EAMCET MATHS FORMULAE WITH EXAMPLES Manual

eamcet maths formulae with examples

EAMCET (Engineering Agriculture and Medical Common Entrance Test) is a significant examination conducted in various states of India, especially Andhra Pradesh and Telangana. It primarily assesses candidates' proficiency in physics, chemistry, and mathematics. A strong grasp of mathematical formulae is crucial for securing a good score in the mathematics section of the exam. This article provides a comprehensive overview of essential EAMCET maths formulae, accompanied by relevant examples to facilitate better understanding and application.

Essential Mathematics Formulae for EAMCET

Understanding core formulae is vital for solving problems efficiently. Below, we categorize the key formulae into different topics commonly encountered in the EAMCET mathematics syllabus.

1. Number Systems and Polynomials

- Laws of Exponents:
- $a^m \times a^n = a^{m+n}$
- $\frac{a^m}{a^n} = a^{m-n}$ (for $a \neq 0$)
- $(a^m)^n = a^{mn}$

- Quadratic Equations:
- Standard form: $ax^2 + bx + c = 0$
- Sum of roots: $\alpha + \beta = -\frac{b}{a}$
- Product of roots: $\alpha \beta = \frac{c}{a}$

Example:

Find the roots of $2x^2 - 4x - 6 = 0$.

Solution:

Sum of roots = $\frac{4}{2} = 2$

Product of roots = $\frac{-6}{2} = -3$

Roots are α, β satisfying:

$\alpha + \beta = 2$ and $\alpha \beta = -3$

2. Arithmetic Progression (AP)

- $a_n = a + (n-1)d$? nth term
- Sum of first n terms: $S_n = \frac{n}{2} [2a + (n-1)d]$
- Common difference: $d = a_{n} - a_{n-1}$

Example:

Find the sum of the first 10 terms of the AP: 3, 7, 11, ...

Solution:

First term $a = 3$

Common difference $d = 4$

Sum $S_{10} = \frac{10}{2} [2 \times 3 + (10-1) \times 4] = 5 [6 + 36] = 5 \times 42 = 210$

3. Geometric Progression (GP)

- $a_n = ar^{n-1}$? nth term
- Sum of first n terms: $S_n = a \frac{r^n - 1}{r - 1}$, $r \neq 1$
- Infinite sum (if $|r|$

Example:

Find the sum of the first 5 terms of GP: 2, 6, 18, ...

Solution:

$a = 2$, $r = 3$

$S_5 = 2 \frac{3^5 - 1}{3 - 1} = 2 \times \frac{243 - 1}{2} = 2 \times 121 = 242$

4. Coordinate Geometry

- Distance between points (x_1, y_1) and (x_2, y_2):

$$
d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}
$$

- Midpoint:

$$
M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)
$$

- Slope of the line through two points:

$$
m = \frac{y_2 - y_1}{x_2 - x_1}
$$

Example:

Calculate the distance between points $(1, 2)$ and $(4, 6)$.

Solution:

$$
d = \sqrt{(4 - 1)^2 + (6 - 2)^2} = \sqrt{3^2 + 4^2} = \sqrt{9 + 16} = \sqrt{25} = 5
$$

5. Trigonometry

- Basic identities:
- $\sin^2 \theta + \cos^2 \theta = 1$
- $1 + \tan^2 \theta = \sec^2 \theta$
- $1 + \cot^2 \theta = \csc^2 \theta$

- Sum and difference formulas:
- $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$
- $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$

- Double angle formulas:
- $\sin 2A = 2 \sin A \cos A$
- $\cos 2A = \cos^2 A - \sin^2 A$

Example:

Evaluate $\sin 75^\circ$ using known angle formulas.

Solution:

$\sin 75^\circ = \sin (45^\circ + 30^\circ) = \sin 45^\circ \cos 30^\circ + \cos 45^\circ \sin 30^\circ = \frac{\sqrt{2}}{2} \times \frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2} \times \frac{1}{2} = \frac{\sqrt{6}}{4} + \frac{\sqrt{2}}{4} = \frac{\sqrt{6} + \sqrt{2}}{4}$

6. Mensuration

- Surface Area and Volume of Basic Solids:

Cube:

- Surface Area: $6a^2$
- Volume: a^3

Cuboid:

- Surface Area: $2(lb + bh + hl)$
- Volume: $l \times b \times h$

Cylinder:

- Surface Area: $2\pi r(h + r)$
- Volume: $\pi r^2 h$

Sphere:

- Surface Area: $4 \pi r^2$
- Volume: $\frac{4}{3} \pi r^3$

Cone:

- Surface Area: $\pi r (l + r)$
- Volume: $\frac{1}{3} \pi r^2 h$

Example:

Calculate the volume of a sphere with radius 7 cm.

Solution:

$$

V = \frac{4}{3} \pi r^3 = \frac{4}{3} \times \frac{22}{7} \times 7^3 = \frac{4}{3} \times \frac{22}{7} \times 343 = \frac{4 \times 22 \times 343}{3 \times 7} = \frac{4 \times 22 \times 343}{21}

$$

Simplify:

$$

= \frac{4 \times 22 \times 343}{21} = \frac{4 \times 22 \times 343}{21}

$$

Calculate numerator: $4 \times 22 = 88$,

then $88 \times 343 = 88 \times 343 = 30,184$

Divide by 21: $30,184 / 21 \approx 1437.33 \text{ cm}^3$

7. Sets and Probability

- Union of two sets:

$$
A \cup B = A + B - (A \cap B)
$$

- Probability of an event:

$$
P(E) = \frac{\text{Number of favorable outcomes}}{\text{Total outcomes}}
$$

Example:

In a deck of 52 cards, what is the probability of drawing a king or a queen?

Solution:

Number of kings = 4, number of queens = 4,

Total favorable outcomes = 4 + 4 = 8

Probability = $8/52 = 2/13$

Additional Tips for Using Formulae Effectively

- Memorize key formulae and practice applying them in various contexts.
- Learn to derive lesser-known formulae quickly to save time during exams.
- Use diagrams wherever possible for clarity and to identify the relevant formula.
- Practice solving previous years' question papers to familiarize yourself with common

EAMCET Maths Formulae with Examples: A Comprehensive Guide for Aspirants

In the realm of engineering and medical entrance examinations, EAMCET (Engineering Agricultural and Medical Common Entrance Test) holds a pivotal position for students aspiring to secure admission in various colleges across Andhra Pradesh and Telangana. Among the subjects tested, Mathematics often presents a significant challenge due to its diverse range of concepts and the extensive formulae involved. Mastery over these formulae is not merely about rote memorization but about understanding their applications and nuances, enabling aspirants to solve problems efficiently and accurately. This article aims to serve as a detailed, analytical resource that consolidates essential EAMCET Maths formulae, supplemented with illustrative examples, to empower students in their preparation journey.

Understanding the Importance of Maths Formulae in EAMCET

Mathematics in EAMCET is designed to assess logical reasoning, problem-solving skills, and conceptual clarity. The formulae act as the foundational tools that simplify complex problems into manageable calculations. A solid grasp of these formulae enhances speed and accuracy, which are crucial given the exam's time constraints. Moreover, recognizing the underlying patterns and relationships facilitated by formulas boosts confidence and minimizes errors.

Core Areas Covered in EAMCET Maths Formulae

EAMCET Maths syllabus broadly encompasses several topics, each with specific formulae. These include:

- Algebra
- Trigonometry
- Coordinate Geometry
- Geometry (Triangles, Circles)
- Mensuration
- Probability and Statistics
- Sequences and Series

Each section has unique formulae, which we will explore comprehensively below.

Algebra: Essential Formulae and Examples

Quadratic Equations

- Standard form: $ax^2 + bx + c = 0$
- Sum of roots (? + ?) = -b/a
- Product of roots (??) = c/a
- Discriminant (D) = $b^2 - 4ac$

Example:

Solve $x^2 - 5x + 6 = 0$

- Sum of roots = 5
- Product of roots = 6
- Roots: x = (5 ± ?(25 - 24))/2 = (5 ± 1)/2
- Roots: x = 3, 2

Arithmetic Progression (AP)

- nth term: a? = a + (n - 1)d
- Sum of first n terms: S? = n/2 [2a + (n - 1)d]

Example:

Find the 10th term of AP: 3, 7, 11, ...

- a = 3, d = 4
- a?? = 3 + (10 - 1)×4 = 3 + 36 = 39

Geometric Progression (GP)

- nth term: a? = a × r^(n-1)
- Sum of first n terms: S? = a(r^n - 1) / (r - 1), r ? 1

Example:

Find the sum of first 5 terms of GP: 2, 6, 18, ...

- a = 2, r = 3
- S? = 2(3^5 - 1)/(3 - 1) = 2(243 - 1)/2 = 2×242/2 = 242

Trigonometry: Key Formulae and Applications

Basic Identities

- $\sin^2? + \cos^2? = 1$
- $1 + \tan^2? = \sec^2?$
- $1 + \cot^2? = \csc^2?$

Sum and Difference Formulas

- sin(A ± B) = sinA cosB ± cosA sinB
- cos(A ± B) = cosA cosB ? sinA sinB
- tan(A ± B) = (tanA ± tanB) / (1 ? tanA tanB)

Example:

Calculate sin(75°) using sum formula:

- sin(75°) = sin(45° + 30°)
- = sin45° cos30° + cos45° sin30°
- = (?2/2) × (?3/2) + (?2/2) × (1/2)
- = (?6/4) + (?2/4) = (?6 + ?2)/4

Double Angle and Half Angle Formulae

- sin2? = 2 sin? cos?
- $\cos2? = \cos^2? - \sin^2? = 2\cos^2? - 1 = 1 - 2\sin^2?$
- $\tan2? = 2\tan? / (1 - \tan^2?)$

Example:

Find cos(2?) given sin? = 3/5 and ? in the first quadrant.

- cos? = ?(1 - sin²?) = ?(1 - 9/25) = ?(16/25) = 4/5
- cos(2?) = cos²? - sin²? = (4/5)² - (3/5)² = 16/25 - 9/25 = 7/25

Coordinate Geometry: Formulae and Applications

Distance Formula

- Distance between points (x?, y?) and (x?, y?):

d = ?[(x? - x?)² + (y? - y?)²]

Example:

Distance between (1, 2) and (4, 6):

d = ?[(4 - 1)² + (6 - 2)²] = ?(3² + 4²) = ?(9 + 16) = ?25 = 5

Midpoint Formula

- Midpoint of segment joining (x?, y?) and (x?, y?):

M = ((x? + x?)/2, (y? + y?)/2)

Example:

Midpoint of (2, 3) and (4, 7):

M = ((2 + 4)/2, (3 + 7)/2) = (3, 5)

Slope Formula

- Slope of line through (x?, y?) and (x?, y?):

m = (y? - y?) / (x? - x?)

Example:

Slope between (1, 2) and (3, 8):

m = (8 - 2) / (3 - 1) = 6/2 = 3

Geometry: Circles, Triangles, and Their Formulae

Circle Formulae

- Radius (r) from area: r = ?(A/?)
- Circumference: C = 2?r
- Area: A = ?r²
- Length of chord at a distance d from center:

l = 2?(r² - d²)

Example:

Find the length of a chord 4 units from the center of a circle with radius 5.

l = 2?(25 - 16) = 2?9 = 2×3 = 6

Triangle Formulae

- Area (Heron?s formula):

A = ?[s(s - a)(s - b)(s - c)]

where s = (a + b + c)/2 (semi-perimeter)

- Pythagoras theorem (for right-angled triangles):

c² = a² + b²

Example:

Sides of a triangle: 7, 24, 25

- Check if right-angled: $25^2 = 7^2 + 24^2$?
- 625 = 49 + 576 = 625 ? Yes, right-angled at the corner with sides 7 and 24.

Mensuration: Volume and Surface Area Formulae

Cube

- Volume: $V = a^3$
- Surface Area: $SA = 6a^2$

Cuboid

- Volume: $V = l \times b \times h$
- Surface Area: $SA = 2(lb + bh + hl)$

Sphere

- Volume: $V = (4/3)?r^3$
- Surface Area: $SA = 4?r^2$

Cylinder

- Volume: $V = ?r^2h$
- Surface Area: $SA = 2?r(h + r)$

Cone

- Volume: $V = (1/3)?r^2h$
- Surface Area: $SA = ?r(l + r)$, where l is the slant height

Example:

Calculate the volume of a sphere with radius 3 units.

$V = (4/3)?(3)^3 = (4$

QuestionAnswer What are the key Maths formulae to remember for EAMCET exams? Some essential Maths formulae include the quadratic formula, distance formula, midpoint formula, area and volume formulas for various shapes, and trigonometric identities like sin²? + cos²? = 1. Memorizing these helps solve problems efficiently during the exam. How is the quadratic formula derived and how can I use it with an example? The quadratic formula x = (-b ± ?(b² - 4ac)) / 2a is derived by completing the square for ax² + bx + c = 0. For example, for 2x² + 3x - 2 = 0, a=2, b=3, c=-2. Plugging in: x = (-3 ± ?(9 - 42(-2))) / 4 = (-3 ± ?(9 + 16)) / 4 = (-3 ± ?25) / 4. So, x = (-3 ± 5)/4, giving x= (2)/4=0.5 or x= (-8)/4=-2. What is the formula for the area of a triangle using Heron?s formula? Heron?s formula states that the area of a triangle with sides a, b, and c is ?[s(s - a)(s - b)(s - c)], where s = (a + b + c)/2 is the semi-perimeter. For example, if a=5, b=6, c=7, then s=9. Area=?[9(9-5)(9-6)(9-7)] = ?[9432] = ?[216] ? 14.7. How do I apply the distance formula with an example? The distance formula between two points (x?, y?) and (x?, y?) is ?[(x? - x?)² + (y? - y?)²]. For example, between (1, 2) and (4, 6): ?[(4 - 1)² + (6 - 2)²] = ?[3² + 4²] = ?[9 + 16] = ?25 = 5. What is the formula for the sum of an arithmetic series? The sum of the first n terms of an arithmetic series is S? = n/2 (2a + (n - 1)d), where a is the first term and d is the common difference. For example, sum of first 5 terms with a=2 and d=3: S?= 5/2 [22 + (5-1)3]= 2.5 [4 + 12]= 2.516=40. How do I use the sine rule with an example? The sine rule states that a/sin A = b/sin B = c/sin C. For example, in a triangle with sides a=7, b=9, and angle A=30°, to find angle B: b/sin B = a/sin A ? 9/ sin B = 7/ sin 30° ? 9/ sin B = 7/0.5 ? 9/ sin B = 14. Solving for sin B: sin B= 9/14 ? 0.643. Then, B ? sin?¹(0.643) ? 40°. What is the volume formula for a cylinder, and can you give an example? The volume of a cylinder is V = ?r²h, where r is radius and h is height. For example, if r=3 cm and h=10 cm, V= ?(3)²10= ?910= 90? ? 282.74 cubic centimeters. How can I remember the basic trigonometric identities for exams? Key identities include sin²? + cos²?=1, 1 + tan²?= sec²?, and 1 + cot²?= csc²?. Remembering these helps simplify problems involving trigonometric functions. For example, if sin ?=3/5, then cos ?=4/5, using the Pythagorean identity.

Related keywords: EAMCET, Maths formulas, Mathematics, Formula sheet, Example problems, Trigonometry formulas, Algebra formulas, Coordinate geometry, Geometry formulas, Quadratic equations

INTER FORMULAE FOR EAMCET

inter formulae for eamcet are essential tools for aspiring students aiming to excel in the Engineering, Agriculture, and Medical Common Entrance Test (EAMCET) conducted in states like Andhra Pradesh and Telangana. These formulae serve as the backbone for solving complex mathematical problems efficiently, enabling candidates to maximize their scores within the limited examination time. A thorough understanding of these inter formulae not only boosts problem-solving speed but also enhances conceptual clarity, which is vital for tackling both multiple-choice questions

and numerical problems. In this comprehensive guide, we delve into the key inter formulae across various topics relevant to EAMCET, providing students with a valuable resource to prepare effectively for the exam.

Understanding the Importance of Inter Formulae for EAMCET

Before exploring specific formulae, it?s important to understand why inter formulae are crucial for EAMCET preparation:

- Time Efficiency: Memorizing and applying inter formulae helps solve problems faster.
- Conceptual Clarity: They bridge different mathematical concepts, making complex problems easier.
- Accuracy: Reduces chances of errors during calculations.
- Exam Strategy: Enables quick approximation and estimation, useful for multiple-choice questions.

Key Topics Covered by Inter Formulae

The inter formulae are primarily applicable across the following mathematical topics:

- Algebra
- Geometry (Coordinate and Solid)
- Trigonometry
- Mensuration
- Calculus (Differentiation and Integration)
- Statistics and Probability

Below, we systematically cover the inter formulae relevant to each topic.

Algebra Inter Formulae for EAMCET

Algebra forms a significant portion of EAMCET questions, and mastering inter formulae here can simplify multiple problem types.

- Quadratic Equations

- Sum and Product of Roots:

If quadratic equation is $ax^2 + bx + c = 0$, then:

$$
\text{Sum of roots} \quad \alpha + \beta = -\frac{b}{a}
$$

$$
\text{Product of roots} \quad \alpha \beta = \frac{c}{a}
$$

- Factorization and Expansion Formulae

- $(a + b)^2 = a^2 + 2ab + b^2$
- $(a - b)^2 = a^2 - 2ab + b^2$
- $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
- $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

- Sequence and Series

- Sum of first n natural numbers: $\frac{n(n+1)}{2}$
- Sum of squares of first n natural numbers: $\frac{n(n+1)(2n+1)}{6}$
- Sum of cubes of first n natural numbers: $\left[\frac{n(n+1)}{2}\right]^2$

Geometry Inter Formulae for EAMCET

Geometry problems often involve coordinate geometry and solid geometry. Here are the key inter formulae.

- Coordinate Geometry

- Distance formula between two points (x_1, y_1) and (x_2, y_2):

$$
d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}
$$

- Midpoint formula:

$$
M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)
$$

- Section formula (Dividing a line segment):

For dividing in ratio $m:n$:

$$
\left(\frac{mx_2 + nx_1}{m + n}, \frac{my_2 + ny_1}{m + n}\right)
$$

- Circle and Sphere

- Equation of a circle with center (h, k) and radius r:

$$
(x - h)^2 + (y - k)^2 = r^2
$$

- Volume of sphere:

$$
V = \frac{4}{3} \pi r^3
$$

- Surface area of sphere:

$$
A = 4 \pi r^2
$$

Trigonometry Inter Formulae for EAMCET

Trigonometry is vital for solving problems involving angles and lengths.

- Basic Identities

- $\sin^2 \theta + \cos^2 \theta = 1$
- $1 + \tan^2 \theta = \sec^2 \theta$
- $1 + \cot^2 \theta = \csc^2 \theta$

- Sum and Difference Formulae

- $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$
- $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$
- $\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$

- Double Angle Formulae

- $\sin 2A = 2 \sin A \cos A$
- $\cos 2A = \cos^2 A - \sin^2 A = 2 \cos^2 A - 1 = 1 - 2 \sin^2 A$

- $\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$

Mensuration Inter Formulae for EAMCET

Mensuration involves calculating volumes and surface areas of 3D objects which are frequently tested.

- Cylinder

- Volume: $V = \pi r^2 h$
- Surface area: $A = 2 \pi r (r + h)$

- Cone

- Volume: $V = \frac{1}{3} \pi r^2 h$
- Surface area (slant height l): $A = \pi r (r + l)$

- Sphere

- Volume: $V = \frac{4}{3} \pi r^3$
- Surface area: $A = 4 \pi r^2$

- Cube and Cuboid

- Cube volume: a^3
- Cube surface area: $6a^2$
- Cuboid volume: $l \times b \times h$
- Cuboid surface area: $2(lb + bh + hl)$

Calculus Inter Formulae for EAMCET

Calculus questions, especially differentiation and integration, are essential for advanced problem-solving.

- Differentiation

- Power rule: $\frac{d}{dx} x^n = n x^{n-1}$
- Sum rule: $\frac{d}{dx} [u + v] = \frac{du}{dx} + \frac{dv}{dx}$
- Product rule: $\frac{d}{dx} [uv] = u \frac{dv}{dx} + v \frac{du}{dx}$
- Quotient rule: $\frac{d}{dx} \left[\frac{u}{v}\right] = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$
- Chain rule: $\frac{d}{dx} f(g(x)) = f'(g(x)) \times g'(x)$

- Integration

- $\int x^n dx = \frac{x^{n+1}}{n+1} + C$, for $n \neq -1$
- $\int e^x dx = e^x + C$
- $\int \frac{1}{x} dx = \ln |x| + C$
- $\int \sin x dx = -\cos x + C$
- $\int \cos x dx = \sin x + C$

Statistics and Probability Inter Formulae for EAMCET

Basic statistical measures and probability concepts are also tested.

- Basic Measures

- Mean: $\bar{x} = \frac{\sum x_i}{n}$
- Median: Middle value when data is ordered
- Mode: Most frequently occurring value
- Variance: $\sigma^2 = \frac{\sum (x_i - \bar{x})^2}{n}$
- Standard Deviation: $\sigma = \sqrt{\sigma^2}$

- Probability

- Probability of an event E: $P(E) = \frac{\text{Number of favorable outcomes}}{\text{Total outcomes}}$
- For independent events A and B:

\[

P(A \cap B) = P(A) \times P(B)

\]

\[

P(A \cup B) = P(A) + P(B) - P(A \cap B)

\]

Tips for Memorizing and Applying Inter Formulae

- Create Flashcards: Write each formula on a card for quick revision.

-

Inter Formulae for EAMCET: A Comprehensive Guide to Mastering the Exam

When it comes to excelling in the Engineering, Agriculture, and Medical Common Entrance Test (EAMCET), every aspiring student understands the importance of strategic preparation. At the heart of this strategy lies the mastery of inter formulae, which serve as the backbone for solving complex problems efficiently and accurately. These formulae are not mere mathematical expressions; they are the key to unlocking quick calculations, saving time during the exam, and boosting confidence. This article delves into the intricacies of inter formulae for EAMCET, offering an expert analysis of their application, significance, and methods to memorize and implement them effectively.

Understanding the Significance of Inter Formulae in EAMCET

EAMCET, a competitive exam conducted in the Indian states of Andhra Pradesh and Telangana, primarily tests students on Physics, Chemistry, and Mathematics (or Biology, depending on the stream). Given the time constraints and the nature of questions, familiarity with formulae becomes paramount.

Why are inter formulae crucial?

- Time Efficiency: Memorizing key formulae enables quick application, reducing calculation time.
- Accuracy: Correct formula application minimizes errors, which is critical in high-stakes exams.

- Problem-Solving Skills: Many complex problems can be simplified with the right formulae, making solutions more straightforward.
- Confidence Building: Knowing the formulae instills confidence, especially when tackling unfamiliar questions.

Inter formulae refer to those mathematical and physical expressions that relate different variables and concepts, often bridging two or more fundamental principles. They are especially useful in solving integrated problems that involve multiple concepts.

Categories of Inter Formulae for EAMCET

To streamline your preparation, it helps to categorize inter formulae based on the subject and topic. Here, we focus on the core areas: Physics, Chemistry, and Mathematics.

Physics Inter Formulae

Physics inter formulae often connect different laws and principles, offering shortcuts to derive answers quickly.

Key Inter Formulae in Physics:

- Kinetic Energy and Work-Energy Theorem:

$$
KE = \frac{1}{2} mv^2
$$

Interrelation: When work done is known, velocity can be derived using work-energy principles.

- Potential Energy in a Spring and Motion:

$$
PE_{spring} = \frac{1}{2} k x^2
$$

Interrelation: Linking elastic potential energy with kinetic energy during oscillations.

- Speed, Time, and Distance (Uniform Motion):

$$
v = u + at
$$

Interrelation: Combining equations for displacement $s = ut + \frac{1}{2} at^2$ and final velocity.

- Momentum and Impulse:

$$
p = mv
$$

$$
J = \Delta p = F \Delta t
$$

Interrelation: Using impulse to calculate change in momentum when force and time are known.

- Work done by Force:

$$
W = F s \cos \theta
$$

Interrelation: Connecting force, displacement, and angle to find work in various scenarios.

- Circular Motion:

$$
v = \sqrt{r g}
$$

Interrelation: Linking centripetal acceleration, radius, and gravitational acceleration.

Chemistry Inter Formulae

Chemistry inter formulae often relate concentration, reaction rates, and thermodynamic quantities.

Key Inter Formulae in Chemistry:

- Ideal Gas Equation:

$$
PV = nRT
$$

Interrelation: Deriving relationships among pressure, volume, and temperature.

- Reaction Rate and Concentration:

$$
\text{Rate} = k [A]^m [B]^n
$$

Interrelation: Understanding how concentration affects reaction rate.

- Hess?s Law:

\[

\Delta H_{total} = \sum \Delta H_{steps}

\]

Interrelation: Calculating enthalpy change for complex reactions via known steps.

- pH and Hydrogen Ion Concentration:

\[

pH = -\log [H^+]

\]

Interrelation: Linking acidity with ion concentration.

- Electrochemical Cell Potential:

\[

E_{cell} = E_{cathode} - E_{anode}

\]

Interrelation: Connecting electrode potentials with cell voltage.

Mathematics Inter Formulae

Mathematics inter formulae often involve linking different concepts in coordinate geometry, calculus, and algebra.

Key Inter Formulae in Mathematics:

- Quadratic Equations and Roots:

\[

ax^2 + bx + c = 0

\]

\[

\text{Sum of roots} = -\frac{b}{a}, \quad \text{Product of roots} = \frac{c}{a}

\]

Interrelation: Using roots to analyze quadratic graphs and vice versa.

- Distance Formula in Coordinates:

\[

d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}

\]

Interrelation: Connecting points and calculating lengths in geometry.

- Equation of a Circle:

\[

(x - h)^2 + (y - k)^2 = r^2

\]

Interrelation: Deriving equations from geometrical conditions.

- Derivatives and Tangents:

\[

\frac{dy}{dx} \quad \text{(slope of tangent)}

\]

Interrelation: Linking calculus with geometry for curve analysis.

- Integration and Area:

\[

\text{Area} = \int y \, dx

\]

Interrelation: Calculating areas under curves or between curves.

Key Inter Formulae for EAMCET Preparation

While the above categories cover major topics, certain inter formulae are universally useful across multiple questions and can be considered essential for EAMCET aspirants.

Physics: Inter Formulae to Remember

- Work-Energy Theorem:

\[

\text{Work done} = \Delta KE

\]

Application: Simplifies problems involving energy transfer.

- Relation between Power, Work, and Time:

\[

P = \frac{W}{t}

\]

Application: Used in electrical and mechanical contexts.

- Frequency and Period in Wave Motion:

$$
f = \frac{1}{T}
$$

Application: Connecting wave parameters for oscillations.

Chemistry: Must-Know Inter Formulae

- Boyle?s Law (for gases):

$$
P_1 V_1 = P_2 V_2
$$

Application: Solving gas law problems involving pressure and volume changes.

- Charles?s Law:

$$
\frac{V_1}{T_1} = \frac{V_2}{T_2}
$$

Application: Temperature-volume relationships.

- Avogadro?s Number:

$$

$$
6.022 \times 10^{23}
$$

Application: Converting between moles and particles.

Mathematics: Crucial Inter Formulae

- Sum and Product of Roots:

$$
\alpha + \beta = -\frac{b}{a}
$$

$$
\alpha \beta = \frac{c}{a}
$$

Application: Simplifying quadratic problems.

- Equation of a Line (Point-Slope form):

$$
y - y_1 = m(x - x_1)
$$

Application: Finding equations of lines passing through a point.

- Area of Triangle (using coordinate geometry):

$$

$$\text{Area} = \frac{1}{2} | x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2) |$$

Application: Calculating areas with vertices in the coordinate plane.

Strategies for Memorizing and Applying Inter Formulae Effectively

Having an extensive list of formulae is beneficial, but their effective application during the exam is the real challenge. Here are some expert tips:

- Create a Formulae Cheat Sheet: Summarize all inter formulae in a single notebook for quick revision.

- Understand Derivations: Instead of rote memorization, learn how formulae are derived. This deep understanding aids recall.

- Practice with Varied Problems: Regular practice helps in recognizing which formula to apply in different contexts.

- Group Study: Discussing and solving problems with peers reinforces memory.

- Use Mnemonics: Develop memory aids for complex formulae or sequences.

- Regular Revision: Periodically revisit formulae to keep them fresh.

QuestionAnswer What are the important inter formulae for EAMCET Mathematics? Key inter formulae include the distance formula, section formula, midpoint formula, area of triangle, Heron's formula, and the formula for coordinate geometry conversions. These are essential for solving problems involving points, lines, and shapes in the exam. How is the distance between two points calculated in EAMCET inter formulae? The distance between points (x?, y?) and (x?, y?) is given by ?[(x? - x?)² + (y? - y?)²]. What is the formula for finding the midpoint between two points in EAMCET geometry? Midpoint M between (x?, y?) and (x?, y?) is given by M = ((x? + x?)/2, (y? + y?)/2). Which inter formulae are useful for calculating the area of a triangle in EAMCET? The main formulae include Heron's formula, (1/2) base height, and coordinate geometry formulas involving the

determinant method: Area = (1/2)|x?(y? - y?) + x?(y? - y?) + x?(y? - y?)|. How do you find the ratio in which a point divides a line segment in EAMCET inter formulae? Using the section formula: If a point divides the segment joining (x?, y?) and (x?, y?) in ratio m:n, then the point's coordinates are ((mx? + nx?)/(m + n), (my? + ny?)/(m + n)). What is the significance of the slope formula in EAMCET inter coordinate geometry? The slope formula (m = (y? - y?)/(x? - x?)) helps determine the inclination of a line, check for perpendicularity or parallelism, and is essential for solving problems involving lines and their equations. Are there any shortcut methods for calculating areas in EAMCET using coordinate formulae? Yes, the determinant method simplifies area calculation by directly applying the coordinates of vertices, making it faster and reducing errors in the exam. How can understanding inter formulae improve problem-solving speed in EAMCET? Mastering inter formulae allows quick calculation of distances, midpoints, areas, and ratios, enabling efficient solving of geometry problems without lengthy calculations during the exam.

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