Show that $\dfrac{x^2}{a^2} - \dfrac{2xy}{ab}\cos z + \dfrac{y^2}{b^2} = \sin^2 z$.

Q14. If $y = \cot^{-1}\sqrt{\cos x} - \tan^{-1}\sqrt{\cos x}$. Prove that $\sin y = \tan^2\dfrac{x}{2}$

Q15. Find the greatest and least values of $(\sin^{-1}x)^2 + (\cos^{-1}x)^2$ OLYMPIAD 2015

CHAPTER 3
<u>Matrices</u>
<u>One Mark Questions</u>

Q1. If a matrix has 12 elements, write all possible orders.

Q2. What is the number of all possible matrices of order 2 X 3 with each entry -1 or 1?

Q3. If A = [-1 2 -5] and B^T = [2 -1 7]. Find AB

Q4. If A = $\begin{bmatrix} \cos x & \sin x \\ -\sin x & \cos x \end{bmatrix}$, Find x so that $A^2 = I$

Q5. If A = $\begin{bmatrix} 0 & 0 \\ 2 & 0 \end{bmatrix}$. Find A^{10}.

Q6. If $\begin{bmatrix} 3 & x-1 \\ 12x+3 & x+2 \end{bmatrix}$ is symmetric. Find x

Two Marks Questions

Q7. $A = \begin{bmatrix} 4 & 2 \\ 1 & 3 \end{bmatrix}$, $B = \begin{bmatrix} -2 & 1 \\ 3 & 2 \end{bmatrix}$ Find X such that 3A - 2B + X = 0

Q8. Find x and y so that $\begin{bmatrix} 2x + 1 & y^2 + 2 \\ 5 & y^2 - 5y \end{bmatrix} = \begin{bmatrix} x + 3 & 3y \\ 5 & -6 \end{bmatrix}$

Q9. Construct a 3 X 2 matrix A in which $a_{ij} = |i - 3j|$

Q10. If $A = \begin{pmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \end{pmatrix}$, $2A - B = \begin{pmatrix} -1 & 5 & 3 \\ 5 & 6 & 0 \end{pmatrix}^2$. Find B.

Q11. If $\begin{bmatrix} 2x & 3 \end{bmatrix} \begin{bmatrix} 1 & 2 \\ -3 & 0 \end{bmatrix} \begin{bmatrix} x \\ 3 \end{bmatrix} = 0$. Find x.

Q12. **If A** $= \begin{bmatrix} 4 & 2 \\ -1 & 1 \end{bmatrix}$. Prove that $(A - 2I)(A - 3\ I) = 0$

Q13. If $\begin{bmatrix} 0 & -5 & a \\ b & c & 3 \\ 2 & d & 0 \end{bmatrix}$ is skew symmetric, find a, b, c and d.

Q14. If $\begin{bmatrix} 0 & 2b & -2 \\ 3 & 1 & 3 \\ 3a & 3 & -1 \end{bmatrix}$ is symmetric, find the value of $9a^2 - 4b^2$

Four marks questions

Q15. **If A** $= \begin{bmatrix} 4 & 3 \\ 2 & 5 \end{bmatrix}$. Find x and y so that $A^2 - x\ A + y\ I = 0$

Q16. **If A** $= \begin{bmatrix} 2 & 3 \\ -1 & 2 \end{bmatrix}$ and $f(x) = x^2 - 4x + 7$, show that $f(A) = 0$ and use it to find A^3.

Q17. If A $= \begin{bmatrix} 2 & 1 & 3 \\ 4 & 1 & 0 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -1 \\ 0 & 2 \\ 5 & 0 \end{bmatrix}$. Verify that (AB)' = B'A' .

Q18. Solve for x and y where $\begin{bmatrix} x & y \\ 3y & x \end{bmatrix} \begin{bmatrix} 1 \\ 2 \end{bmatrix} = \begin{bmatrix} 3 \\ 5 \end{bmatrix}$

Q19. Find x, If $\begin{bmatrix} 1 & 2 & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 & 0 \\ 2 & 0 & 1 \\ 1 & 0 & 2 \end{bmatrix} \begin{bmatrix} 0 \\ 2 \\ x \end{bmatrix} = 0$

Q20. Express the following matrices as sum of symmetric and skew symmetric matrices.

i) $\begin{bmatrix} 3 & -4 \\ 1 & -1 \end{bmatrix}$ ii) $\begin{bmatrix} 3 & 2 & 5 \\ 4 & 1 & 3 \\ 0 & 6 & 7 \end{bmatrix}$

Q21. Prove by principle of mathematical induction that $A^n = \begin{bmatrix} a^n & na^{n-1} \\ 0 & a^n \end{bmatrix}$ where $A = \begin{bmatrix} a & 1 \\ 0 & a \end{bmatrix}$

Q22. Find the inverse of following by elementary transformations

i) $\begin{bmatrix} 3 & -1 \\ -4 & 2 \end{bmatrix}$ ii) $\begin{bmatrix} 2 & -2 \\ 4 & 3 \end{bmatrix}$

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Q23. Find A such that $A\begin{bmatrix} 5 & -7 \\ -2 & 3 \end{bmatrix} = \begin{bmatrix} -16 & -6 \\ 7 & 1 \end{bmatrix}$

Q24. If $\begin{bmatrix} 2 & 1 \\ -3 & 2 \end{bmatrix}A + \begin{bmatrix} -5 & 0 \\ 2 & 4 \end{bmatrix} = \begin{bmatrix} 3 & -9 \\ 7 & 1 \end{bmatrix}$. Find matrix A.

Q25. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & -2 & 1 \\ 4 & 2 & 1 \end{bmatrix}$, then show that $A^3 - 23A - 40I = 0$

Q26. $A = \begin{bmatrix} 3 & 1 \\ 7 & 5 \end{bmatrix}$. Find x and y so that $A^2 + xI = yA$. Hence find A^{-1}.

Q27. If $A = \begin{pmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{pmatrix}$ find $A^2 - 5A + 4I$ and hence find a matrix X such that
$$A^2 - 5A + 4I + X = 0$$

Six marks questions

Q28. Using elementary transformations find the inverse of following matrices:

a) $\begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 2 & 1 & 1 \end{bmatrix}$
b) $\begin{bmatrix} -1 & 2 & 3 \\ 2 & 1 & 3 \\ 3 & -1 & 2 \end{bmatrix}$
c) $\begin{bmatrix} 8 & 4 & 3 \\ 2 & 1 & 1 \\ 1 & 2 & 2 \end{bmatrix}$

Q29. For $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{bmatrix}$. Show that $A^3 - 6A^2 + 5A + 11I = 0$. Hence find A^{-1}.

CHAPTER - 4
Determinants

One Mark Questions

Q1. For what value of x : $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & x \\ 1 & 1 & 1 \end{bmatrix}$ is singular.

Q2. If A is a square matrix of order 3 and $|A| = 8$, Find $|adjA|$

Q3. If $A(adjA) = 10I$. Find $|adjA|$ where A is a 3x3 matrix.

Q4. If $|k A| = 108$, $|A| = 4$ and A is 3X3 matrix. Find k.

Q5. Given that the following system has non trivial solutions
$x + 2y + 3z = 0$, $3x + y + \lambda z = 0$, $x - y + z = 0$. Find the value of λ

Q6. If $\begin{vmatrix} 3 & m \\ 4 & 5 \end{vmatrix} = 3$. Find m

Q7. If $\Delta = \begin{vmatrix} cos\theta & sin\theta & 1 \\ -sin\theta & cos\theta & 1 \\ 0 & 0 & 2 \end{vmatrix}$ Find M_{33}.

Two Marks Questions
Q8. Using determinants find λ so that (-1, -1), (5, λ), (8,11) lie on the same line.

Q9. Without expanding evaluate :

i) $\begin{vmatrix} 1 & a & a^2 - bc \\ 1 & b & b^2 - ac \\ 1 & c & c^2 - ab \end{vmatrix}$ ii) $\begin{vmatrix} \frac{1}{a} & a & bc \\ \frac{1}{b} & b & ac \\ \frac{1}{c} & c & ab \end{vmatrix}$ iii) $\begin{vmatrix} 41 & 1 & 5 \\ 79 & 7 & 9 \\ 29 & 5 & 3 \end{vmatrix}$

Q10. If $\begin{vmatrix} 3 & y \\ x & 1 \end{vmatrix} = \begin{vmatrix} 3 & 2 \\ 4 & 1 \end{vmatrix}$. Find possible values of x and y where x and y $\in$ N .

Four marks questions

Q11. Using properties of determinants, prove the following

a) $\begin{vmatrix} a & a+b & a+2b \\ a+2b & a & a+b \\ a+b & a+2b & a \end{vmatrix} = 9b^2(a+b)$ b) $\begin{vmatrix} x & y & z \\ x^2 & y^2 & z^2 \\ y+z & z+x & x+y \end{vmatrix} = (x+y+z)(x-y)(y-z)(z-x)$

c) $\begin{vmatrix} x+y & x & x \\ 5x+4y & 4x & 2x \\ 10x+8y & 8x & 3x \end{vmatrix} = x^3$. d)* $\begin{vmatrix} a & b & ax+by \\ b & c & bx+cy \\ ax+by & bx+cy & 0 \end{vmatrix} = (b^2-ac)(ax^2+2bxy+cy^2)$

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

f) $\begin{vmatrix} 0 & p-q & p-r \\ q-p & 0 & q-r \\ r-p & r-q & 0 \end{vmatrix} = 0$ g) $\begin{vmatrix} 0 & 99 & -998 \\ -99 & 0 & 997 \\ 998 & -997 & 0 \end{vmatrix} = 0$ h) $\begin{vmatrix} \frac{a^2+b^2}{c} & c & c \\ a & \frac{c^2+b^2}{a} & a \\ b & b & \frac{a^2+c^2}{b} \end{vmatrix} = 4abc$

Q12. Solve for x : a) $\begin{vmatrix} 7 & 6 & x \\ 2 & x & 2 \\ x & 3 & 7 \end{vmatrix} = 0$ b) $\begin{vmatrix} 15-2x & 11-3x & 7-x \\ 11 & 17 & 14 \\ 10 & 16 & 13 \end{vmatrix} = 0$

c)* $\begin{vmatrix} x-2 & 2x-3 & 3x-4 \\ x-4 & 2x-9 & 3x-16 \\ x-8 & 2x-27 & 3x-64 \end{vmatrix} = 0$ d) $\begin{vmatrix} x+2 & x+6 & x-1 \\ x+6 & x-1 & x+2 \\ x-1 & x+2 & x+6 \end{vmatrix} = 0$ CBSE 2015

Q13*.If f(x) = $\begin{vmatrix} a & -1 & 0 \\ ax & a & -1 \\ ax^2 & ax & a \end{vmatrix}$, Using properties evaluate f(x) hence evaluate f(2x) – f(x)

CBSE 2015

Q14. A = $\begin{bmatrix} 3 & 1 \\ 7 & 5 \end{bmatrix}$. Find x and y so that A^2 + xI = yA. Hence find A^{-1}

Six marks questions

Q15. Solve using matrices: $\frac{2}{x} + \frac{3}{y} + \frac{10}{z} = 4, \frac{4}{x} - \frac{6}{y} + \frac{5}{z} = 1, \frac{6}{x} + \frac{9}{y} - \frac{20}{z} = 2$

Q16*. If A = $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{bmatrix}$. Find A^{-1} and use it to solve x + y + 2z = 0, x + 2y – z = 9 and
x– 3y + 3z = -14.

Q17. Use product AB to solve the system x – y +2z = 1, 2y – 3z = 1 and 3x -2y + 4z = 2

where A = $\begin{bmatrix} 1 & -1 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix}$ and B = $\begin{bmatrix} -2 & 0 & 1 \\ 9 & 2 & -3 \\ 6 & 1 & -2 \end{bmatrix}$.

Q18*. Evaluate using properties : $\begin{vmatrix} a^2 & (b+c)^2 & bc \\ b^2 & (c+a)^2 & ca \\ c^2 & (a+b)^2 & ab \end{vmatrix}$ CBSE 2016

Q19. The management committee of a residential colony decided to award some of its members (say x) for honesty, some (say y) for helping others and some other (say z) for supervising the workers to keep the colony neat and clean. The sum of all the awardees is 12. Three times the sum of awardees for cooperation and supervision added to two times the number of awardees for honesty is 33. If the sum of the number of awardees for honesty and supervision is twice the number of awardees for helping others, using matrix method, find the number of awardees of each category.

Q20. Two schools A and B want to award their selected students on the values of sincerity, truthfulness and helpfulness. The school A wants to award ` x each, ` y each and ` z each for the three respective values to 3, 2 and 1 students respectively with a total award money of ` 1,600. School B wants to spend ` 2,300 to award its 4, 1 and 3 students on the respective values (by giving the same award money to the three values as before). If the total amount of award for one prize on each value is ` 900, using matrices, find the award money for each value.

Q21. The monthly income of Aryan and Babban are in the ratio 3:4 and their monthly expenditures are in the ratio 5:7. If each saves `15000 per month, find their monthly incomes using matrix method.

                                                                                                    CBSE 2016

ACCOUNTANCY

- **Do Ch-3,4 assignments in the class notebook.**
- **Complete the Project Work in Accountancy as per the problem given in the Class.**

Chapter 3
Goodwill

1   How does the market situation affect the value of goodwill of a firm?
2   What is meant by super profits?
3   Give any three characteristics of goodwill.
4   How the goodwill is valued under the capitalization of Super Profit Method?
5   Distinguish between average profits and super profits.
6   Goodwill is to be valued at two years' purchase of the average profits of last three years. Profits are I year – Rs. 30,000, II year – Rs. 24,000, III year – Rs. 8,000. Profits of first year are inclusive of abnormal profits of Rs. 3,000 and second year profits include Rs. 1,000 abnormal loss.
7   Total capital of A and B is Rs. 3,00,000 and the market rate of interest is 10% p.a. Partners are entitled to receive salary of Rs. 12,000 each. Profits (before partners' salaries) for the years 2008, 2009, 2010, 2011, 2012 were Rs. 65,000, Rs. 62,000, Rs. 80,500, Rs. 90,200 and Rs. 1,05,000 respectively. Goodwill is to be valued at 3 years' purchase of super profits based on the average profits. Calculate the goodwill of the firm.

8   A firm has earned an average profit of Rs. 50,000 during the last year and the normal rate of return in similar type of business is 10%. Find out the goodwill according to capitalization method assuming that the firm owns total assets worth Rs. 5,50,000 including therein a goodwill of Rs. 50,000 and outside liabilities worth Rs. 1,00,000. Also show that goodwill is same under both average profit basis and super profit basis of capitalization.

Ch- 4
Change in Profit Sharing Ratio Among the Existing Partners

1. What is meant by reconstitution of partnership firm?
2. What is the formula for calculating sacrificing ratio?
3. What is the nature of Revaluation A/c?
4. State any five circumstances when need for valuation of goodwill may arise.
5. Weighted average method of calculating goodwill is used when:
   a) Profits are not equal
   b) Profits show a trend
   c) Profits are fluctuating
   d) None of the above
6. P,Q and R are partners sharing profits equally. They decided that in future R will get 1/7 share in profits. On the day of change, firm's goodwill is valued at Rs. 42,000. Pass the necessary journal entry for the treatment of goodwill.
7. A and B are partners in a firm sharing profits in the ratio of 3:2. On March31, 2016, their Balance Sheet showed a general reserve of Rs. 54,000. On that date they decided to admit C as a new partner. The new profit sharing ratio between A, B and C will be 4:3:2. Record the necessary journal entry in the books of the firm under the following circumstances:
   i) When they want to transfer the general reserve in their capital accounts.
   ii) When they do not want to transfer general reserve in their capital accounts and prefer to record an adjustment entry for the same.

8. S, T, U and V were partners in a firm sharing profits and losses in the ratio of 4:3:2:1. On 31 March, 2018, their Balance Sheet was as follows:

Liabilities		Rs.	Assets	Rs.
Creditors		80,000	Fixed Assets	4,40,000
Workmen Compensation Reserve			Current Assets	2,00,000
Capitals:		60,000		
S	2,00,000			
T	1,50,000			
U	1,00,000			
V	50,000			
		5,00,000		
		6,40,000		**6,40,000**

 From the above date partners decided to share the future profits in 3:1:2:4 ratio. For this purpose the goodwill of the firm was valued at Rs. 90,000. The partners also agreed for the following:
 i) The claim for workmen compensation has been estimated at Rs. 70,000.
 ii) To adjust the capitals of the partners according to new profit sharing ratio by opening partners current accounts.

Prepare Revaluation A/c, Partners Capital Accounts and the Balance Sheet of the reconstituted firm.

9. P, Q and R were partners sharing profits in the ratio of 1:3:2. Following was their Balance Sheet as at 31 March, 2018:

Liabilities	Rs.	Assets	Rs.
Creditors	2,80,000	Land and Building	5,00,000
Workmen Compensation Reserve	60,000	Investments (Market Value Rs. 1,10,000)	1,25,000
Outstanding Expenses	15,000	Stock	2,20,000
Investment Fluctuation Reserve	45,000	Debtors	3,20,000
Capitals:		Bank Balance	1,60,000
P 2,00,000		Advertisement Suspense	
Q 5,00,000	10,00,000		75,000
R 3,00,000			
	14,00,000		14,00,000

On 1 April, 2018 they decided to share future profits in the ratio of 4:6:5. It was agreed that :

i)   Claim for Workmen Compensation has been estimated at Rs.1,00,000.
ii) A motor cycle valued at Rs. 30,000 was unrecorded and is now to be recorded in the books.
iii) Outstanding expenses were not payable anymore.
iv) Value of stock be increased to Rs. 2,90,000.
v)   A provision for doubtful debts be created @ 5% on debtors.
vi) Goodwill is valued at Rs. 1,00,000.
vii) The work of reconstitution was assigned to firm's auditors. They were paid Rs. 20,000 for this work. Pass journal entries and prepare Revaluation A/c.

BUSINESS STUDIES

Complete Project Work given As per CBSE guidelines.

ECONOMICS

1. Complete the worksheets of Unit – 1 of Macro Economics and chapter-2 of Indian Economic Development.
2. Complete the Project file on Economics issues. (As per instructions given in the class)

FINE ARTS

Prepare 5 posters on any social /commercial topics.

PHYSICAL EDUCATION

1. Writing of AAHPER IN Practical File
2. Revising of Yoga Chapter.

LEGAL STUDIES

1. **Do the research on the topic given for project work and make project file.**
2. **Do the following assignment in your notebook.**

1. A crime is said to exist usually when _____ and _____ elements are present.
2. Which latin maxim means ' An act does not make one guilty unless the mind is also legally blameworthy'?
3. What do you mean by :
   a. Actus reus   b. Mens rea
4. What are the 3 constituent parts of Actus reus?
5. What are the constituent parts of Mens rea?
6. In which section of the IPC is it mentioned that moral ommissions of not doing something would not complete the requirement of Actus reus?
7. Give 2 examples of when Actus reus does not take place and why it cannot be considered as Actus reus?
8. When and where did the act of Mens rea evolve?
9. Explain in brief the State of Maharashtra vs. Mayor Hans George case.
10. In which case did the supreme court hold that 'the element of mens rea must be read into a statutory penal provision unless a statute either expressly or by necesssary implication rules it out'?
11. What does the term crime denote?
12. What are white collar crimes? Give examples.
13. Give examples of organized crimes?
14. Mention the stages of crime.
15. Which two stages of crime does not give rise to criminal liability?
16. Explain crime against morality with examples.
17. Give examples of crime against person?
18. What is CrPC? What is its objective?
19. Which offences are covered by CrPC?
20. Differentiate between the following:
    (a) Bailable and non-bailable offences.   (b) Cognizable and non-cognizable offences.
21. What are compoundable offences? Give an example.
22. Are all offences compoundable? Why or why not?
23. The CrPC lists various offences under the Indian Penal Code which are compoundable. How many offences may be compounded by specific aggrieved party without the permission of court and how many can be compounded after securing permission of court?
24. When was IPC passed and when did it come into force?
25. Name the 2 criminal codes consulted while drafting the IPC.
26. IPC is uniformly applicable in all the states except the state of _____.
27. The IPC is divided into _____ chapters and it comprises of _____ sections.
28. Name the 6 broad classification of crimes under the IPC.
29. What is the way in which IPC is organised? Explain them.
30. What does section 378 of the IPC state?
31. What does section 379 of the IPC state?
32. In which year was the CrPC formulated?
33. Depending on the nature and gravity of an offence, how does the CrPC classify these offences?
34. Which section defines bailable and non-bailable offences?
35. Give 3 distinguishing points between bailable and non- bailable offences.

36. Mention some offences that are classifed as non-bailable.
37. How many types of compoundable offences are there? Name them.
38. State the meaning of section 154 of the CrPC.
39. What are the objectives of CrPC?

PROJECT ON FINANCIAL LITERACY SKILLS

1. What are the different types of ITR?

2. Consider yourself to be an individual (salaried or business man) and determine which type of ITR form will be used to file ITR. File returns using hypothetical figures to see how much revenue your services or business generates for the ex-Chequer.

3. Explain in brief the sections for different types of Tax Exemptions for salaried/business person.