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Assignments for Summer Vacations (2025-26) for Class XII ARTS



General Instructions:

1. *Get up early in the morning and go out for a walk daily. Do yoga daily for healthy living.*
2. *Make a Bird feeder and add seeds for birds daily and also place water for them.*
3. *Raise a small kitchen garden by planting seeds.*
4. *Learn any one folk song.*
5. *Help your mother in cooking and learn vegetable cooking and salad decoration.*
6. *The summer break for classes VI-XII will be from 01.06.2025 to 01.07.2025 (Both days inclusive). School will reopen on 02.07.2025.*
7. *Revise the syllabus of all subjects done before summer vacations for Unit Tests to be started from 07.07.2025.*
8. *Try to make your handwriting better by practicing and do your HW in good handwriting.*
9. *Do assignments in holidays homework notebook and activities/projects on A4 sheets for each subject & submit it for assessment to your class teacher on July 10, 2025.*
10. *Learn all the prayers and mantras given in student diary.*
11. ***Register & participate in 1st stage of 11th Online International Humanity Olympiad, International Open Oratory Contest and International Open Poetry Recitation Contest by accessing through web portal <https://www.dhyankaksh.org/value-your-virtues>. Every individual passing the exam (i.e. scoring minimum 40%) will get an e-certificate through e-mail immediately on their e-mails. School code is : FATE104. This certificate and certificates of courses earned by you during holidays should be part of your portfolio.***
12. ***Waste Warriors: Smart Sorting & Creative Recycling.** Survey at least 10 families in your surroundings and collect data how they Dispose off two types of waste and create awareness in them to segregate waste. Click pictures and paste in your portfolio.*

English

1. Revise the following syllabus for Unit Test-

Reading Section- Comprehension

Writing Section- Notice Writing

Flamingo- Lesson – 1 to 5

Poems- 1(My Mother at Sixty-Six)

2- Keeping Quiet

Writing Skill-

Solve the following Worksheets in BBC Compacta

2. Comprehension – Worksheets 1 to 5 (Unsolved)

3. Notice Writing – Questions 1 to 5 (Unsolved)

4. Solve Extracts of all the Lessons and Poems included in Unit Test (as mentioned above)

Reading Skill-

Read **2 Unseen Passages** from previous years' CBSE paper (factual & discursive).

• Write unfamiliar words and find meanings.

Listening Skill-

Listen to **2 English podcasts or TED Talks** (Choose topics like education, motivation, climate, youth, etc.)

E.g., TED Talk: “The Power of Believing You Can Improve” by Carol Dweck.

Take notes and summarize in 100–150 words.

Watch an English movie or documentary with subtitles.

Write a 100-word review and list 10 new vocabulary words.

Speaking Skill-

Prepare and record a 2-minute speech on **any one** of the following topics:

The Importance of Time Management

The Role of Youth in Nation Building

Benefits of Reading Books

Send video on 8059270083

OR

As Father’s Day is around the corner, take an interview of your father asking about his life journey by far.

Record the interview and send video/link on 8059270083

Project Work- As Assigned in Class

Hindi

1. पत्रकारीय लेखन विषय से संबंधित फीचर लेखन एवं संपादकीय लेखन का एक कोलाज तैयार करें।

2. समाचार लेखन के सभी प्रकारों का वर्णन करते हुए किसी दैनिक समाचार पत्र से कोई दो या तीन खबरें परिभाषित करें।

3. निम्नलिखित विषयों पर लेख लिखें-

* युवा पीढ़ी में निरंतर बढ़ रही स्क्रीन की लत

* महानगरों में जीवन की चुनौतियाँ

* छात्र को आत्मनिर्भर बनाने में विद्यालय की भूमिका

4. आज की युवा पीढ़ी पर विज्ञापनों का प्रभाव लगातार बढ़ता जा रहा है। बाजार की चकाचौंध सभी को अपनी ओर आकर्षित कर रही है। बाजारवाद एवं उपभोक्तावाद की संस्कृति क्या वास्तव में हमारे देश की अर्थशास्त्र व्यवस्था को अनीति शास्त्र की ओर लेकर जा रही है? इसका उल्लेख करते हुए इसके सकारात्मक एवं नकारात्मक प्रभावों के बारे में अपने आसपास के लोगों के विचारों का संकलन करते हुए एवं बाजार की जादुई ताकत से बचने के उपायों को एक आकर्षक चित्रात्मक परियोजना द्वारा दर्शाइए।

पहला पृष्ठ- विद्यार्थी का नाम, कक्षा, वर्ग, अनुक्रमांक, विद्यालय का नाम एवं विद्यालय का प्रतीक चिह्न (लोगो)

दूसरा पृष्ठ-आभार ज्ञापन

तीसरा पृष्ठ- प्रमाण-पत्र

चौथा पृष्ठ- अनुक्रमणिका

पाँचवा पृष्ठ भूमिका/प्रस्तावना

छठा पृष्ठ - संपूर्ण चित्राकर्षक

प्रथम इकाई परीक्षा संबंधी पाठ्यक्रम - अपठित गद्यांश अथवा अपठित काव्यांश

आरोह-गद्य खंड पाठ भक्तिन एवं बाजार दर्शन

काव्य खंड- कविता आत्मपरिचय, दिन जल्दी जल्दी ढलता है, पतंग, बात सीधी थी पर, कविता के बहाने।

अभिव्यक्ति और माध्यम पाठ 3 एवं 4।

Political Science

Project / Activity

1 Paste pictures of at least 10 cartoons, including logos of different organisations, of the book Contemporary World Politics and explain under each the message conveyed by the cartoon.

2 "Painting Patriotism Red: The Story of Operation Sindoor"

- Design a collage or timeline chart to visually represent the major highlights of Operation Sindoor. Focus on key dates, objectives, places involved, and the outcome. Use printed images, newspaper clippings, map cutouts, and powerful quotes from officials or media.
- Title it "Operation Sindoor: India's Silent Warriors".
- Include pictures of forces, operation zones, and headlines from the mission.

3 Map Work: (Locate and label)

- i) ASEAN members
- ii) Old and New members of European Union
- iii) All the 15 countries of former USSR
- iv) Learn the names of the countries related to different incidents mentioned in the chapters, write statements related to them and mark their location on map.

4 Prepare a detailed project on Any one of the following themes:

1. NAM- 1961 to present times.
2. Division of Germany with special focus on the construction and dismantling of the Berlin Wall.
3. CIS-Central Asian Republics
4. Disintegration of USSR with special focus on Gorbachev.
5. Arab Spring
6. Cover the negative as well as positive aspects of relationship between India and the following countries.

Focus on any one of the following (current updates should be highlighted):

- a) Relationship between India and Russia
- b) Relationship between India and China
- c) Relationship between India and Pakistan
- d) Relationship between India and Bangladesh
7. ASEAN
8. European Union and BREXIT
9. BRICS
10. SAARC
11. India's Nuclear Policy
12. United Nations with focus on India's candidature in Security Council.
13. UN Agencies – UNICEF, UNESCO, WHO
14. Pandemics: Covid 19- Its global impact (focus on worldwide cooperation and preparedness along with controversies (please collect newspaper clippings for the same)
15. Partition of India-Theory behind it and its legacy
16. Comparison between NITI AAYOG and Planning Commission and their contribution in India's Development.
17. Election 2019- Rise of BJP and Downfall of Congress (1989-2019).

18. Imposition of Emergency in India

19. NDA III and NDA IV – Social and Economic welfare programmes.

***Learn chapters of book Contemporary World Politics (1to7) and complete notes and prepare for U.T.**

PSYCHOLOGY

Q.1) What is more Important IQ or EQ? Comment .

Q.2) Activity ‘Understanding the self’ with the help of Chapter-2

Activity 2.1

- Write down the personality-related terms
- If you were asked to change one aspect of your personality. What would you like to change and why? If not, why? Which aspect of your personality would you never want to change? Write in about 100-150 word.

Q.3) Pedagogical hints of Chapter-2 Page NO.-49

Q.4) Activity- 4.1 , 4.2 , 4.3 and pedagogical hints of chapter-4

Q.5) Prepare Case Profile (Hard copy as well as presentation) using assessment methods like psychological test, interviews, case study and report narration. Observe and interview three persons in your neighborhood to check how they differ from each other in terms of psychological attributes. Cover all five domains i.e. intelligence, personality, aptitude, interest and values .

- Prepare a psychological profile of each person and compare the result.

Q.6) Learn and write chapter-1 and 2 from NCERT book.

Unit Test syllabus: chapter 1 and 2

GEOGRAPHY

A. Activity: Prepare a report on the following-:

- i. Have someone in your family migrated? Write about his/her place of destination. What made her/ him to migrate?
- ii. Write a brief report on the different types of Settlements with pictures.

B. Make a list of the 10 most corrupt countries and 10 least corrupt countries. Compare their scores on the human development index. What inferences can you draw?

C. Visit a nearby village and observe the cultivation of some crops. Ask the farmers and make a list of various operations with beautiful pictures.

D. Prepare the following chapters or UNIT-TEST:

FUNDAMENTAL OF HUMAN GEOGRAPHY:

Ch. 1 Human Geography

Ch. 2 The world population density distribution and growth

Ch. 3 Human development

INDIA: PEOPLE AND ECONOMY-:

Ch. 2 Human Settlements

Ch. 3 Land Resources and Agriculture

HISTORY

1. Revise chapters done so far unit test (Chapter 1st and 2nd)

2. Prepare a hand written project report on any one of the topics given below:

Only one project is to be done in a session.

- i. Town planning and artefacts of Harappan civilization
- ii. Understanding the Bhakti & Sufi Movement
- iii. Mahabharata, through a readers eye
- iv. Mughal Paintings
- v. The Sanchi and Amravati stupa
- vi. Monuments of Delhi
- vii. An imperial capital Vijaynagar
- viii. Mahatma Gandhi-A legendary soul
- ix. Jainism and Buddhism x. Divine Apostle of Guru Nanak Dev
- xi. Help, humanity and sacrifices during partition
- xii. The process behind the framing of Indian constitution

GENERAL INSTRUCTIONS:

1. The project should be strictly as per guidelines of C.B.S.E.

2. The project should be handwritten, done on A4 size sheet.

The total length of the project should not be less than 25-30 pages.

3. It should consist of pictures, maps, Color illustrations, relevant newspaper clippings, maps, charts may be hand drawn or printed (if it is relevant for any aspect of your project) are welcome. acknowledgement and Bibliography

- 5 . Students must prepare individual project as it is not a group activity.
6. The projects must be neat and well-presented and must be completely hand-written.
- 7 No correction pen to be used or written matter to be crossed out. In case of any mistakes, redo the sheet.
8. Pictures should be labelled.
9. Introductory page should include picture and name

Applied Mathematics

- Prepare yourself for Unit Test
Unit-1 Numbers, Quantification and Numerical Applications
Unit-2 Algebra
Unit-3A (Differentiation & Applications of Differentiation)
- Make mind map of each topic given below : Quantification and Numerical Applications, Matrices & Determinants , Differentiation & Applications of Differentiation

Project Work: Do any one of the following projects

- Prepare a questionnaire to collect information about money spent by your friends in a month on activities like travelling, movies, recharging of the mobiles, etc. (at least 20 items). And draw interesting conclusions.
- Each day newspaper tells us about the maximum temperature, minimum temperature, and humidity. Collect the data of June 2025 and represent it graphically. Compare it with the data of June 2024, draw conclusion and what small steps should be taken by citizens to stop this climate change.
- Visit Kirana shops near your home and collect the data regarding the sales of certain commodities over a month. Try to figure out the stock of a particular commodity which should be in the store in order to maximize the profit.
- Unlocking the Secrets of Matrices and Determinants: Applications in the Real World
 - 1: Introduction to matrices and determinants, including their definitions and properties. Explanation of how matrices and determinants are used in various fields, such as engineering, computer science, physics, and economics.
 - 2: Demonstration of basic matrix operations, such as addition, subtraction, multiplication, and inverse. Examples of how these operations can be used to solve systems of linear equations.
 - 3: Explanation of determinants and how to calculate them. Examples of how determinants can be used to determine if a matrix is invertible, find the area of a parallelogram or volume of a parallelepiped, and solve systems of linear equations.

4: Research on real-world applications of matrices and determinants in fields such as computer graphics, cryptography, optimization, and data analysis.

5: Conclusion summarizing the key concepts and applications of matrices and determinants. How this project did deepened your understanding of these topics and their practical application?

Points to Remember while making Project: -

- The project should consist of 15- 20 pages with proper and relevant information.
- Be as creative and innovative as you can in doing your project.
- The project should be handwritten.
- The work has to be done on A4 size sheets.
- Paste the relevant pictures and draw the graph to make the project attractive.
- The project should be maintained in a neat File.

Economics

- 1) Revise Ch. 1 to 7 of Macroeconomics from textbook and class notes.
- 2) Do NCERT questions in fair notebook.
- 3) Write a Report on following policies of Government
 - a) Jan Dhan Yojana
 - b) Ujjwala Yojana
 - c) Demonitization
 - d) GST
 - e) Ayushman Bharat
- 4) Collect data of important aspects of Government budget 2025-26.
- 5) Make a poster on 'Strategies for Sustainable Development.'

ELECTIVE MATHEMATICS

Relations & Functions

1. Let N be the set of natural numbers and the function $f: N \rightarrow N$ be defined by $f(n) = 2n + 3 \forall n \in N$.
Then f is
 - [a] surjective
 - [b] injective
 - [c] bijective
 - [d] none of these
2. Set A has 3 elements and the set B has 4 elements. Then the number of injective mappings that can be defined from A to B is
 - [a] 144
 - [b] 12
 - [c] 24
 - [d] 64

3. The number of relations $R : A \rightarrow B$, where $A=\{a,b,c\}$ and $B=\{e,f\}$ is :
- [a] 48 [b] 16 [c] 32 [d] 64
4. Let $A = \{a,b,c,d\}$ and $R=\{(a,c), (c,a), (a,a)\}$ be a relation on A , then R is :
- [a] Symmetric and transitive [b] Reflexive and transitive
[c] Symmetric only [d] Transitive only
5. Two finite sets A and B have n and 2 elements respectively. The total number of relations from A to B is 56 more than number of functions from A to B , then the value of n is
- [a] 7 [b] 9 [c] 8 [d] 3
6. For real numbers x and y , define xRy if and only if $x - y + \sqrt{2}$ is an irrational number. Then the relation R is
- [a] reflexive [b] symmetric [c] transitive [d] none of these
7. Let $f : \mathbb{N} \rightarrow \mathbb{N}$ be defined as $f(x) = x^2$. Which one is true.
- [a] f is one-one onto [b] f is many one onto
[c] f is one but not onto [d] f is neither one-one nor onto
8. A relation R in $S = \{(1,1), (1,3), (2,2), (3,3)\}$. Which element(s) of relation R be removed to make R an equivalent relation?
- [a] (1,1) [b] (1,3) [c] (2,2) [d] (3,3)
9. If R is a relation of set $A=\{1,2,3\}$ given by $R=\{(1,1),(2,2), (1,3)\}$, then R is
- [a] Reflexive [b] Symmetric [c] Transitive [d] both a and b
10. If R is a relation of set $A=\{1,2,3\}$ given by $R=\{(1,1),(2,2), (3,3)\}$, then R is
- [a] Reflexive [b] Symmetric [c] Transitive [d] Equivalence
11. If R is a relation of set $A=\{1,2,3\}$ given by $R=\{(1,1),(1,2), (2,1)\}$, then R is
- [a] Reflexive [b] Symmetric [c] Transitive [d] Equivalence
12. If $A = \{1,2,3\}$, then which of the following relations are equivalence relation on A ?
- [a] $\{(1,1),(2,2),(3,3)\}$ [b] $\{(1,1),(2,2),(3,3),(1,2), (2,1)\}$
[c] $\{(1,1),(2,2),(3,3),(2,3),(3,2)\}$ [d] $\{(1,1),(2,2),(3,3),(1,3),(3,1),(2,3)\}$
13. If R is a relation of set $A=\{1,2,3\}$ given by $R=\{(1,3)\}$, then R is
- [a] Reflexive [b] Symmetric [c] Transitive [d] both a and b
14. If R is a relation of set $A=\{1,2,3\}$ given by $R=\{(1,1),(2,2),(3,3),(1,2), (2,3),(1,3)\}$, then R is
- [a] Reflexive but not symmetric [b] symmetric but not transitive
[c] symmetric and Transitive [d] neither symmetric nor transitive
- [a] A is false and R is true.
[b] A is true and R is false.
[c] Both A and R are true and R is the correct explanation of A .
[d] Both A and R are true but R is not the correct explanation of A .

1. Assertion : The number of reflexive relations on the set $A = \{a, b, c, d\}$ is 2^{12} .

Reason : The number of reflexive relations on a set having n elements is $2^{n(n-1)}$.

2. Assertion : If two sets A and B contain 4 and 6 elements respectively, then ${}^6C_4 \times 4!$ one-one functions can be defined from A to B .

Reason : A one-one function from X to Y relates different elements from set X to different elements of set Y .

3. Assertion : Let X and Y be two finite sets having m and n elements respectively. Then the number of functions from X to Y is n^m .

Reason : Every function from set M to set N is a subset of $M \times N$.

Inverse Trigonometric Functions

1. Which of the following corresponds to the principal value branch of \tan^{-1} ?

- [a] $(-\pi/2, \pi/2)$ [b] $[-\pi/2, \pi/2]$ [c] $(-\pi/2, \pi/2) - \{0\}$ [d] $(0, \pi)$

2. The principal value branch of \sec^{-1} is

- [a] $[-\pi/2, \pi/2] - \{0\}$ [b] $[0, \pi] - \{\pi/2\}$ [c] $(0, \pi)$ [d] $(-\pi/2, \pi/2)$

3. One branch of \cos^{-1} other than the principal value branch corresponds to

- [a] $[\pi/2, 3\pi/2]$ [b] $[\pi, 2\pi] - \{3\pi/2\}$ [c] $(0, \pi)$ [d] $[2\pi, 3\pi]$

4. The value of $\sin^{-1} \cos(43\pi/5)$

- [a] $3\pi/5$ [b] $-7\pi/5$ [c] $\pi/10$ [d] $-\pi/10$

5. If $3\tan^{-1} x + \cot^{-1} x = \pi$, then x equals

- [a] 0 [b] 1 [c] -1 [d] $1/2$

6. The domain of the $f(x) = \sin^{-1}(2x-5)$ is :

- [a] (2,3) [b] [2,3] [c] {2,3} [d] [2,3]

7. The value of the expression $\tan\left(\frac{1}{2}\cos^{-1}\frac{2}{\sqrt{5}}\right)$

- [a] $2+\sqrt{5}$ [b] $\sqrt{5}-2$ [c] $\frac{\sqrt{5}+2}{2}$ [d] $5+\sqrt{2}$

8. If $\sin^{-1} x = \cos^{-1} y$, then $\operatorname{cosec}^{-1} \frac{1}{x} + \operatorname{cosec}^{-1} \frac{1}{y}$ equals to :

- [a] π [b] $\frac{\pi}{2}$ [c] $\frac{\pi}{6}$ [d] $\frac{-\pi}{6}$

9. The value of $\left[\tan\left(\frac{\pi}{2} - \cos^{-1}\frac{3}{5}\right)\right]^2$

- [a] $16/25$ [b] $9/16$ [c] $9/25$ [d] $16/9$

10. The value of $\tan^2(\sec^{-1}5) + \cot^2(\operatorname{cosec}^{-1}3)$ is

- [a] 35 [b] 34 [c] 32 [d] 36

11. If $5\tan^{-1} x + \cot^{-1} x = 7\pi/6$, then x equals

- [a] $\sqrt{3}$ [b] $1/\sqrt{3}$ [c] -1 [d] $1/2$

12. The value of $\left[1 + \operatorname{cosec}\left(\tan^{-1}\frac{3}{4}\right)\right]^2$
 [a] 9/64 [b] 64/9 [c] 81/16 [d] 16/81
13. $\tan^{-1}\left(\frac{1}{7}\right) + \tan^{-1}\left(\frac{1}{9}\right) =$
 [a] $\tan^{-1}\left(\frac{12}{93}\right)$ [b] $\tan^{-1}\left(\frac{31}{4}\right)$ [c] $\tan^{-1}\left(\frac{4}{33}\right)$ [d] $\tan^{-1}\left(\frac{8}{31}\right)$
14. If $\cos(\tan^{-1}3/4 + \cot^{-1}x) = 0$, then the value of x is
 [a] 1/5 [b] 3/4 [c] 3/5 [d] 1
15. The value of the expression $\sin\left(\frac{1}{2}\cos^{-1}\frac{8}{9}\right)$
 [a] $1/3\sqrt{2}$ [b] $3\sqrt{2}$ [c] $\frac{\sqrt{3}+2}{2}$ [d] $3+\sqrt{2}$
16. If $\tan^{-1}(x) - \cot^{-1}(x) = \tan^{-1}(1/\sqrt{3})$, then the value of $\sec(2/x)$ is equal to :
 [a] $\pi/6$ [b] $-\pi/4$ [c] $-\pi/6$ [d] $2\pi/3$
17. If $3\tan^{-1}x + \cot^{-1}x = \pi$, then x equals
 [a] 0 [b] 1 [c] -1 [d] $1/2$
18. The principal value of $2\cos^{-1}\left(\frac{1}{2}\right) - 3\sin^{-1}\left(\frac{1}{2}\right) + 3\tan^{-1}\left(\frac{-1}{\sqrt{3}}\right)$
 [a] $\frac{2\pi}{3}$ [b] $\frac{\pi}{6}$ [c] $-\frac{\pi}{3}$ [d] $-\frac{\pi}{6}$
19. The value of $\tan\left(\frac{\pi}{4} - 2\tan^{-1}\frac{1}{2}\right)$
 [a] 7 [b] 1/7 [c] -1/7 [d] -7
20. If $\cot^{-1}(x) + 2\tan^{-1}\left(\frac{3}{5}\right) = \frac{\pi}{2}$, then the value of x
 [a] 15/8 [b] 8/15 [c] 7/18 [d] 18/7

- (a) Both A and R are true and R is the correct explanation of A.
 (b) Both A and R are true but R is not the correct explanation of A.
 (c) Both A and R are false.
 (d) Both A and R are true

1. Assertion : If $\tan^{-1}m = x$, then $\cos 2x = \frac{1-m^2}{1+m^2}$.
 Reason : $2\tan^{-1}x = \cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)$
2. Assertion : The value of $\sin^{-1}\left[\sin\frac{43\pi}{5}\right] = \frac{3\pi}{5}$
 Reason : The domain of $\sin^{-1}x$ is $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$
3. Assertion : If $3\tan^{-1}x + \cot^{-1}x = \pi$, then the value of x=1
 Reason : $\tan^{-1}x + \cot^{-1}x = \pi/2$

4. Assertion : If $\sin^{-1}x + \cos^{-1}y = 4\pi/5$, then the value of $\cos^{-1}x + \sin^{-1}y = \pi/5$
Reason : $\sin^{-1}x + \cos^{-1}y = \pi/2$.

Matrix & Determinant

1. If $A = \begin{bmatrix} 3 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 3 \end{bmatrix}$, then $|\text{adj}A|$ is equal to :
[a] 81 [b] 243 [c] 729 [d] 27
2. If number of elements in a matrix is 60 then how many different order of matrix are possible.
[a] 12 [b] 6 [c] 24 [d] none of these
3. If $A = \begin{bmatrix} x & 3 & 4 \\ 5 & y & 3 \\ 2 & 2 & z \end{bmatrix}$, $xyz=62$, $6x+8y+15z=80$ and $A(\text{adj}.A)=kI$, then $k =$.
[a] 81 [b] 40 [c] 64 [d] 72
4. If $A = \begin{bmatrix} 1 & -5 & 8 \\ 0 & 2 & 7 \\ 0 & 0 & 2 \end{bmatrix}$, then $|\text{adj}A|$ is equal to :
[a] 256 [b] 64 [c] 16 [d] 32
5. If $A = \begin{bmatrix} 1 & -1 & 1 \\ 2 & 1 & -3 \\ 1 & 1 & 1 \end{bmatrix}$ and $10B = \begin{bmatrix} 4 & 2 & 2 \\ -5 & 0 & a \\ 1 & -2 & 3 \end{bmatrix}$ where $B=A^{-1}$, then a is equal to :
[a] 2 [b] -1 [c] -2 [d] 5
6. Let $A = \begin{bmatrix} 5 & 5a & a \\ 0 & a & 5a \\ 0 & 0 & 5 \end{bmatrix}$, if $|A^2|=25$ then $|a|$ is equal to :
[a] 5 [b] 25 [c] 1 [d] 1/5
7. If $\begin{bmatrix} 0 & 2q & r \\ p & q & -r \\ p & -q & r \end{bmatrix}$ is orthogonal, then the value of p, q and r is :
[a] $p = \pm \frac{1}{\sqrt{2}}, q = \pm \frac{1}{\sqrt{6}}, r = \pm \frac{1}{\sqrt{3}}$ [b] $p = \pm \frac{1}{\sqrt{6}}, q = \pm \frac{1}{\sqrt{2}}, r = \pm \frac{1}{\sqrt{3}}$
[c] $p = \pm \frac{1}{\sqrt{3}}, q = \pm \frac{1}{\sqrt{6}}, r = \pm \frac{1}{\sqrt{2}}$ [d] $p = \pm \frac{1}{\sqrt{2}}, q = \pm \frac{1}{\sqrt{3}}, r = \pm \frac{1}{\sqrt{6}}$
8. If $A = \begin{bmatrix} 2 & 0 & 0 \\ 2 & 2 & 0 \\ 2 & 2 & 2 \end{bmatrix}$, then $\text{adj}(\text{adj}A)$ is equal to : [Note : $\text{adj}(\text{adj}A) = |A|^{n-2}.A$]
[a] $6 \begin{bmatrix} 2 & 0 & 0 \\ 2 & 2 & 0 \\ 2 & 2 & 2 \end{bmatrix}$ [b] $16 \begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix}$ [c] $\begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix}$ [d] $8 \begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix}$
9. If $A^2=A$, then $(I+A)^4$ is equal to :
[a] $I+A$ [b] $I+4A$ [c] $I+15A$ [d] $I+19A$
10. Matrix A has x rows and $(x+5)$ columns. Matrix B has y rows and $(11-y)$ columns. Both AB and BA exist,

then :

- [a] $x=3, y=4$ [b] $x=4, y=3$ [c] $x=3, y=8$ [d] $x=8, y=3$

11. Using determinants, the value of x if the points $(5,5), (-k,1)$ and $(10,7)$ are collinear.

- [a] 4 [b] -4 [c] 5 [d] -5

12. Using determinants, the value of x if the area of triangle $A(-3,1), B(2,x), C(5,1)$ is 20 units².

- [a] -4 [b] 5 [c] 6 [d] 7

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

- [a] I [b] A [c] $-A$ [d] $3A$

14. If $A = [a_{ij}]_{m \times n}$ is a square matrix, if

- [a] $m < n$ [b] $m > n$ [c] $m = n$ [d] none of these

15. The number of all possible matrices of order 3×3 with each entry 2 and 3 is :

- [a] 27 [b] 18 [c] 81 [d] 512

16. Given that A is a non-singular matrix of order 3 such that $A^2=2A$, then the value of $|2A|$ is

- [a] 4 [b] 8 [c] 16 [d] 64

17. If $[3 \ 7] \begin{bmatrix} 1 & -2 \\ -2 & x \end{bmatrix} \begin{bmatrix} -1 \\ 2 \end{bmatrix} = [13]$, then the value of x is :

- [a] 0 [b] -1 [c] 1 [d] 2

18. If $\begin{bmatrix} 1 & 4 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} x & y^2 \\ z & 0 \end{bmatrix}$, $y < 0$ then the value of $x-y+z$ is :

- [a] 4 [b] 5 [c] 6 [d] 7

19. If $Y = \begin{bmatrix} 3 & 2 \\ 1 & 4 \end{bmatrix}$ and $2X+Y = \begin{bmatrix} 7 & 8 \\ -3 & 4 \end{bmatrix}$, then the value of matrix X is :

- [a] $\begin{bmatrix} 4 & 6 \\ 4 & 0 \end{bmatrix}$ [b] $\begin{bmatrix} 2 & -3 \\ -2 & 2 \end{bmatrix}$ [c] $\begin{bmatrix} 2 & 3 \\ 2 & 0 \end{bmatrix}$ [d] $\begin{bmatrix} 2 & 3 \\ -2 & 0 \end{bmatrix}$

20. If $A = [a_{ij}]_{2 \times 2}$ where $a_{ij} = i + j$, then A is equal to :

- [a] $\begin{bmatrix} 4 & 6 \\ 4 & 0 \end{bmatrix}$ [b] $\begin{bmatrix} 2 & 3 \\ 3 & 4 \end{bmatrix}$ [c] $\begin{bmatrix} 2 & 3 \\ 3 & 0 \end{bmatrix}$ [d] $\begin{bmatrix} 2 & 3 \\ -3 & 4 \end{bmatrix}$

21. Sum of two skew symmetric matrices is always :

- [a] symmetric [b] diagonal [c] Identity [d] skew symmetric

22. If A and B are symmetric matrices of same order then $(AB-BA)$ is :

- [a] symmetric [b] diagonal [c] Identity [d] skew symmetric

23. If $A = \begin{bmatrix} 5 & 7 \\ 4 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 3 \\ -2 & 5 \end{bmatrix}$, then $2A-B$ is :

- [a] $\begin{bmatrix} 9 & 11 \\ 10 & -1 \end{bmatrix}$ [b] $\begin{bmatrix} 3 & -5 \\ 8 & -1 \end{bmatrix}$ [c] $\begin{bmatrix} 9 & -11 \\ 10 & -1 \end{bmatrix}$ [d] $\begin{bmatrix} 3 & 8 \\ 5 & -1 \end{bmatrix}$

24. If A is a matrix of order 3×2 and B is the matrix of order 4×3 , then the order of matrix BA is

- [a] 2×4 [b] 4×2 [c] 4×3 [d] 2×3

25. If $X = \begin{bmatrix} 3 & 2 \\ 3 & 4 \end{bmatrix}$ and $Y = \begin{bmatrix} 1 & 2 \\ 3 & 0 \end{bmatrix}$, then the value of matrix $X - 2Y$ is :

[a] $\begin{bmatrix} 4 & 10 \\ -4 & 8 \end{bmatrix}$ [b] $\begin{bmatrix} 1 & -2 \\ -3 & 4 \end{bmatrix}$ [c] $\begin{bmatrix} 4 & 2 \\ 5 & 10 \end{bmatrix}$ [d] $\begin{bmatrix} 4 & -2 \\ 5 & 10 \end{bmatrix}$

26. If $X = \begin{bmatrix} 4 & -9 \\ -3 & 13 \end{bmatrix}$ and $Y = \begin{bmatrix} -1 & 3 \\ 1 & -4 \end{bmatrix}$, then the value of matrix $X + 3Y$ is :

[a] $\begin{bmatrix} 1 & 12 \\ 5 & -11 \end{bmatrix}$ [b] $\begin{bmatrix} 4 & 9 \\ 4 & 8 \end{bmatrix}$ [c] $\begin{bmatrix} 1 & 12 \\ 5 & 11 \end{bmatrix}$ [d] $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

27. The value of determinant $A = \begin{vmatrix} 3 & -1 & -2 \\ 0 & 0 & -1 \\ 3 & -5 & 0 \end{vmatrix}$ is

[a] 12 [b] 13 [c] -12 [d] -13

28. If $\Delta = \begin{vmatrix} 3 & -2 & 2 \\ 2 & 3 & 3 \\ 3 & 2 & 2 \end{vmatrix}$, then the value of $a_{21}A_{31} + a_{22}A_{32} + a_{23}A_{33}$ is

[a] -1 [b] 0 [c] 2 [d] 1

(a) Both A and R are true and R is the correct explanation of A.

(b) A is true but R is false.

(c) Both A and R are false.

(d) A is false and R is true

29. Assertion (A) : Matrix $\begin{bmatrix} 0 & 3 & 2 \\ -3 & 0 & -5 \\ -2 & 5 & 0 \end{bmatrix}$ is a skew symmetric matrix.

Reason (R) : A matrix is skew symmetric if $A' = -A$

30. Assertion (A) : If $\begin{bmatrix} x + y + z \\ x + z \\ y + z \end{bmatrix} = \begin{bmatrix} 12 \\ 7 \\ 8 \end{bmatrix}$, then the value of $x = 4$, $y = 5$ and $z = 3$

Reason (R) : Two matrices A and B are said to be defined for multiplication. If the number of rows of A (pre-multiplier) is equal to the number of rows of B (post-multiplier).

Case Study

1. Sohan wants to donate a rectangular plot of land for school in his village. When he was asked to give the dimensions of the plot, he told that if its length is decreased by 50m and breadth is increased by 50m, then its area will remain the same, but if length is decreased by 10m and breadth is decreased by 20m, then its area will be decreased by 5300m^2 .

Based on the given information, answer the following questions :

[i] The equations representing the dimensions of the plot in terms of x and y are :

[a] $x - y = 50$, $2x - y = 550$ [b] $x - y = 50$, $2x + y = 550$

[c] $x + y = 50$, $2x + y = 550$ [d] $x + y = 50$, $2x - y = 550$

[ii] Which of the following matrix equation is represented by the given information.

[a] $\begin{bmatrix} 1 & -1 \\ 2 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 50 \\ 550 \end{bmatrix}$ [b] $\begin{bmatrix} 1 & -1 \\ 2 & -1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 50 \\ 550 \end{bmatrix}$

$$[c] \begin{bmatrix} 1 & 1 \\ 2 & -1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 50 \\ 550 \end{bmatrix} \quad [d] \begin{bmatrix} 1 & 1 \\ 2 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 50 \\ 550 \end{bmatrix}$$

[iii] The value of x (length of rectangular field) is

- [a] 150m [b] 400m [c] 200m [d] 320m

[iv] The value of x (breadth of rectangular field) is

- [a] 150m [b] 430m [c] 200m [d] 350m

[v] How much is the area of the rectangular field?

- [a] 60000m² [b] 30000m² [c] 20000m² [d] 15000m²

2. A school wants to award its students for the values of honesty, regularity and hard work with a total cash award of Rs. 6000. Three times the award money for hard work added to that given for honesty amounts to Rs. 11000. The award money given for honesty and hard work together is double the one given for regularity.

Based on the above information, answer the following questions :

[i] If Rs. x awarded to honesty , Rs. y to regularity and Rs. z awarded to hard work, then write the matrix equation representing the above situation.

[ii] If A is coefficient matrix, then find the value of $|\text{adj. } A|$.

[iii] Find the value of A^{-1}

[iv] The value of x, y and z.

3. A school organized 100m race under two different categories on the sports day. There are 40 students in all. Among all of them, finally five from category I and six from category II were selected for the final race. Kavi forms two sets A and B with these participants. Let $A = \{1,2,3,4,5\}$ and $B = \{1,2,3,4,5,6\}$.



Based on the above information, answer the following questions.

[i] How many relations from set A to B?

[ii] If $R = \{(x,y) : x \in A \text{ and } y \in B \text{ such that } 2x - y = 0\}$. Write all the elements of relation R.

[iii] If $R = \{(x,y) : x \in A \text{ and } y \in B \text{ such that } y = x + 1\}$. Is the given relation Reflexive, symmetric and transitive?

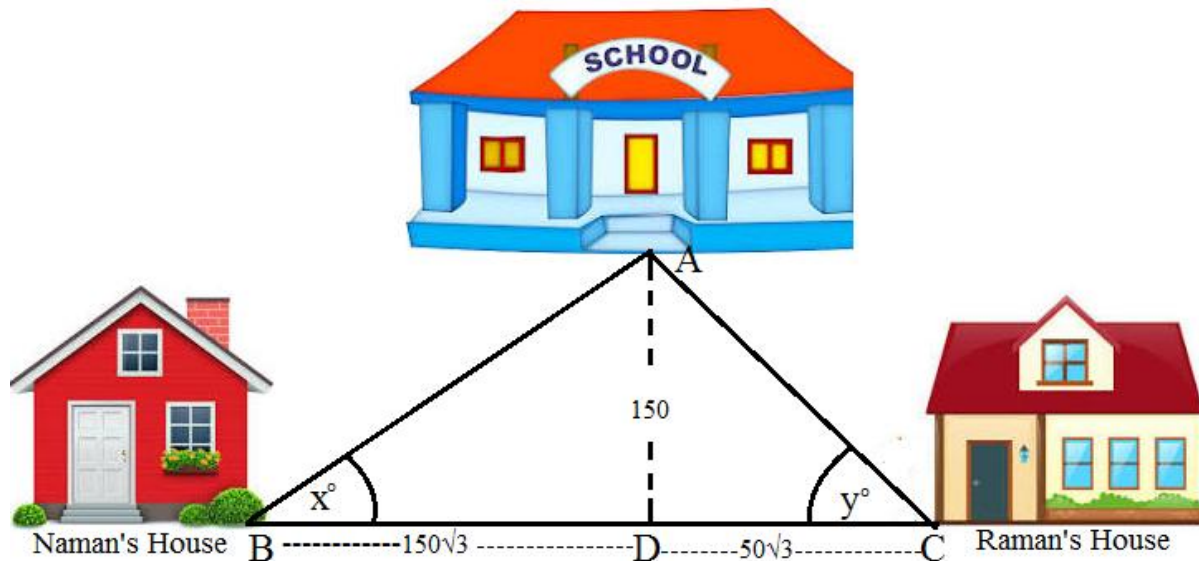
OR

[iii] Show that the function $f: R - \{3/5\} \rightarrow R - \{7/5\}$ defined by $f(x) = \frac{7x+4}{5x-3}$ is one-one and onto

4. Naman's and Raman's house is situated at the bottom of a hill and their school is situated at the top of

the hill. The distance between both houses is $200\sqrt{3}$ m. The height of the school from the ground is 150m. The angle of elevation from Naman's house at the school is observed as x° and from Raman's house is y° .

Based on the above information, answer the following.



[i] Find $\angle CBA$.

[ii] Find $\angle CAD$

[iii] Evaluate : $\tan^{-1} \left\{ \frac{\sqrt{3}}{2} \operatorname{cosec} \left(2 \cos^{-1} \frac{\sqrt{3}}{2} \right) \right\}$

OR

[iii] Write in the simplest form: $\tan^{-1} \left(\frac{\cos x}{1 - \sin x} \right), -\frac{\pi}{2} < x < \frac{\pi}{2}$

Activities :

1. To verify that the relation R in the set of L of all lines in a plane, defined by $R = \{(l, m) : l \text{ is parallel to } m\}$ is an equivalence relation.
2. To demonstrate different types of functions.
3. Draw the graph of $\cot^{-1}x$ and $\sec^{-1}x$

Syllabus of UT (July)

1. Relations & Functions
2. Inverse Trigonometric Functions
3. Matrix
4. Determinants
- 5.

Physical Education

1. Revise chapters 1, 2, 3 for UNIT TEST.
2. Make a project file on yoga and management of sporting events.

Music

Revise syllabus for Unit Test:- Unit 1, 2 and 4

Q 1. Make one composition in Ektala or in Jhaptala.

Q 2. Make a video of any classical or semi classical song, and send video through whatsapp on 9416726190.

Q 3. Make a composition of Raga Bhairav with following words-

प्रभुवर हमारे मन को , भक्ति का दान देना,

सबके मैं काम आऊँ, बुद्धि का दान देना |

जीवन में मेरे दाता, तेरा ही नाम गाऊं,

तुम्हें छोड़ कर मैं दाता, कहीं और कैसे जाऊं |

सुख में तुझे न भूलूँ, शक्ति का दान देना |

Painting (049)

Unit 1 & 2 for unit test

- 10 sheets of Nature Painting ,
- 10 sheets of still life , 5 coloured and 5 shading (A3 size)