



Aakash

Medical | IIT-JEE | Foundations

KNOWLEDGE BYTES

DECEMBER 2024

CLASS 10



PREFACE

What is Knowledge Bytes ?

Knowledge Bytes is a collection of riddles, interesting facts, mnemonics and puzzles that will make your learning fun and engaging.

We want you to be delighted about studying. Knowledge Bytes helps you to know more about the subject in a fun, motivating and educational way and helps to implement what you learn in a creative way.

Benefits



Saves Time



Develops Learning Skills



Stimulates Interest



Leads to Increased Comprehension

EXPLORE

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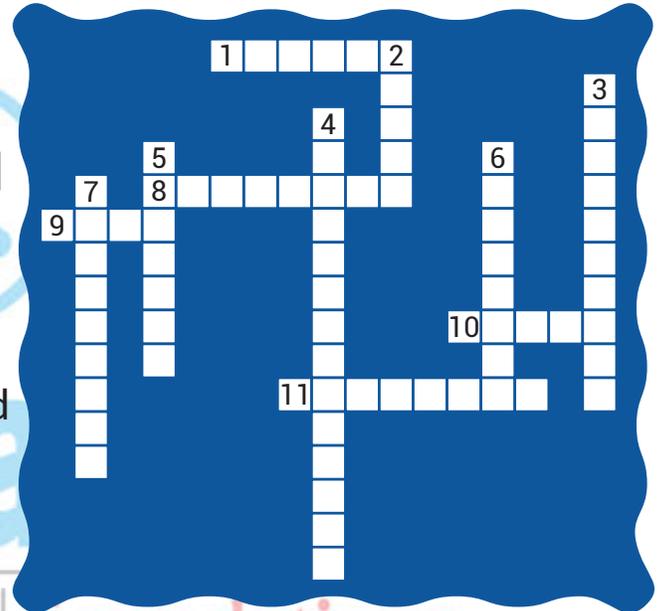


Real Numbers

Crossword

Across

1. Every real number can be represented by a _____ point on the number line. [6]
8. Product of two rational numbers is _____. [8]
9. Euclid's division lemma can be extended for all whole numbers except _____. [4]
10. HCF of 14 and 7 is _____. [5]
11. There are _____ rational numbers between any two rational numbers. [8]



Down

2. If the LCM and HCF of two numbers are equal, then the numbers must be _____. [5]
3. $3 + \sqrt{5}$ is a/an _____ number. [10]
4. Decimal expansion of an irrational number is _____ and non-repeating. [14]
5. Product of two numbers is equal to the _____ of their HCF and LCM. [7]
6. Dividend = Divisor x _____ + Remainder. [8]
7. The decimal number in which all the figures after the decimal point are repeated is called _____ decimal. [9]

Number System

The number system or the numeral system is the system of naming or representing numbers. There are various types of number systems in maths like binary, decimal, etc.



What is Number System in Maths?

A number system is defined as a writing system to express numbers. It is the mathematical notation for representing numbers of a given set by using digits or other symbols in a consistent manner.

The value of any digit in a number can be determined by:

- ⦿ The digit
- ⦿ Its position in the number
- ⦿ The base of the number system

What is Number ?

A number is a mathematical value used for counting or measuring or labeling objects. Numbers are used to perform arithmetic calculations. Numbers are classified as natural numbers, whole numbers, real numbers, rational and irrational numbers, etc.



Types of Number System

The four most common number system types are:

1. Decimal number system (Base-10)
2. Binary number system (Base-2)
3. Octal number system (Base-8)
4. Hexadecimal number system (Base-16)

Decimal Number System (Base-10)

Decimal number system has base 10 because it uses ten digits from 0 to 9.

For example, the decimal number 1457 consists of the digit 7 in the units place, 5 in the tens place, 4 in the hundreds place, and 1 in the thousands place whose value can be written as

$$= (1 \times 10^3) + (4 \times 10^2) + (5 \times 10^1) + (7 \times 10^0)$$

$$= (1 \times 1000) + (4 \times 100) + (5 \times 10) + (7 \times 1)$$

$$= 1000 + 400 + 50 + 7$$

$$= 1457$$

Binary number system (Base-2)

The Base-2 number system is also known as the Binary number system wherein, only two binary digits exist, i.e., 0 and 1. The figures described under this system are known as binary numbers which are the combination of 0 and 1. For example, 110101 is a binary number.

We can convert any system into binary and vice versa.

Example

Write $(13)_{10}$ as a binary number.

$$\begin{array}{r|l} \text{Sol:-} & 2 \mid 13 \\ & \hline & 2 \quad 6 \quad 1 \\ & \hline & 2 \quad 3 \quad 0 \\ & \hline & \quad 1 \quad 1 \end{array}$$

$$\therefore (13)_{10} = (1101)_2$$

Octal Number System (Base-8)

In the octal number system, the base is 8 as it uses digits from 0 to 7 to represent numbers. Octal numbers are commonly used in computer applications.

Example

Convert $(215)_8$ into decimal.

$$\begin{aligned} \text{Sol:- } (215)_8 &= 2 \times 8^2 + 1 \times 8^1 + 5 \times 8^0 \\ &= 2 \times 64 + 1 \times 8 + 5 \times 1 \\ &= 128 + 8 + 5 \\ &= 141 \end{aligned}$$

Hexadecimal Number System (Base-16)

In the hexadecimal number system, numbers are written or represented with base 16. In this system, the numbers are represented by the digits 0 to 9 and alphabets A to F. Any number in hexadecimal number system can be represented by using these 16 alphanumeric characters.

Hexadecimal	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Decimal	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Mysteries of Numbers

Mystery of Number 9

It is said to be a significant part of Indian Psyche.

1. The 'Fruit of the Spirit' comprises nine graces:" love, joy, peace, patience, kindness, goodness, faithfulness, gentleness, and self-control.
2. Nine being a significant part of the Indian psyche from time immemorial, the creators of our classical arts also found nine emotions or artistic moods that form a part of our expressions in life.
3. THE NUMBER 18 ($8 + 1 = 9$) : Hindu epic Mahabharata is associated with number 18 in several ways. The Mahabharata is divided into 18 books (parvas) and the Bhagavad Gita also has 18 chapters.



Mystery of Number 3

1. Almost everything in life can (and is) separated into a beginning, a middle and an end.
2. Time is measured through past, present, and future.
3. The dimensions of the space we inhabit are measured through width, length and height.
4. The Goddess herself has three expressions: Virgin, mother and crone.
5. In astrology, the planet Jupiter vibrates to the frequency of the three.
6. The third sign of the Zodiac is Gemini (where the Sun sails from May 21 – June 21).



Mystery of Number 7

1. Spiritually, the number 7 is sacred and carries 'the energy of the mystics'.
2. The rainbow has seven colours.
3. There are seven continents on planet Earth.
4. There are seven seas on planet earth.
5. Every week has seven days.
6. The Lotus flower on Buddha's pedestal has 7 petals.
7. There were 7 great ancient sages called as Saptarishi.



Q1

Convert $(1056)_{16}$ to octal number.

Sol:- Given, 1056_{16} is an hexadecimal number.

First we need to convert the given hexadecimal number into decimal number

$$\begin{aligned}(1056)_{16} &= 1 \times 16^3 + 0 \times 16^2 + 5 \times 16^1 + 6 \times 16^0 \\ &= 4096 + 0 + 80 + 6 \\ &= (4182)_{10}\end{aligned}$$

Now we will convert this decimal number to required octal number by repetitively dividing by 8.

		Remainder
8	4182	
8	522	6
8	65	2
8	8	1
8	1	0
	0	1

Therefore, taking the value of remainder from bottom to top, we get;

$$(4182)_{10} = (10126)_8$$

Therefore,

$$(1056)_{16} = (10126)_8$$

Q2 Convert $(1001001100)_2$ to decimal number.

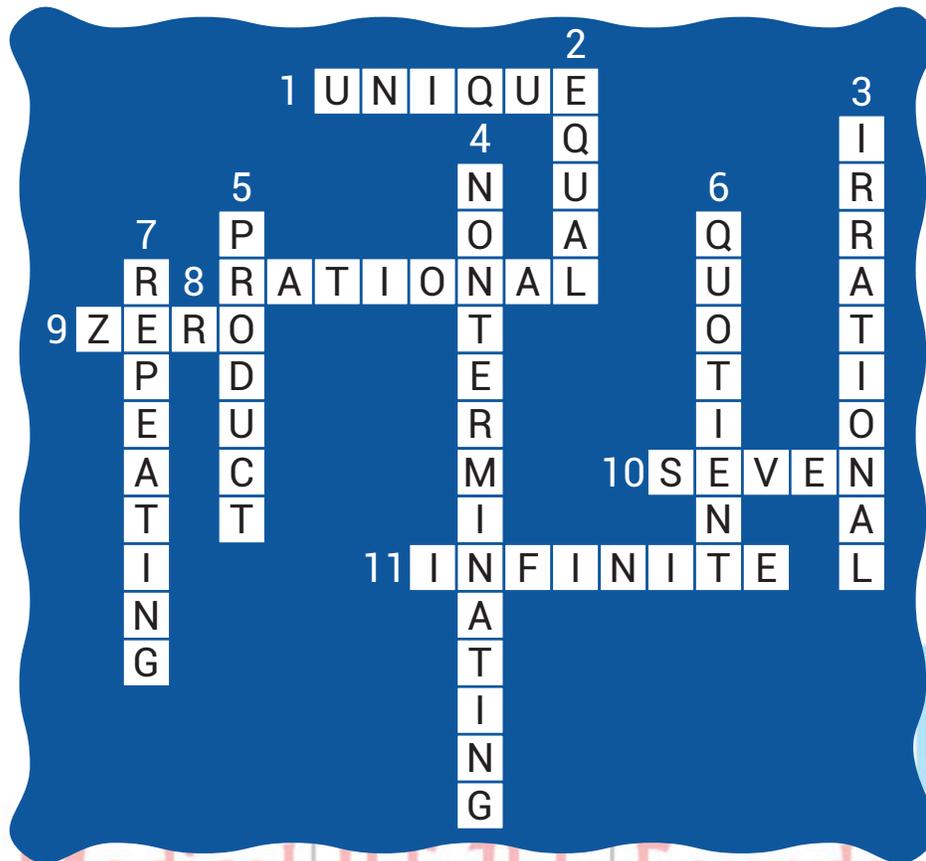
Sol:- $(1001001100)_2$

$$= 1 \times 2^9 + 0 \times 2^8 + 0 \times 2^7 + 1 \times 2^6 + 0 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 0 \times 2^0$$

$$= 512 + 64 + 8 + 4$$

$$= (588)_{10}$$

Answer (Crossword)



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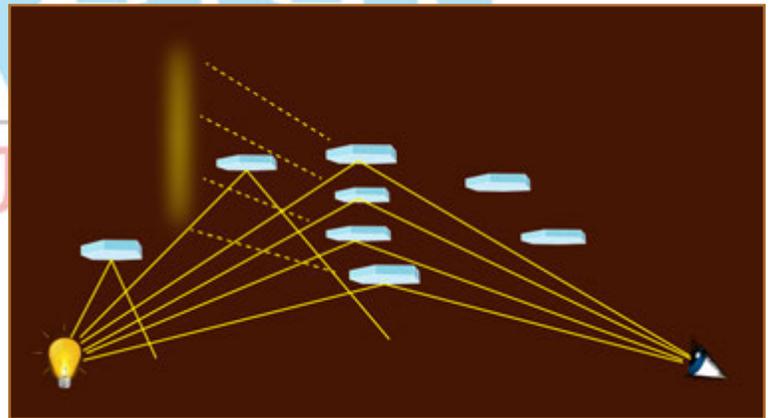
Light-Reflection

A Map of The City in The Sky - Light Pillars

On Jan 13, 2016, by Mia Heikkilä in Eura, Finland shared a photo of reflection of city into the sky. This splendid phenomenon happens due to light pillars which contains the ice crystal suspended in the sky. These ice crystals which has reflecting surface act as a group of tiny mirrors.



Mia Heikkilä



Light pillars : Light pillars are optical illusions caused by ice crystals suspended in the air. These crystals can take on a variety of shapes as water freezes, but a common one is a flat, hexagonal crystal. They're heavier than air, so they fall, but if they're the right size (bigger than about 20 microns across, $\frac{1}{5}$ th the width of a typical human hair), they fall slowly and stay oriented flat, parallel to the ground.

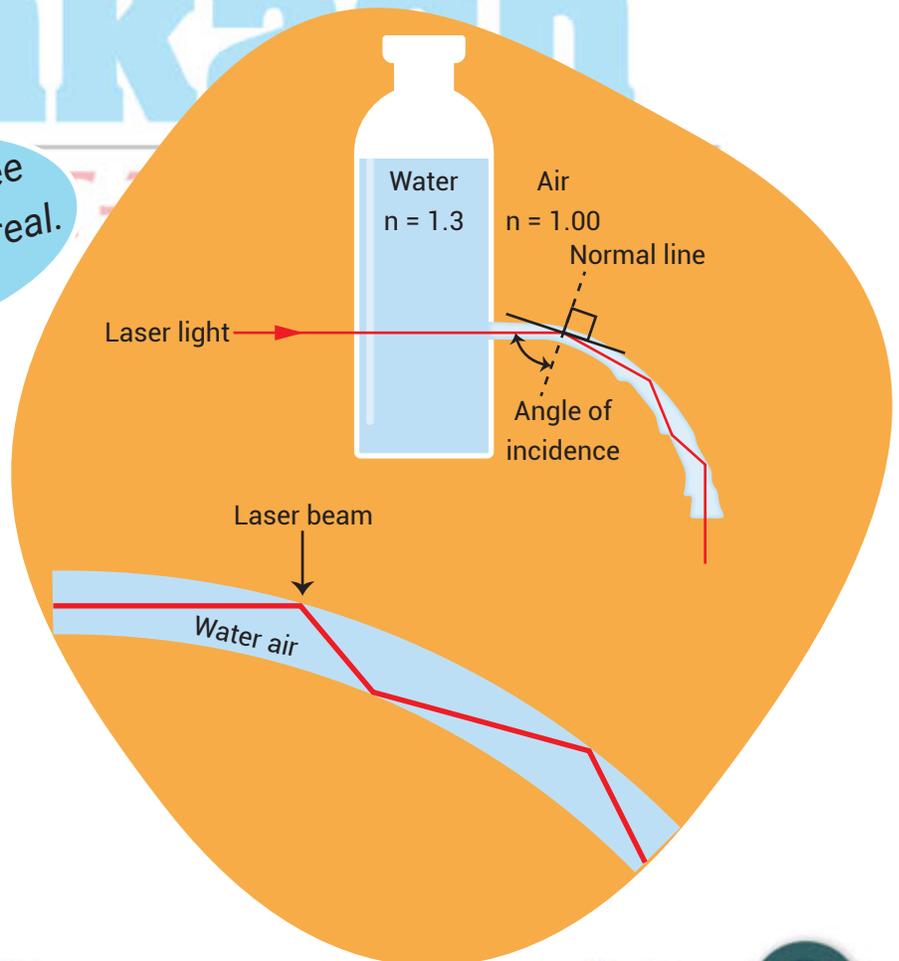


Experiment to Bend the Light

Materials required – Empty bottle, water, thin metal pin, laser.

1. Poke a hole into the middle of a water bottle with a metal.
2. Fill the bottle with water.
3. Make sure the hole is in the middle or just below the middle of the bottle so the water flows well.
4. Cover the hole with a piece of masking tape so it doesn't leak immediately when you add water.
5. Fill it completely to the top and leave the lid off. The pan will catch the water as it drains out when you remove the tape.
6. Aim the beam of a laser pointer through the bottle at the hole.

And you will see the bending in real.





Facts of Light

1. Light is a form of energy which causes sensation of vision. It travels in straight line path.
2. If incident light after interacting with a boundary separating two media comes back into the same medium, this phenomenon is called reflection.
3. Images can be either real or virtual.
4. Real image is formed by the actual intersection of reflected rays and it can be obtained on a screen.
5. Virtual image is formed by the apparent meeting of reflected rays from a mirror, when produced backwards. It cannot be obtained on a screen.
6. **Laws of reflection** : There are two laws of reflection.
 - (i) The incident ray, the reflected ray and the normal at the point of incidence all lie in the same plane.
 - (ii) The angle of incidence is equal to the angle of reflection i.e., $\angle i = \angle r$.
7. **Spherical mirror** : There are two types of spherical mirrors, viz concave mirror and convex mirror.

Concave mirror : A spherical mirror whose reflecting surface is curved inwards, facing towards the centre of the sphere.

Convex mirror : A spherical mirror whose reflecting surface is curved outwards opposite to centre of sphere.
8. **Focal length of a mirror** : It is the distance between the pole and the focus of a spherical mirror. It is half of its radius of curvature. It is positive for a convex mirror and negative for a concave mirror.
9. Mirror formula, $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$, gives the relationship between the object distance (u), image distance (v) and the focal length (f) of a spherical mirror.



Quiz Time?

1. Focal length of plane mirror is

A Infinity

B Zero

C Negative

D None of these

2. Image formed by plane mirror is

A Real and erect

B Real and inverted

C Virtual and erect

D Virtual and inverted

3. A concave mirror gives real, inverted and same size image if the object is placed

A At F

B At infinity

C At C

D Beyond C

4. Shining of diamond is due to

A Reflection of light

B Refraction of light

C Total internal reflection

D Dispersion of light

5. In optics, an object which has higher refractive index is called

A Optically rarer

B Optically denser

C Optical density

D Refractive index

Answer

1. A

2. C

3. C

4. C

5. B



Chemical Reactions and Equations

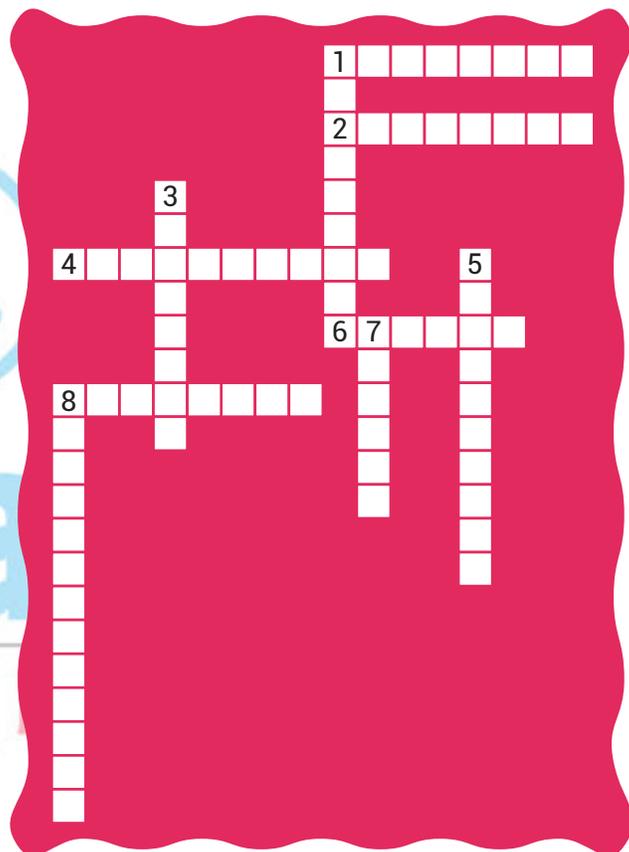
Crossword

Across

1. Chemical species which undergo the chemical change. [8]
2. Gas which is used for packaging of freshly prepared chips to avoid rancidity. [8]
4. Conversion of hydrogen peroxide into water and oxygen gas in presence of sunlight. [10]
6. During the reaction of lead nitrate with potassium iodide _____ colored precipitate of lead iodide is formed. [6]
8. Conversion of solid CO_2 to gaseous form is an example of _____ change. [8]

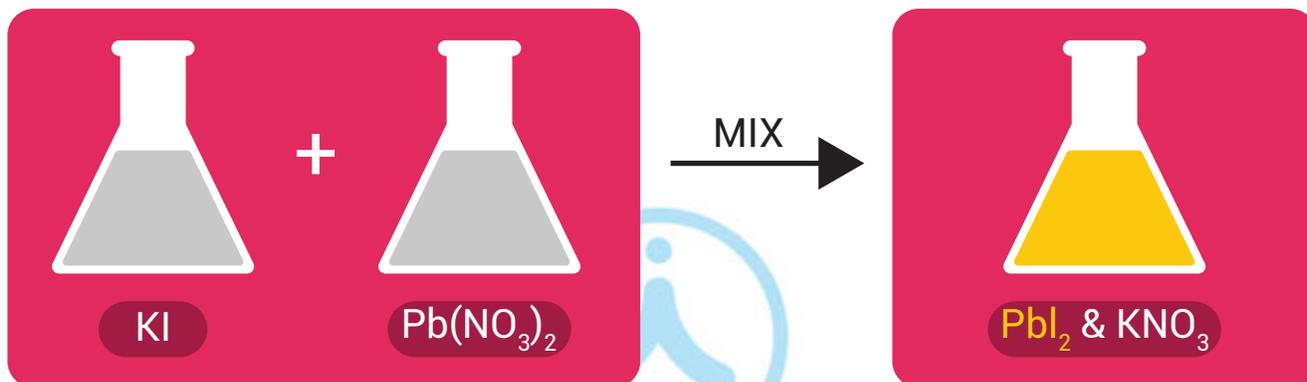
Down

1. In the open atmosphere oily food starts giving bad odour, it is called _____ [9]
3. Substance which does not take part in the chemical reaction but enhances the rate of a chemical reaction. [8]
5. Combination reactions are generally _____ in nature. [10]
7. Bio-catalyst is also known as _____. [6]
8. Chemical reaction in which insoluble solid is formed. [13]

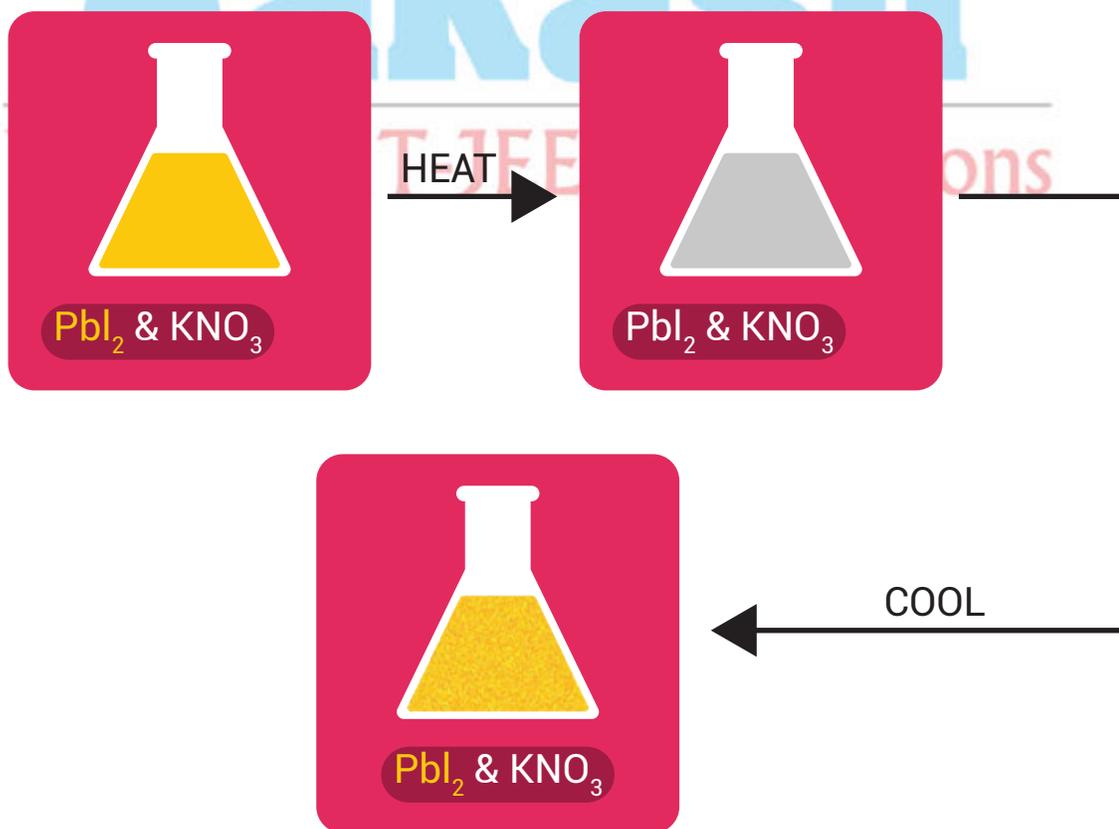


The Lead Iodide 'Golden Rain' Reaction

The Experiment



The lead iodide is more soluble in warm water than in cold. It dissolves when heated, reappearing as 'golden rain' on cooling.



The Explanation



When the two solutions of potassium iodide (KI) and lead nitrate ($\text{Pb}(\text{NO}_3)_2$) react, they produce soluble potassium nitrate (KNO_3) and insoluble lead iodide (PbI_2). This is visible as a yellow precipitate in the solution.

The lead iodide produced dissolves in the solution if it is heated, causing the yellow precipitate to disappear and leaving a colourless solution. If this solution is allowed to cool slowly, crystals of lead iodide begin to form, causing the glistening 'golden rain' effect.



Yellow precipitate
of PbI_2



Yellow crystals
of PbI_2



Lead salts are toxic and can cause lead poisoning so any skin contact should be avoided. They are also harmful to the environment.

Why Do Onions Make You Cry ?

It involves chemical reactions. Onions flow out enzymes which convert amino acids present in onion into sulphenic acid when their peels are removed. Sulphenic acid being unstable rearranges itself into propanethial S-oxide, an irritating gas. Propanethial S-oxide is a lachrymatory agent, meaning that it generates tears when it touches the eye. Propanethial S-oxide turns into sulphuric acid when it touches the water layer that covers and protects your eyeballs. But just like onions, your eyes are also equipped with a defense mechanism meant to protect them from harm. When the nerves in each eye detect a lachrymatory agent, they generate tears to flush it out.



Quiz Time?

1. Ratio of the gases collected at anode and cathode during the electrolysis of water is

A 1 : 2

B 2 : 3

C 1 : 1

D 1 : 3

2. Which of the following compounds does not undergo photolysis?

A Silver chloride

B Silver bromide

C Calcium carbonate

D Hydrogen peroxide

3. $a\text{MnO}_2 + b\text{HCl} \longrightarrow c\text{MnCl}_2 + d\text{H}_2\text{O} + e\text{Cl}_2$

In the given reaction a, b, c, d, e are

A 1, 4, 1, 2, 2

B 2, 4, 2, 2, 1

C 1, 4, 1, 2, 1

D 1, 1, 1, 2, 1

4. $\text{N}_2 + \text{O}_2 \longrightarrow 2\text{NO}$ is an

A Exothermic combination reaction

B Endothermic combination reaction

C Exothermic decomposition reaction

D Endothermic decomposition reaction

5. Identify the odd one with respect to type of decomposition reaction.

A $2\text{FeSO}_4 \rightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$

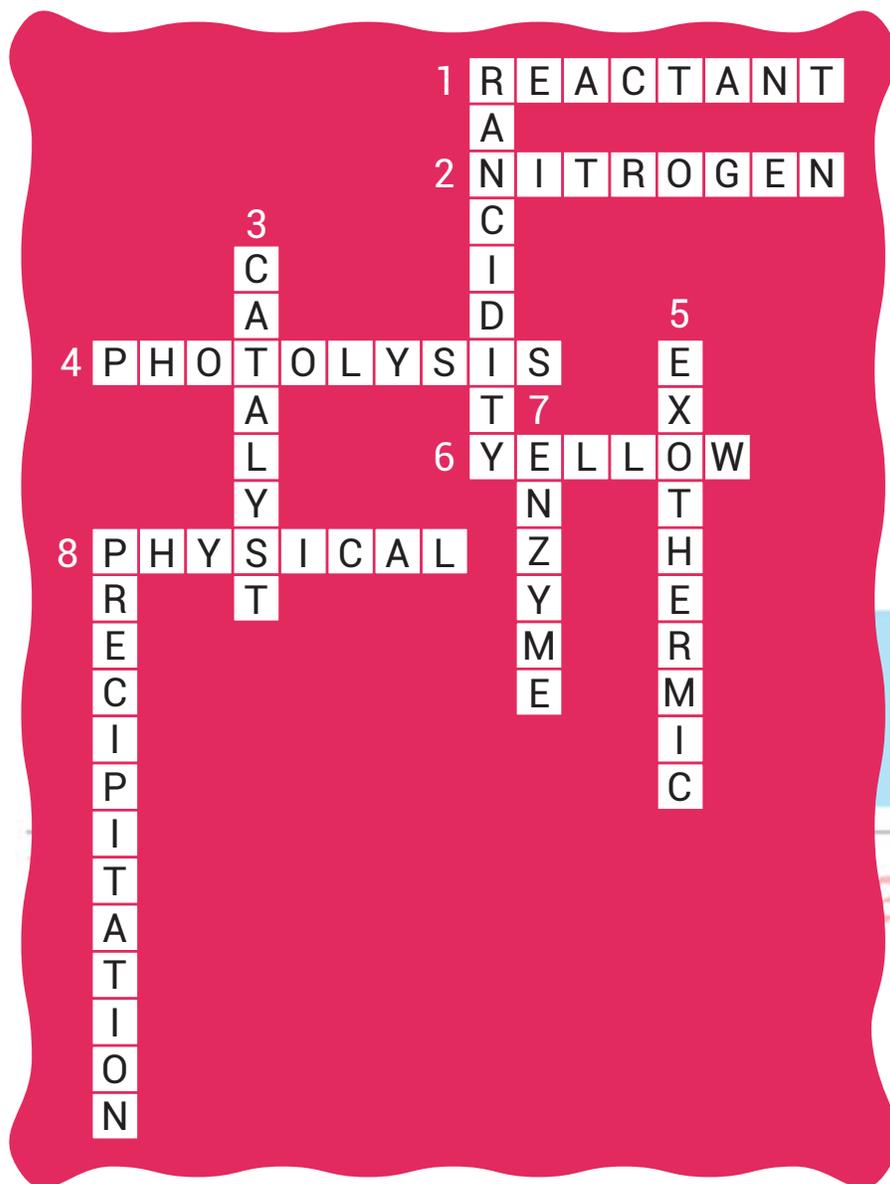
B $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

C $2\text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{O}_2$

D $2\text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$



Answer (Crossword)



Answer (Quiz Time)

1. / A

2. / C

3. / C

4. / B

5. / C



Life Processes- Nutrition and Respiration

1. Chewing Over The Conundrum!

a

This gland might claim to be the largest but it doesn't secrete any protein.



b

I look like a million fingers on the inside of a tube & can quickly help you to uptake the nutrients present in the food.



c

I am a versatile gland that helps your intestines. I have a duct & yet you can call me endocrine.

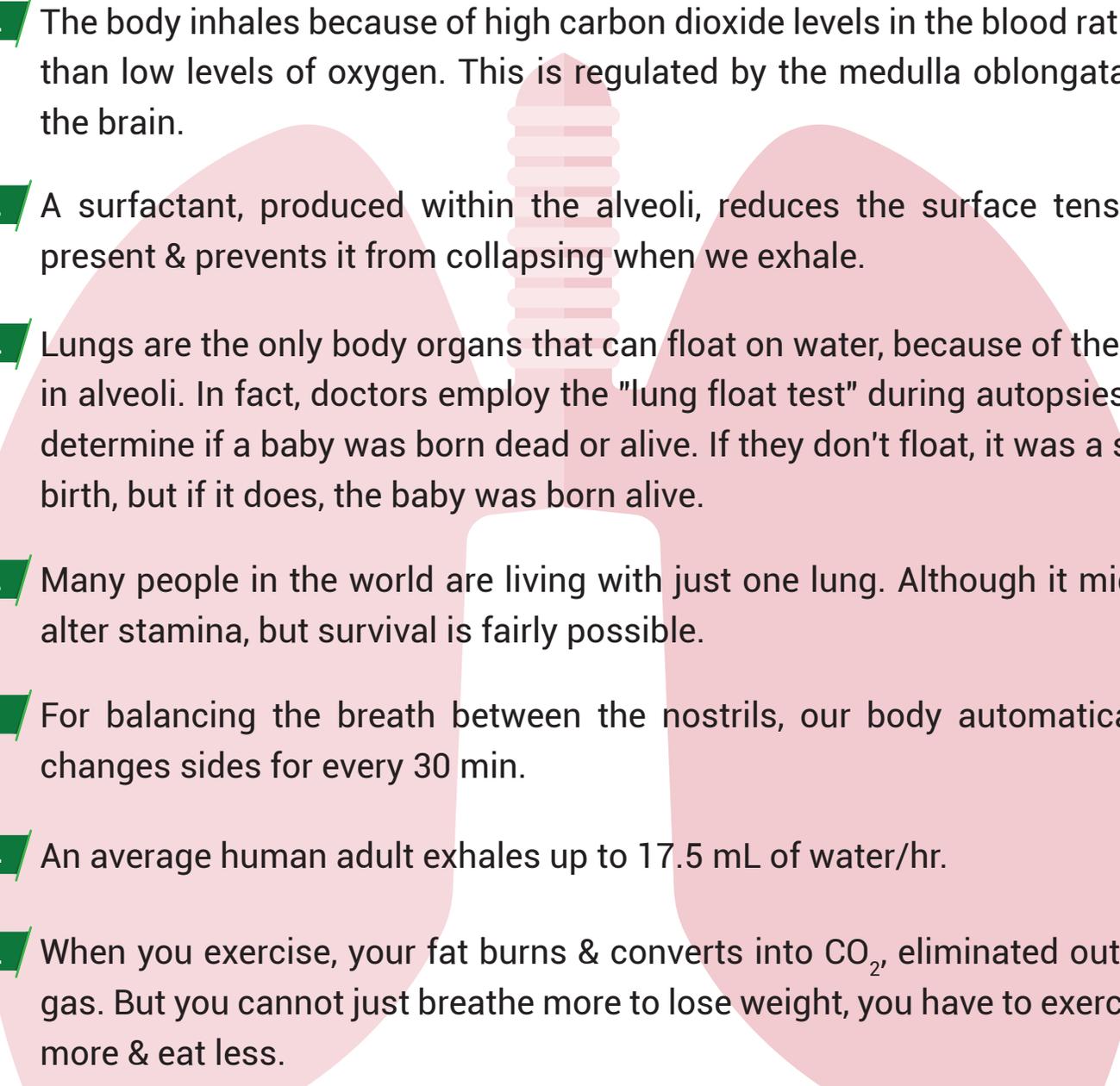


d

I pour the saliva inside your mouth, but hide below your ear. You might see a swelling when a virus grows in here.



Baffling Breaths

- 
- a. Approx. 70% wastes of the body are eliminated in the form of gases.
 - b. The body inhales because of high carbon dioxide levels in the blood rather than low levels of oxygen. This is regulated by the medulla oblongata in the brain.
 - c. A surfactant, produced within the alveoli, reduces the surface tension present & prevents it from collapsing when we exhale.
 - d. Lungs are the only body organs that can float on water, because of the air in alveoli. In fact, doctors employ the "lung float test" during autopsies to determine if a baby was born dead or alive. If they don't float, it was a still birth, but if it does, the baby was born alive.
 - e. Many people in the world are living with just one lung. Although it might alter stamina, but survival is fairly possible.
 - f. For balancing the breath between the nostrils, our body automatically changes sides for every 30 min.
 - g. An average human adult exhales up to 17.5 mL of water/hr.
 - h. When you exercise, your fat burns & converts into CO_2 , eliminated out as gas. But you cannot just breathe more to lose weight, you have to exercise more & eat less.
 - i. When we breathe in, oxygen is carried by the iron in the haemoglobin of our RBCs. Iron is only formed in the space due to supernova collisions.

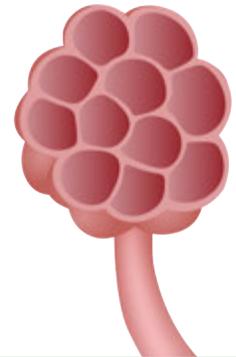


Emphysema

The word 'Emphysema' means 'full of air' or 'inflation'. It is a chronic disorder.

Causes : The major cause is excessive cigarette smoking. Others may include inhalation of smoke or toxic substances over a period of time.

Symptoms : The walls of alveoli are damaged due to excessive smoking, loss of elasticity of walls of bronchioles and alveoli. Due to this, the surface area for exchange of gases is reduced. Alveolar sacs remain filled with air even after expiration. The lungs remain inflated as exhalation becomes difficult. This disease may be prevented by avoiding cigarette smoking.



Terms Associated with Breathing

Eupnea

(i)

Normal breathing

Hypopnea

(ii)

Slow breathing

Hyperpnea

(iii)

Rapid breathing

Apnea

(iv)

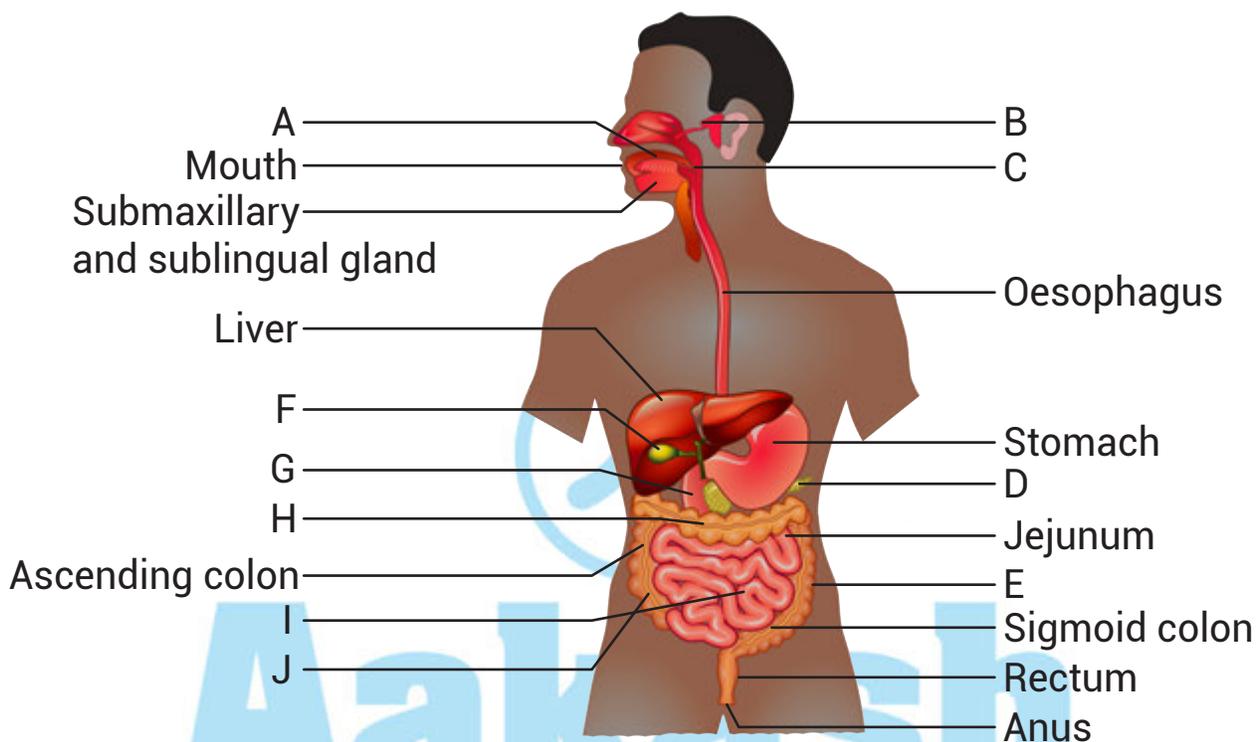
No breathing

Dyspnea

(v)

Painful breathing

2. Label the following parts from A to J in the given diagram of human digestive system.



3. Which of the following is an incorrect match regarding reaction, its location of occurrence and the enzyme involved?

	Reaction	Location	Enzyme
(i)	Protein $\xrightarrow{\text{pH } 1.8}$ Proteoses + peptones	Stomach	Pepsin
(ii)	Procarboxy \rightarrow Carboxypeptidase peptidase	Duodenum	Trypsin
(iii)	Fats \rightarrow Diglycerides + Monoglycerides	Stomach	Salivary amylase
(iv)	Dipeptides \rightarrow Amino acids	Ileum	Dipeptidases

1 / (i)

2 / (ii)

3 / (iii)

4 / (iv)

Answers

1. a. L I V E R

f. S T O M A C H

b. V I L L I

g. M O U T H

c. P A N C R E A S

h. C O L O N

d. P A R O T I D

i. E P I G L O T T I S

e. O E S O P H A G U S

D I G E S T I O N

2. A Oral cavity

F Gall bladder

B Parotid gland

G Duodenum

C Pharynx

H Transverse colon

D Pancreas

I Ileum

E Descending colon

J Caecum

3. (iii)

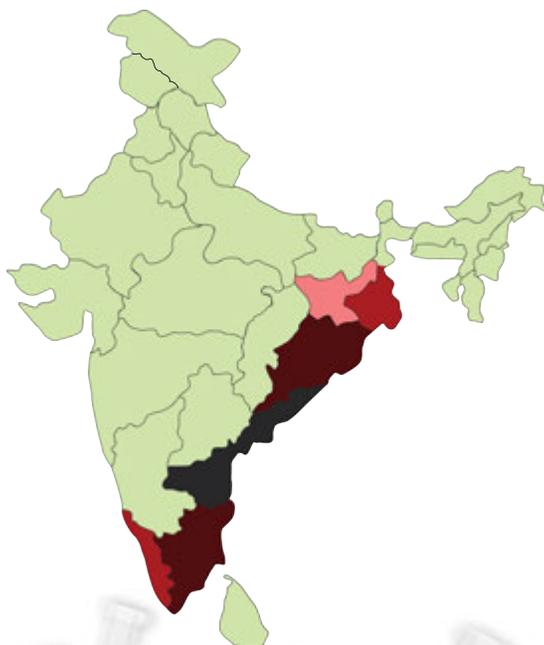


Sources of Energy

Non-conventional Sources of Energy and Their Location

Nuclear or Atomic Energy

- ⦿ Uranium and Thorium - Jharkhand and the Aravalli ranges of Rajasthan.
- ⦿ Thorium - Monazite sands of Kerala.



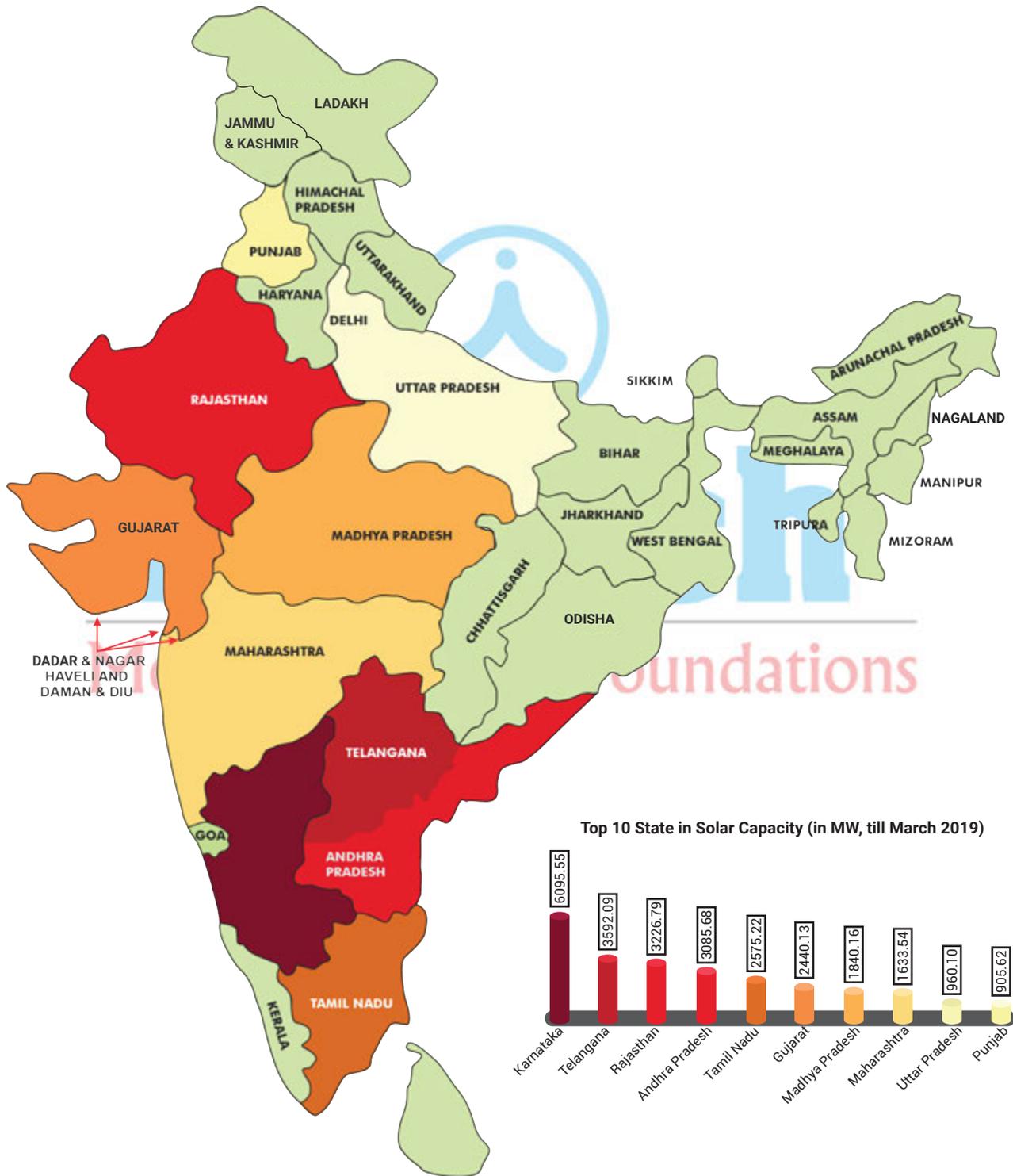
India's thorium is mostly located in a contiguous belt of eastern coastal states as placer sands.

2016 Monazite reserve estimates.

- Andhra Pradesh (31%)
- Tamil Nadu (21%) and Odisha (20%)
- Kerala (16%) and West Bengal (10%)
- Jharkhand (2%)

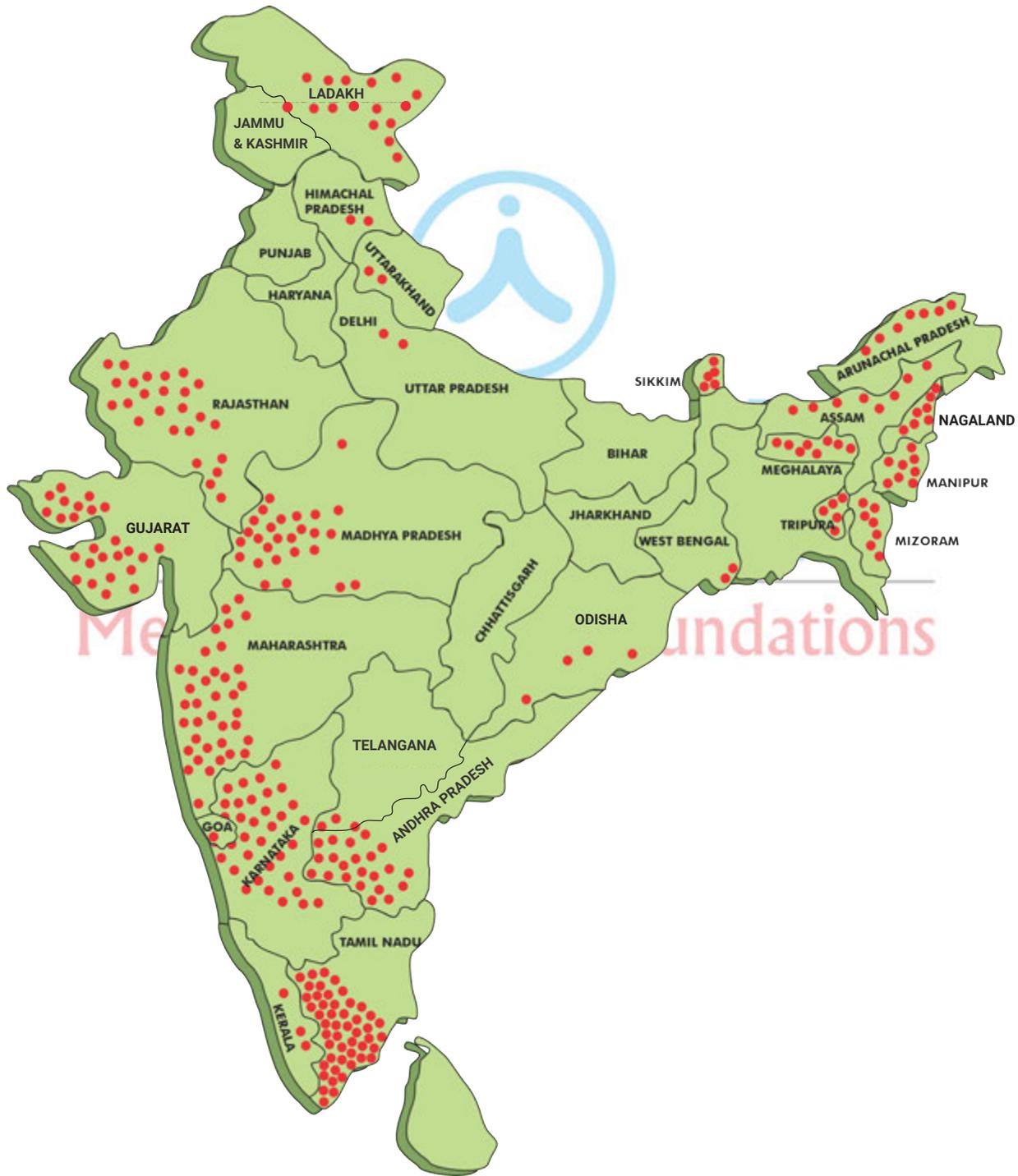
Solar Energy

☉ Tropical Region of India



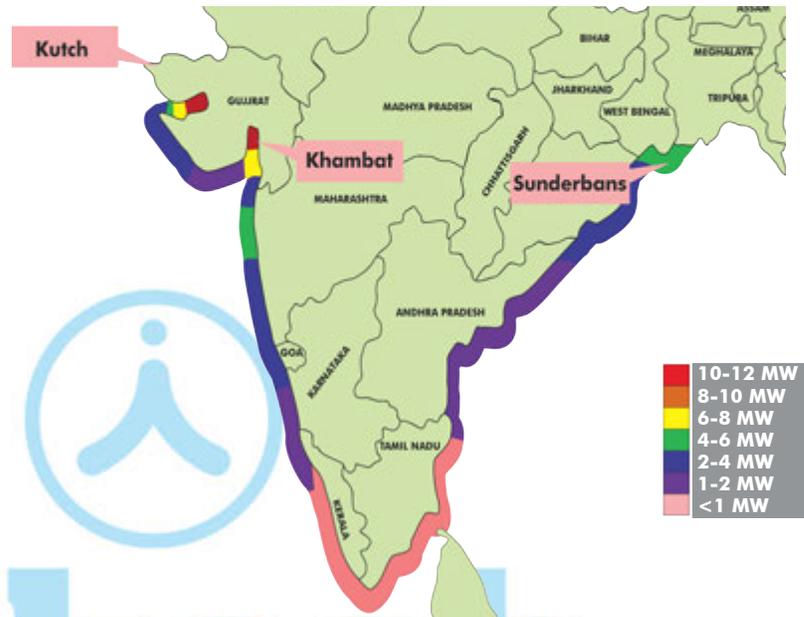
Wind Power

- ⦿ Tamil Nadu, Andhra Pradesh, Karnataka, Gujarat, Kerala, Maharashtra, and Jaisalmer (Rajasthan).



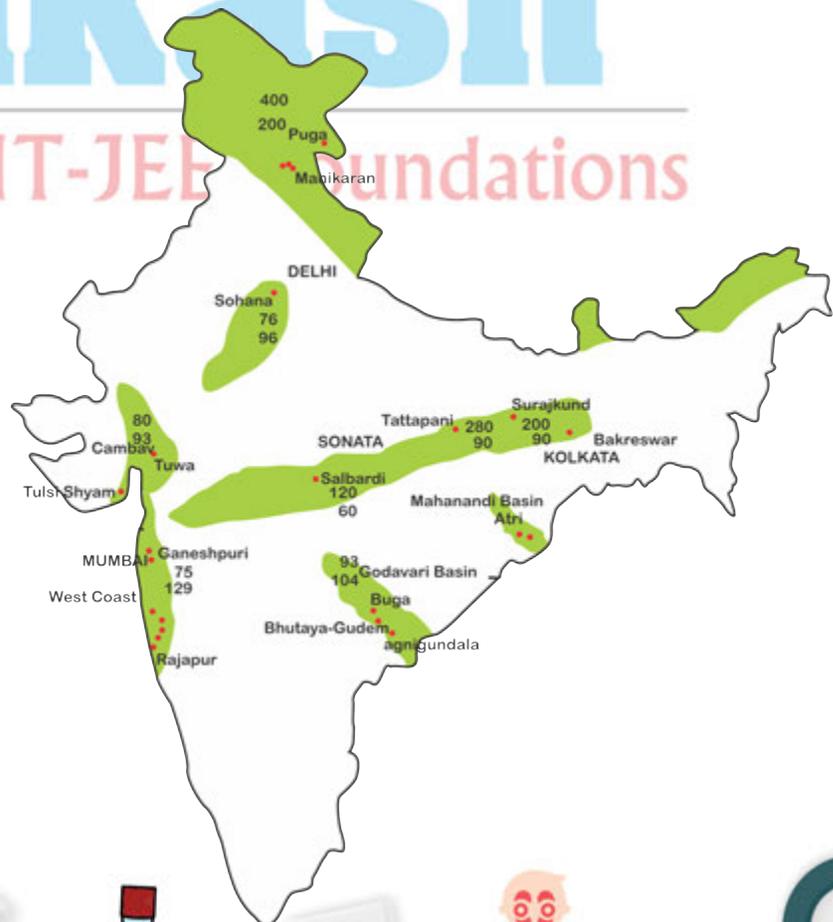
Tidal Energy

- ⊙ Gulf of Khambhat, Gulf of Kutch and Gangetic Delta in Sunderban Regions
- ⊙ **Gulf of Cambay/ Khambhat**
 - Potential: 7000 MW
- ⊙ **Gulf of Kutch**
 - Potential: 1200 MW
- ⊙ **Sunderbans Delta**
 - Potential: 100 MW



Geo Thermal Energy

- ⊙ Parvati valley near Manikarn in Himachal Pradesh.
- ⊙ Puga Valley, Ladakh.



Gap Filling

1. Most internet consumers _____ think about the internet service providers' responsibility in peering beyond their own network.

- (A) don't (B) doesn't
(C) aren't (D) haven't

2. In _____ hyper-connected world where access to information is abundant, internet is a blessing in disguise.

- (A) a (B) an
(C) the (D) X (No article)

3. Never mistake knowledge for wisdom. One _____ you make a living. The other helps you _____ a life.

- (A) help, make (B) helps, makes
(C) helps, make (D) help, makes

4. That _____ wisdom – the “why” of things we do. Information is “what” and knowledge is “how”.

- (A) has (B) is
(C) does (D) had



5. Positive psychology research has shown that gratitude touches _____ many aspects of our lives.

- (A) at (B) in
(C) with (D) on

6. Gratitude is an effective strategy for _____ insecurity. A grateful emotion is triggered _____ we perceive an act of benevolence directed towards us.

- (A) reduction to, when (B) reducing, when
(C) reduced, than (D) reduces, than

7. Gratitude has been _____, in multiple studies, to make people kinder and more friendly.

- (A) shows (B) shown
(C) showing (D) showed to

8. The counsel for the applicants said the present situation is not _____ for conducting any type of physical mode examination, for any class of students.

- (A) conducive (B) condnucive
(C) conducevi (D) conducting

9. India celebrates 'National Reading Day' on the death anniversary of social reformer PN Panicker, known as _____ Father of the Library Movement in India.

- (A) the (B) a
(C) an (D) X (No article)

10.

Last year, Infosys _____ with employees by providing opportunities for continuous learning and career advancements.

(A) engaged

(B) engaged

(C) is engaging

(D) had engaged

Answers

1. (A)

2. (A)

3. (C)

4. (B)

5. (D)

6. (B)

7. (B)

8. (A)

9. (A)

10. (A)

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Quantitative Aptitude : Profit, Loss and Discount

1. After selling 70 articles a man earns a profit of cost price of 9 articles. Find profit percentage.

A 12%

B $12\frac{1}{8}\%$

C $12\frac{6}{7}\%$

D $12\frac{5}{7}\%$

2. Cost price of 10 articles is equal to selling price of 8 articles. What is the profit percentage?

A 20%

B 25%

C 22%

D 26%

3. Cost price of 12 articles is equal to selling price of 9 articles while discount on 10 articles is equal to profit on 8 articles. What is the difference between profit % and discount %?

A $\frac{50}{3}\%$

B 40%

C 52%

D 47%



4. A dishonest shopkeeper promise to sell his goods at its cost price. But he uses 950 grams weight instead of 1 kg. Find profit percentage.

A $5\frac{5}{19}\%$

B $9\frac{5}{4}\%$

C $4\frac{5}{9}\%$

D $4\frac{1}{4}\%$

5. A shopkeeper allow 20% discount on marked price and earn 25% profit. If he gets ₹ 90 as profit. What is the amount of the discount?

A ₹ 110.5

B ₹ 114.5

C ₹ 101.5

D ₹ 112.5

Answer

Aakash

1. (C) Cost price of 1 article = ₹ 1

$$\text{Profit} = ₹ 9$$

$$\text{CP of 70 articles} = ₹ 70$$

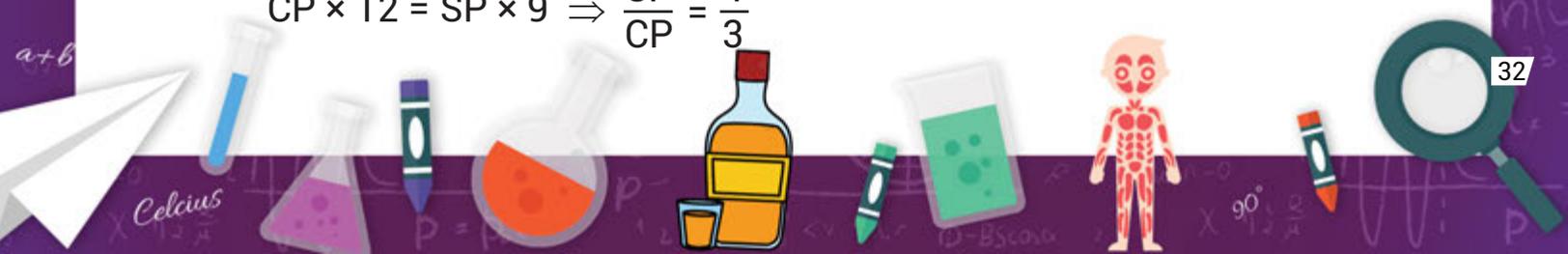
$$\text{Profit \%} = \frac{9}{70} \times 100 = 12\frac{6}{7}\%$$

2. (B) $\text{CP} \times 10 = 8 \times \text{SP}$

$$\frac{\text{CP}}{\text{SP}} = \frac{4}{5} \Rightarrow \frac{\text{SP} - \text{CP}}{\text{CP}} \times 100 = \frac{5 - 4}{4} \times 100 = 25\% \text{ profit}$$

3. (A) CP → Cost price, D → Discount, P → Profit, SP → Selling price

$$\text{CP} \times 12 = \text{SP} \times 9 \Rightarrow \frac{\text{SP}}{\text{CP}} = \frac{4}{3}$$



$$\Rightarrow \text{Profit \%} = \frac{SP - CP}{CP} \times 100 = \frac{4 - 3}{3} \times 100 = \frac{100}{3}$$

$$D \times 10 = P \times 8 \Rightarrow \frac{D}{P} = \frac{4}{5}$$

MP → Marked price

CP	SP	MP	
3	4	x	Profit = 1
15	20	5x	Profit = 5

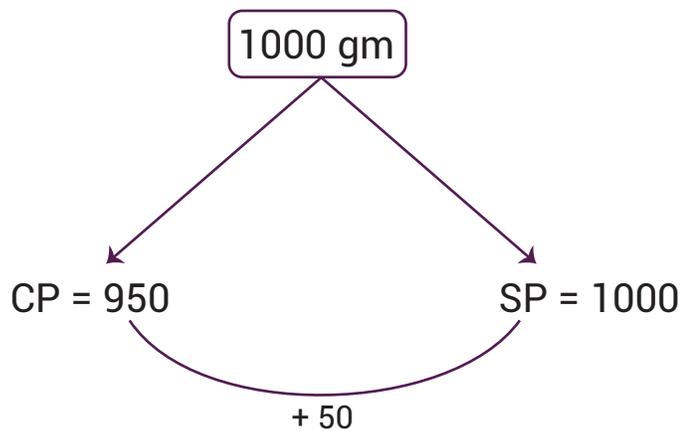
$$5x - 20 = 4 \Rightarrow x = \frac{24}{5}$$

$$D\% = \frac{D}{MP} \times 100 = \frac{4}{24/5 \times 5} \times 100 = \frac{100}{6} = \frac{50}{3}$$

$$D\% - P\% = \frac{50}{3} - \frac{100}{3} = -\frac{50}{3}$$

So, required difference = $\frac{50}{3}\%$

4. (A)



Profit = 50

$$\text{Profit \%} = \frac{50}{950} \times 100 = 5 \frac{5}{19}\%$$



5. (D)

CP	SP	MP
4×5	4×5	5×5
4×4	5×4	
$= 16$	20	25

$$20\% = \frac{1}{5} \begin{matrix} \curvearrowright D \\ \curvearrowleft MP \end{matrix}$$

$$SP = 4$$

$$25\% = \frac{1}{4} \begin{matrix} \curvearrowright P \\ \curvearrowleft CP \end{matrix}$$

Profit = 4 units, so 4 units \rightarrow 90 \Rightarrow 1 \rightarrow $\frac{90}{4}$

$$\text{Discount} = 25 - 20 = 5$$

$$= 5 \times \frac{90}{4} = \frac{450}{4} = 112.5$$

Aakash

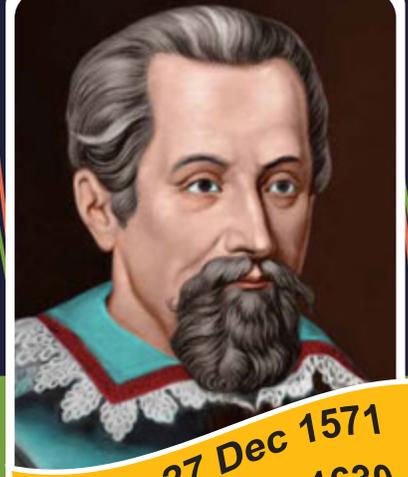
Medical | IIT-JEE | Foundations



BEST KNOWN FOR HIS THREE LAWS OF PLANETARY MOTION

Happy Birthday

Johannes Kepler



Born - 27 Dec 1571
Died - 15 Nov 1630

December 27 is a day to celebrate the life of astronomer Johannes Kepler, who was born on this date in 1571, and is best known for his three laws of planetary motion. But also, coming up in 2009. The International Year of Astronomy (IYA) will celebrate the work of Kepler as well. Not only did Galileo begin his observations with a telescope almost 400 years ago in 1609, but also in that year Kepler published his book *New Astronomy* or *Astronomia Nova*. This was first published work that documented the scientific method.

OUR RESULTS 2024

AIR 1

NEET (UG) 2024

State Topper Delhi	State Topper Uttar Pradesh	State Topper West Bengal	State Topper Uttar Pradesh	State Topper Maharashtra	State Topper Rajasthan
Mridul M Anand 3 Year Classroom	Ayush Naugraiya 4 Year Classroom	Arghyadeep Dutta 2 Year Classroom	Aryan Yadav 1 Year Classroom	Palansha Agarwal 2 Year Classroom	Iram Quazi 1 Year Classroom

JEE (Advanced) 2024

AIR 25	AIR 67	AIR 78	AIR 93	AIR 95
Rishi Shekher Shukla 2 Year Classroom	Krishna Sai Shishir 4 Year Classroom	Abhishek Jain 4 Year Classroom	Hardik Aggarwal 2 Year Classroom	Ujjwal Singh 4 Year Classroom

1430 Students Scored Above MAS

344

Classroom Students
Qualified in
NSEs* 2023-24

(Group A & B)
34+30
NSEA*

156
NSEB*

72
NSEC*

23
NSEP*

29
NSEJS*

Aakashians Qualified for INO-2024



Diptanshu Sharma
NSEB | NSEC | NSEP



Priyanshu Sarkar
NSEB | NSEC | NSEP



Mridul Garg
NSEB | NSEC | NSEP



Zaman Hussain
NSEA | NSEC | NSEP



Shubhradeep Paul
NSEA | NSEC | NSEP



Samvit Shandilya
NSEA | NSEC | NSEP

and many more...

*NSEA-National Standard Examination in Astronomy | NSEB-National Standard Examination in Biology | NSEC-National Standard Examination in Chemistry
NSEP-National Standard Examination in Physics | NSEJS-National Standard Examination in Junior Science | INO-Indian National Olympiad

Aakashians Qualified for OCSC/IMOTC-2024

32

Classroom Students
Qualified
in INOs 2024



Aneesh Shastri
Qualified INAO



Sanvi Jain
Qualified INChO



Mridul M Anand
Qualified INBO



Zaman Hussain
Qualified INMO



Sushant Agarwal
Qualified INJSO



Archit Kumar
Qualified INAO Jr

OCSCs - Orientation cum Selection Camps | IMOTC - International Mathematical Olympiad Training Camp

and many more...

Aakashians Qualified for RMO from Classroom Programs

869

Classroom Students
Qualified
in IOQM 2024



Class VIII Joish Achyuta
2 Year Classroom



Class VIII Pranava NS
3 Year Classroom



Class VIII Bruteshwar Rajguru
3 Year Classroom



Class VIII Hardik Mishra
2 Year Classroom



Class VIII Hardik Dhariwal
2 Year Classroom



Class IX Dhanush Damu
4 Year Classroom

IOQM - Indian Olympiad Qualifier in Mathematics

and many more...

Board Exam Results 2024

Top Performers from Class X



Marks
500
500

Devidyuti K Pisharody
CBSE



Marks
499
500

P Harini
CBSE



Marks
498
500

Jiya Dugar V
CBSE

and many more...

Top Performers from Class XII



Marks
496
500

Ananthan R
CBSE



Marks
495
500

Ansh Agrawal
CBSE



Marks
495
500

Himanshu Agarwal
CBSE

and many more...



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