Aakash

Medical | IIT-JEE | Foundations

Edition: 2024-25

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

Quadrilaterals

Crossword

ACROSS

1. A figure with two pairs of parallel sides.

3. Quadrilateral with only one pair of parallel sides.

5. A parallelogram with four equal sides.

7. A rectangle with all sides equal.
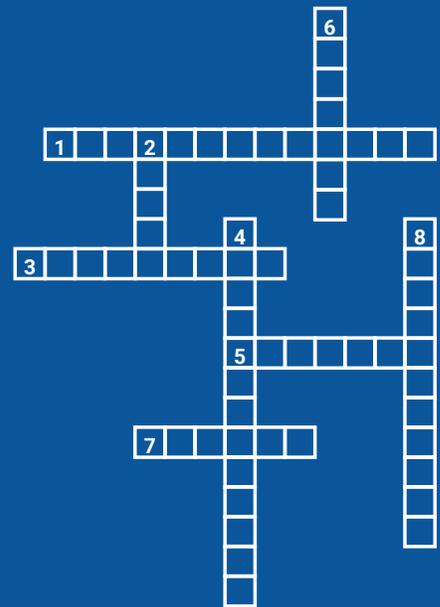
DOWN

2. Figure formed by two rays meeting at a common end point.

4. A four sided closed figure.

6. A closed figure formed by line segments.

8. A line of fixed length.

Flowchart

A flowchart to check whether a triangle is possible or not. Find the value at question mark(?).

START

Enter three angles A, B, C

Sum = ∠A + ∠B + ∠C

?

Yes

Display "Triangle is possible

No

Display "Triangle is not possible

STOP

Answer (Crossword)

```
                              6
                              P
                              O
                              L
                              Y
    1      2                  G
    P  A  R  A  L  L  E  L  O  G  R  A  M
          N                  O              8
          G         4        N              L
    3     L         Q                       I
    T  R  A  P  E  Z  I  U  M                N
          E         U                       E
                    A                       S
                 5  R  H  O  M  B  U  S      E
                    I                       G
       7            L                       M
       S  Q  U  A  R  E                      E
                    A                       N
                    T                       T
                    E
                    R
                    A
                    L
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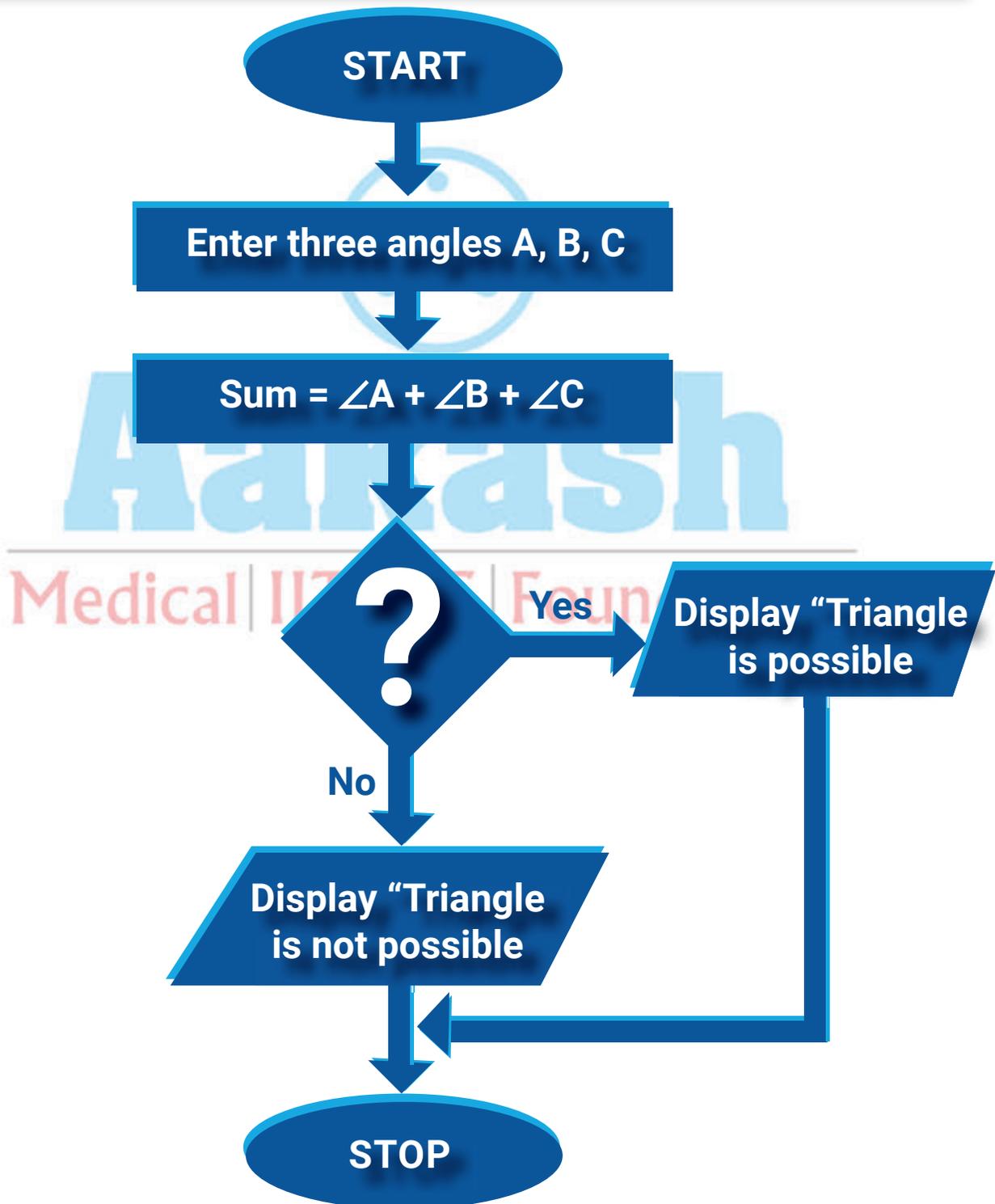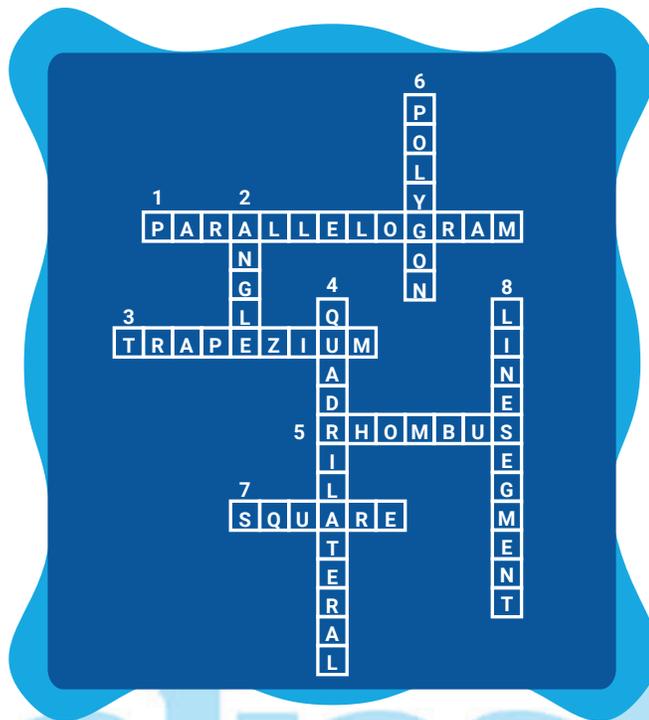
Answer (Flowchart)

If sum = 180°

Pulley

It is a simple wooden or metallic machine that uses a wheel and rope to lift heavy loads. Nowadays, plastic pulleys are also available in the market to carry small loads. This can be rotated freely about an axis passing through its center. It can change the direction of a force which makes it much easier for people to lift anything.

Types of Pulley

When the block of the pulley is fixed on a high platform, it is known as fixed pulley. An extensible string passes over the groove where its one end is attached to the body to be lifted while the other end is free.

When the block of the pulley is not fixed but carries the load, it is known as movable. An inextensible string is tied around the groove where its one end is fixed to fixed support while the other end is kept free to apply the effort. As the effort is applied, the pulley together with the load moves upward.

Movable Pulley

5
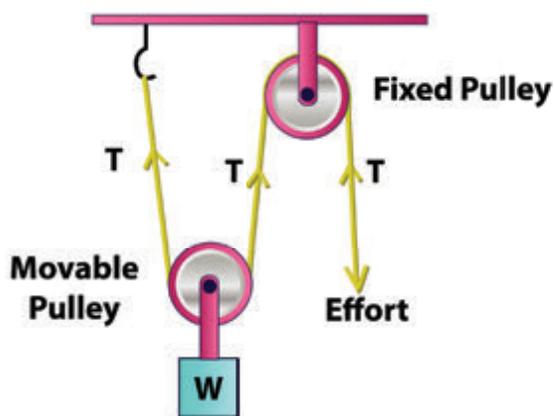
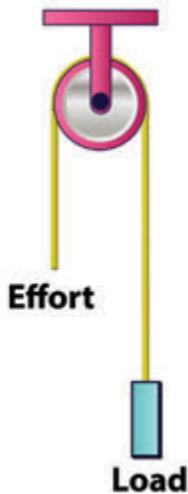## Pulley Formula

Following are the formulas that are used when pulleys are used for lifting.

◆ Mechanical advantage formula: It is defined as the ratio of load to the effort.

Effort

Load

● A single pulley simply changes the direction of the tension force (Pulling force).
● There is no mechanical advantage when using a rope around a single pulley.
● This system is often used on building sites to haul loads onto high buildings.

$$\text{Mechanical advantage} = \frac{\text{Load}}{\text{Effort}}$$

● In second case, two parts of the rope support the load. Each part supports half the load, therefore the mechanical advantage is 2.

$$\text{Mechanical advantage} = \frac{\text{Load}}{\text{Effort}}$$

$$\text{Velocity ratio} = \frac{\text{Distance moved by effort}}{\text{Distance moved by load}}$$

● The effort force moves twice as far as the load, therefore the velocity ratio is 2.
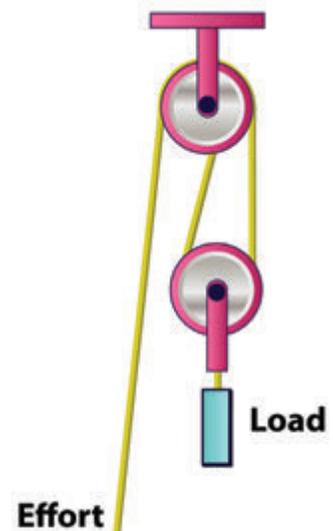
Load

Effort

In third case, three parts of the rope support the load. Each part supports one third of the load, therefore the mechanical advantage is 3.

$$\text{Mechanical advantage} = \frac{\text{Load}}{\text{Effort}}$$

$$\text{Velocity ratio} = \frac{\text{Distance moved by effort}}{\text{Distance moved by load}}$$

The effort force moves three times as far as the load, therefore the velocity ratio is 3.

Interesting Facts

1. The word energy comes from the Greek word enérgeia.
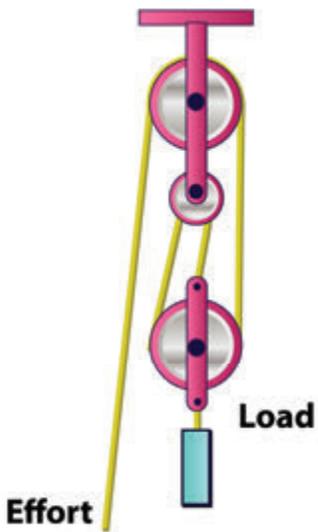
2. Most types of energy are either in the form of kinetic or potential Energy.

3. Food contains chemical energy which is used by living organism to grow and reproduce.

4. Plants use energy from sunlight during photosynthesis.

5. Work done is the transfer of energy between the system and surroundings.

6. Work is a scalar quantity, measured in Joule.

7. Work done by gravitational force on object flying in space is zero.

8. Pulley is a simple machine used to lift heavy objects.

9. There are two different type of pulleys.

Fixed pulley   :   It consists of a wheel fixed to a shaft.
Movable pulley :   It consists of a moving wheel and rope.

Simple Pendulum

In the Figure, we see that a simple pendulum has a small-diameter bob and a string that has a very small mass but it is strong enough and not stretchable. The linear displacement from equilibrium is same as the length of arc for smaller displacement. Also shown the forces on the bob, which result in a net force of mg sinθ toward the equilibrium position, that is a restoring force.
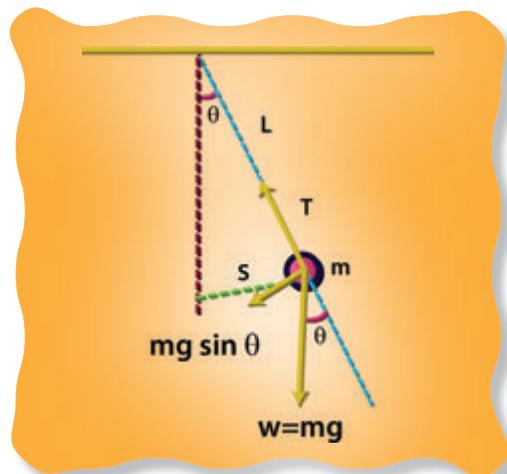
Pendulums are in common usage. Some have crucial uses, such as in clocks; some are for fun, such as a child's swing; and some are just there, such as the sinker on a fishing line. For small displacements, a pendulum is a simple harmonic oscillator. A simple pendulum is defined to have an object that has a small mass, also known as the pendulum bob, which is suspended from a light wire or string, such as shown in Figure.

The time period of simple pendulum is

$$T = 2\pi\sqrt{\frac{m}{k}} = 2\pi\sqrt{\frac{m}{mg/L}}$$

Thus,

$$T = 2\pi\sqrt{\frac{L}{g}}$$

Here L is the length of pendulum and g is the acceleration due to gravity.

Note the dependence of T on g. If the length of a pendulum is precisely known, it can actually be used to measure the acceleration due to gravity.

Crossword

ACROSS

1. The work to lift a weight of 5 Newton upto 2 meter is ____ Joule.

2. Unit of distance.

5. Unit of time.

7. 20 Joules of work were done in 5 seconds. How much power is this in Watt?

8. Unit of power.

9. The energy to move a one Newton weight through three meter is ____ Joule.

10. Rate at which work is done.
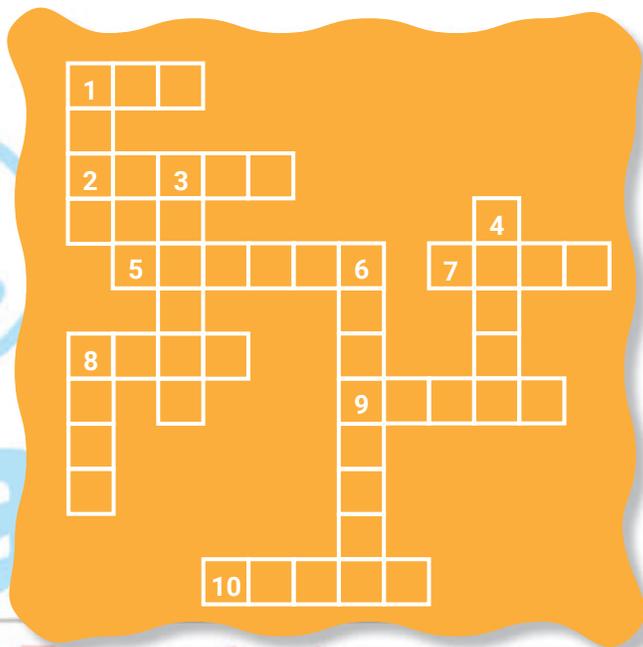
DOWN

1. Power is work done per unit ____.

3. A weight of ten Newton raised two meter takes ____ Joule of energy.

4. Unit of work and energy.

6. Work is force times of ____.

8. ____ is done when a force moves an object.

A crossword puzzle with the following filled answers:

- 1 (Down): TIME
- 1 (Across): TEN
- 2 (Across): METER
- 3 (Down): TWENTY
- 4 (Down): JULE
- 5 (Across): SECOND
- 6 (Down): DISTANCE
- 7 (Across): FOUR
- 8 (Across/Down): WATT / WORK
- 9 (Across): THREE
- 10 (Across): POWER
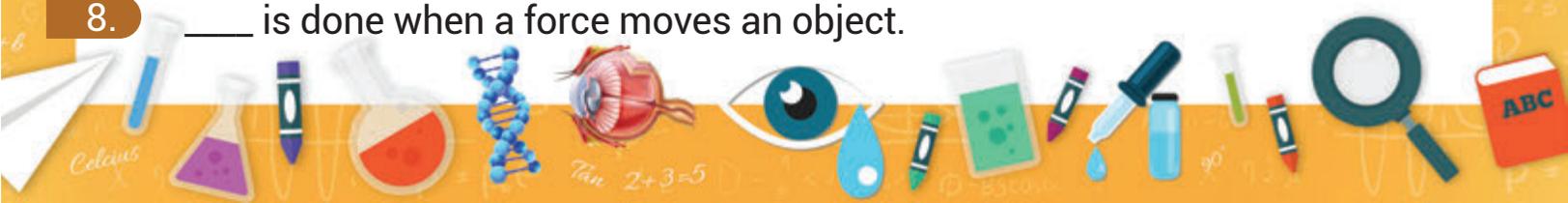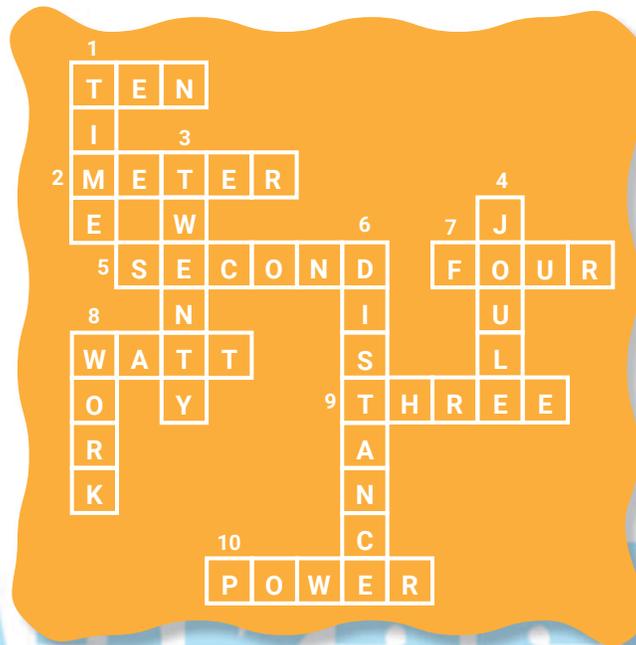
Atoms and Molecules
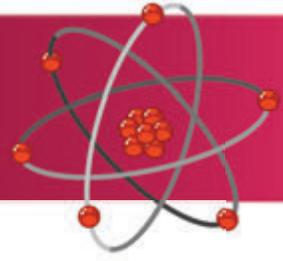
The Atoms

Atoms are the tiny building blocks of matter. All the matter on Earth is made up of various combinations of atoms. Atoms are the smallest particles of an element that exhibit all the characteristics of that element.

Use the words given in the box to label the diagram of an atom and fill in the blanks. Most of the words are used twice.

Electron	Electron orbit	Neutron
Nucleus	Proton	Atom

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____
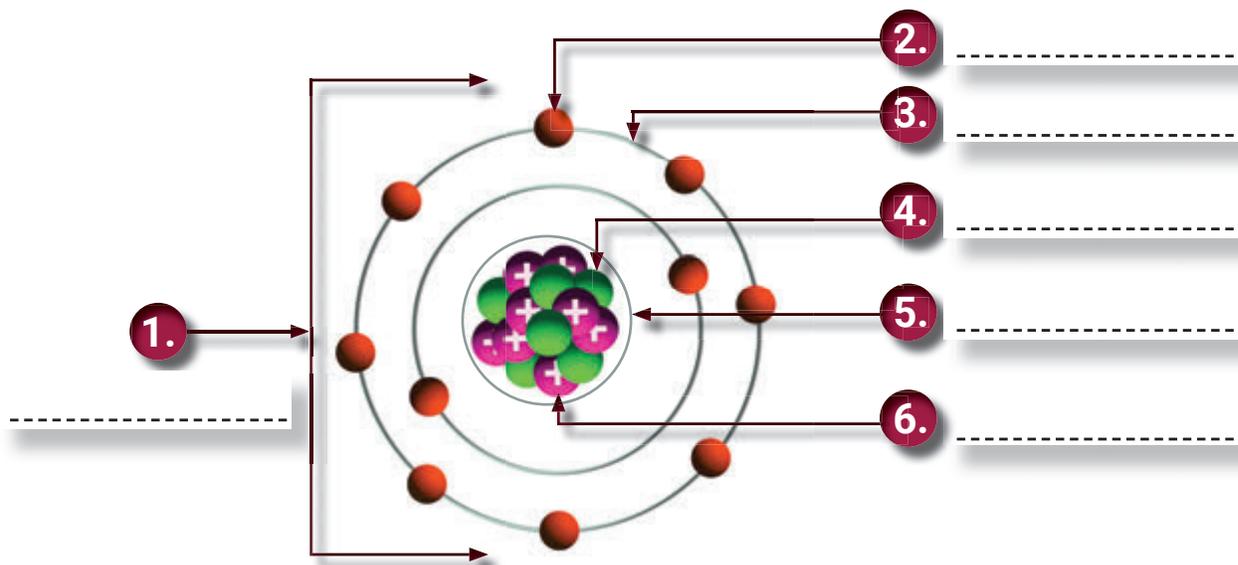
7 _____ is the smallest particle of an atom that carries a negative charge.

8 _____ is made up of the protons and neutrons and this part of the atom contains nearly all the mass of the atom.

9 _____ is the smallest particle of an atom that carries no charge.

10 _____ is the circular path of electrons around the nucleus.

11 _____ is the basic building block of all matter.

12 _____ is the smallest particle of an atom that carries a positive charge.

Interesting Facts

1. The human body contains around 7×10^{27} atoms. Every year our body replaces 98% of atoms.

2. Hydrogen is the most abundant element in the universe and there are about 10 million known compounds that can be made with carbon.

3. Marie Curie discovered the first form of radiation. She found the element and named it radium. She was also the first female recipient of the Nobel Prize.

4. Alpha decay is a type of radioactive decay in which the nucleus of an atom shoots out a particle having two protons and two neutrons. This is essentially a helium nucleus. This results an element with atomic number two less than the previous one. For example:

The decay of Uranium 238

$$^{238}_{92}U \Rightarrow {}^{234}_{90}Th + {}^{4}_{2}\alpha$$

Crossword

ACROSS

1. The number of atoms constituting one molecule is known as its _____. [9]

5. The number of moles of solute dissolved per litre of solution is known as _____. [8]

6. A group of 6.022×10^{23} atoms or molecules or particles is known as _____. [4]

7. The ion with a positive charge is known as a _____. [6]

11. Ratio of the number of moles of one component to the total number of moles present in solution is known as _____. [4, 8]

12. Latin name of iron is _____. [6]
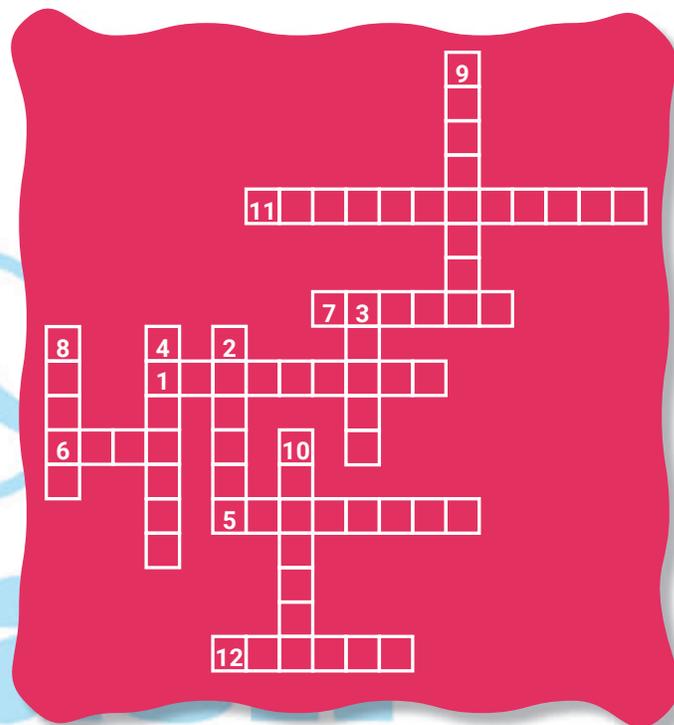
DOWN

2. Na is symbol of _____. [6]

3. The ion with a negative charge is known as _____. [5]

4. Combining capacity of any element is known as its _____. [7]

8. According to Dalton, matter is made up of small particles called _____. [5]

9. 6.022×10^{23} is known as the _____ number. [8]

10. The chemical symbol S represents _____. [7]
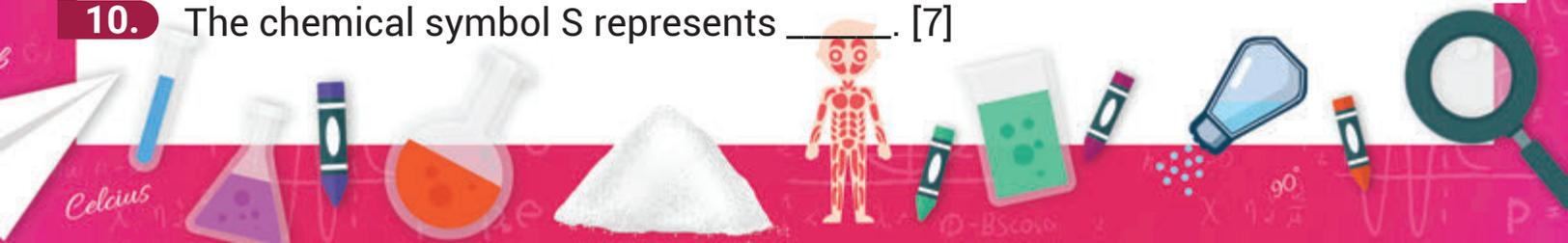
Puzzle based on chemical formulae

In this puzzle cations are written in a column and anions are in a row. You have to write the chemical formulae by using the cation and anion and then answer the questions mentioned in the rectangle.

Cations \ Anions	Oxalate	Phosphate	Sulphide
Mg^{+2}	Number of O atoms	Total charge on compound formed	Chemical formula
Al^{+3}	Number of C atoms	Number of P atoms	Number of S atoms
NH_4^+	Chemical formula	Phosphate is ___ valent anion. (mono/di/tri)	Number of H atoms

Medical IIT-JEE Foundations

Answer (The Atoms)

1 — Atom

2 — Electron

3 — Electron Orbit

4 — Neutron

5 — Nucleus

6 — Proton

7 — Electron

8 — Nucleus

9 — Neutron

10 — Electron Orbit

11 — Atom

12 — Proton

Answer (Crossword)

```
                              9
                              A
                              V
                              O
                              G
                              A
         11 M O L E F R A C T I O N
                              D
                              R
                        3
                        A
            7 C A T I O N
8         4      2       N
A         V      S       N
T       1 A T O M I C I T Y
O         L      D
M         E   10 I
6 M O L E  N    S
S         C     U
          Y   5 M O L A R I T Y
                P
                H
                U
         12 F E R R U M
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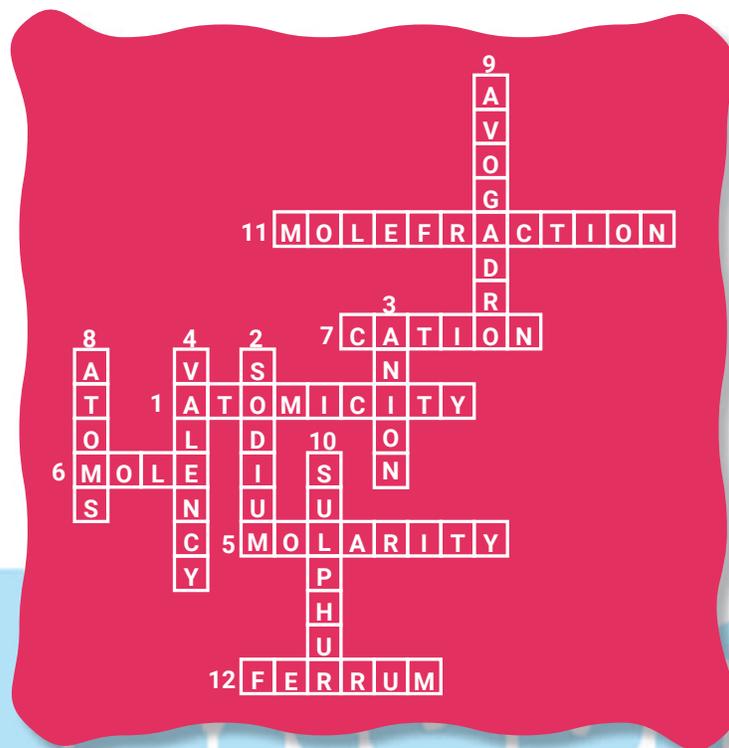
Answer (Puzzle)

Cations \ Anions	Oxalate	Phosphate	Sulphide
Mg^{+2}	4	0	MgS
Al^{+3}	6	1	3
NH_4^+	$(NH_4)_2C_2O_4$	Tri	8

Why Do We Fall Ill ?

Discovery

The prize bestowed for the Scientific Advancement?? Correct, 'The Nobel Prize' it is.

The Nobel Prize in Physiology, Medicine in the year 2020 also reflects one such prominent achievement . Let us understand this achievement a little more in depth.

Hepatitis — A global threat to human health

There are two main forms of hepatitis. One form is an acute disease caused by **Hepatitis A** virus that is transmitted by contaminated water or food. The other form is caused by

Viral hepatitis

Hepatitis A virus

Hepatitis B virus
Hepatitis C virus

Blood transmitted

Chronic Hepatitis Progression   10-30 years

Healthy liver   Chronic Hepatitis   Cirrhosis   Hepatocellular Carcinoma
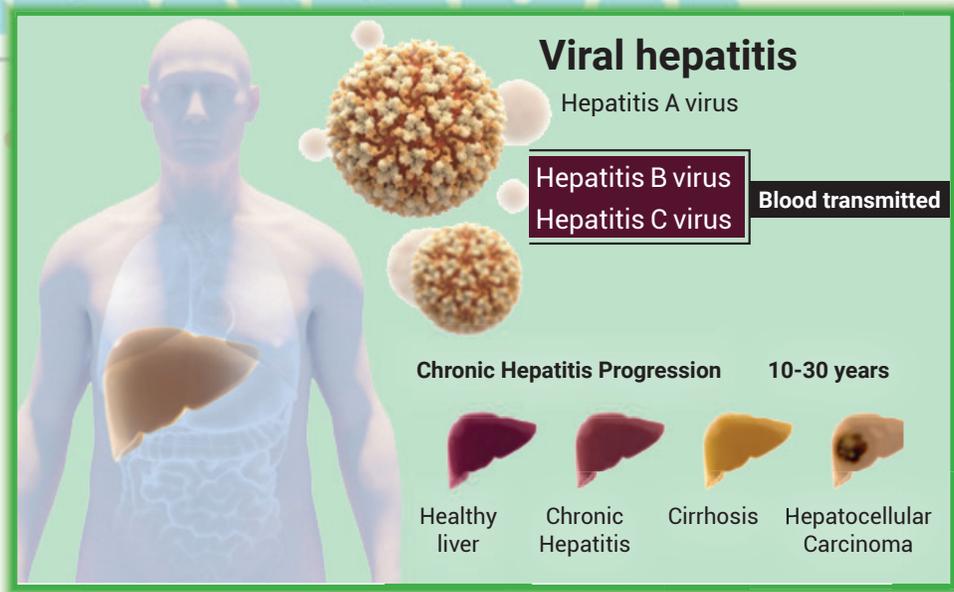
Hepatitis B virus or **Hepatitis C** virus and the 2020 Nobel Prize in Physiology or Medicine is awarded to Harvey J. Alter, Michael Houghton and Charles M. Rice for the discovery of Hepatitis C virus. This form of blood-borne hepatitis is often a chronic disease that may progress to cirrhosis and hepatocellular carcinoma.

> **Ten years after the 'Berlin patient,' doctors announce a second person has been effectively 'cured' of HIV**

For the second time, doctors appear to have put HIV into "sustained remission" with a stem cell transplant — effectively curing the recipient.

The case comes nearly 10 years after Timothy Ray Brown announced he was the so-called "Berlin Patient" — the first person who was functionally cured of HIV and able to stop taking antiretroviral drugs after an intensive round of chemotherapy and radiation and two bone marrow transplants.

Fighter antibodies in our body

1. Immunoglobulin A (IgA) is the major immunoglobulin in human colostrum (the first milk secreted by mammary glands at the time of parturition) and milk; however, it is also present in milk of most other species. Colostrum IgA is found in the form of secretory Immunoglobulin. Much of this is produced by plasma cells in the mammary tissue.

2. IgE plays a key role in mediating the initiation and development of allergic diseases. The IgE molecule performs its biological function by binding its receptors on target cells, activating the induction immunomodulation and protecting against parasitic worms (helminths) and the expulsion of environmental substances that include toxins, venoms, irritants and xenobiotics.

3. Immunoglobulin M (IgM) is also one of the first antibodies recruited by the immune system to fight infection. IgM populations rise very quickly when the body is first confronted with disease and then plummet just as quickly when there are enough IgG to take over.

Compared to the primary response, the secondary antibody response occurs more quickly and produces antibody levels that are higher and more sustained. The secondary response mostly involves IgG.
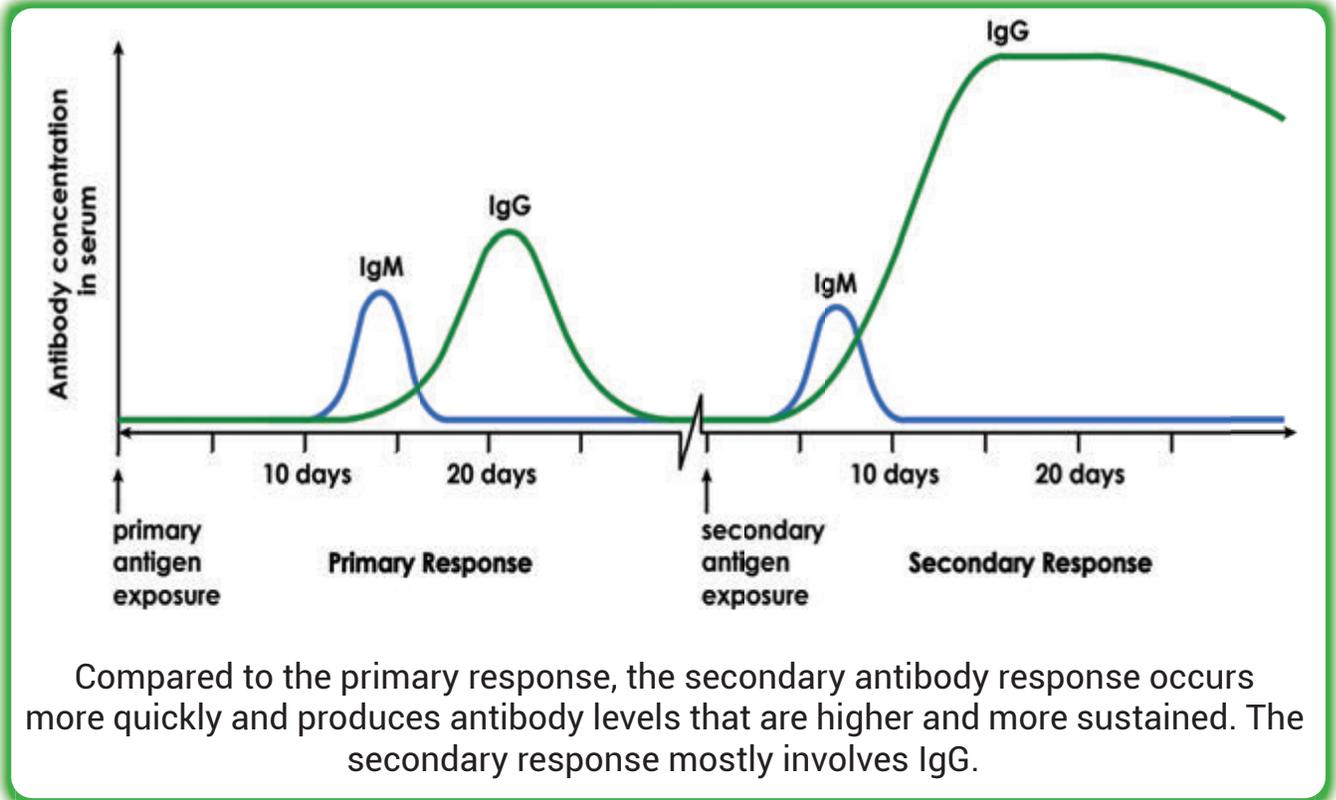
4. IgD accounts for only around 0.25% of antibodies in the human body. Despite its vital role in "kick-starting" the immune response, IgD is arguably the least understood antibody with little known about how it might participate in other parts of the immune system.

Word Search

So from the following crossword find out all the symptoms you have known for the COVID- 19. Let us see how well you are aware of the symptoms?? So let us begin...........

H	E	A	D	A	C	H	E	Q	U	K	U	E	R	D
A	K	S	E	X	U	M	K	V	S	F	S	A	Q	I
N	O	I	T	S	E	G	N	O	C	O	R	U	U	A
J	E	L	V	A	U	N	H	Z	N	F	B	W	S	R
T	V	I	L	E	O	B	J	Y	B	R	O	K	V	R
N	G	O	N	E	W	R	N	A	X	N	P	H	U	H
T	N	G	M	G	M	N	H	V	A	E	S	H	Z	O
I	E	N	O	I	U	S	W	T	W	U	S	H	J	E
D	M	I	K	R	T	N	Z	H	E	X	E	H	X	A
P	O	H	E	I	A	I	G	Q	L	R	A	Y	Z	T
W	M	T	P	U	K	U	N	W	N	R	O	M	X	R
Z	X	A	S	A	O	A	Y	G	D	T	A	S	T	E
R	F	E	X	C	I	S	U	S	L	L	I	H	C	V
O	A	R	A	H	R	N	R	X	I	U	R	S	R	E
V	S	B	P	D	H	S	L	K	I	I	U	E	Y	F

Preventive Measures and Control of Diseases

For diseases such as malaria and filariasis transmission occurs through insect vectors, the most important measure is to control or eliminate the vectors and their breeding places.

This can be achieved by avoiding stagnation of water in and around residential areas, regular cleaning of household coolers, use of mosquito nets, introducing larvivorous fish like *Gambusia* in pond that feed on mosquito larvae, etc.

Scientific Contribution

📢 *Plasmodium*, the causative agent of malaria, was discovered by **Charles Laveran** in 1880.

📢 **Lancisi** first suspected a relationship between mosquito and malaria.

Ronald Ross (1897) discovered (confirmed) relationship between malaria and mosquito.

📢 In 1897, **Ross** discovered oocytes of *Plasmodium* in the stomach of mosquito. He got Nobel Prize in 1902.

Crossword

Across

1. Biologist who first discovered T.B. [6, 4]

3. Mass scale immunisation is going on for this viral disease. [5]

5. Malaria is transmitted by this organism. [6, 9]

7. The term derived from Latin word 'vaccinia'. [7]

8. Who discovered smallpox vaccine? [6, 6]

9. DOTS programme is used for the treatment of _____. [12]

10. A protozoan disease in which antibiotic has no role. [7]
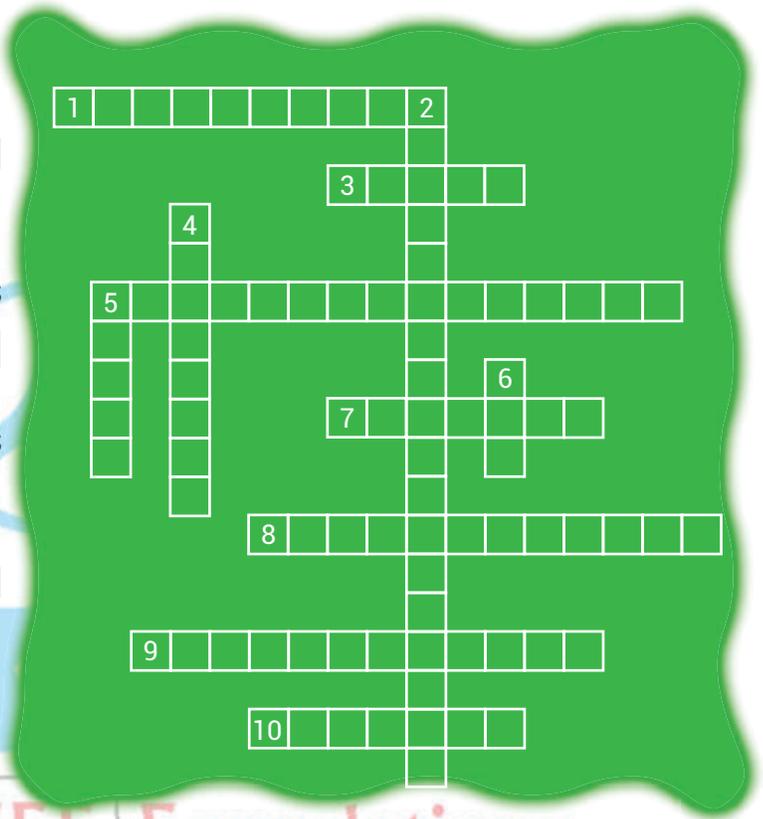
Down

2. This bacterium causes peptic ulcers. [12, 6]

4. The ability of body to resist disease is called _____. [8]

5. Skin diseases are mainly caused by these microorganisms. [5]

6. Causative agent of AIDS is _____. [3]

Multiple Choice Question

Rahul was infected by a pathogen, due to which he suffers from painless watery diarrhoea followed by vomiting. Doctor diagnosed and told him that, "this pathogen is transmitted through contaminated water and food." Which of the following structures represents the causative organism of this disease?

(a)
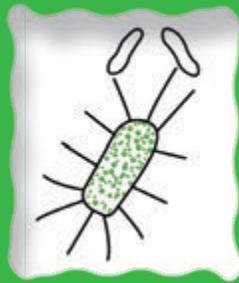
(b)
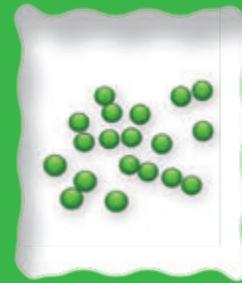
(c)
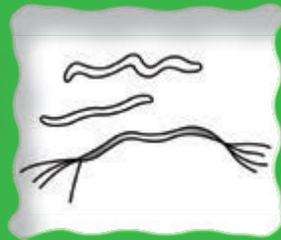
(d)

Answer (Word Search)

H	E	A	D	A	C	H	E	Q	U	K	U	E	R	D
A	K	S	E	X	U	M	K	V	S	F	S	A	Q	I
N	O	I	T	S	E	G	N	O	C	O	R	U	U	A
J	E	L	V	A	U	N	H	Z	N	F	B	W	S	R
T	V	I	L	E	O	B	J	Y	B	R	O	K	V	R
N	G	O	N	E	W	R	N	A	X	N	P	H	U	H
T	N	G	M	G	M	N	H	V	A	E	S	H	Z	O
I	E	N	O	I	U	S	W	T	W	U	S	H	J	E
D	M	I	K	R	T	N	Z	H	E	X	E	H	X	A
P	O	H	E	I	A	I	G	Q	L	R	A	Y	Z	T
W	M	T	P	U	K	U	N	W	N	R	O	M	X	R
Z	X	A	S	A	O	A	Y	G	D	T	A	S	T	E
R	F	E	X	C	I	S	U	S	L	L	I	H	C	V
O	A	R	A	H	R	N	R	X	I	U	R	S	R	E
V	S	B	P	D	H	S	L	K	I	I	U	E	Y	F

Answers (Crossword)

```
 1                              2
 R O B E R T K O C H           H
                     3         E
                     P O L I O L
         4                     I
         I                     C
 5       M                     A N O P H E L E S
 F E M A L E                   B     6
 U       U                     A     H
 N       N             7       C     I
 G       I             V A C C I N E
 I       T                     T     V
         Y         8           E
                   E D W A R D J E N N E R
                               P
     9                         Y
     T U B E R C U L O S I S
              10               O
              M A L A R I A
                               I
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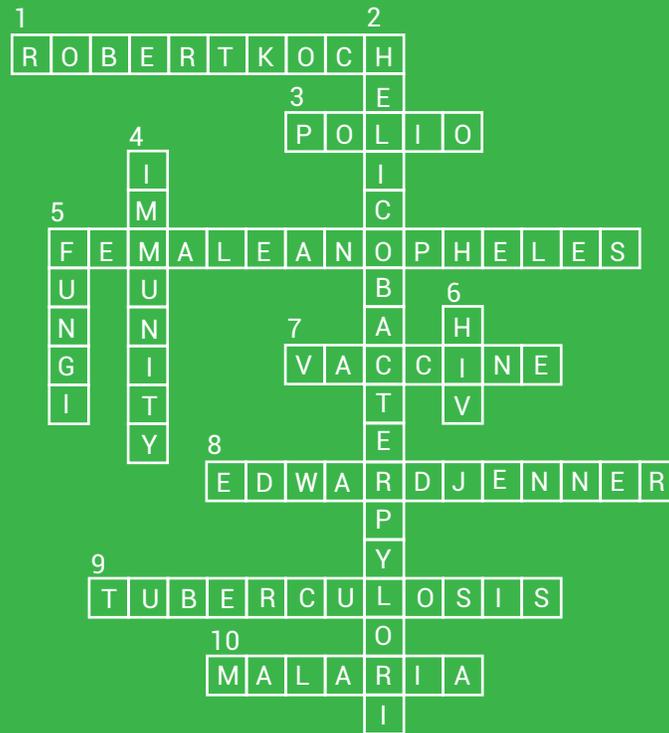
Answers (Multiple Choice Question)

(d)

Indian Constitution
(Important Amendments)

1st Amendment Act, 1951

The Ninth Schedule was added

7th Amendment Act, 1956

Abolition of Class A, B, C and D states – 14 States and 6 Union Territories were formed

10th Amendment Act, 1961

Dadra and Nagar Haveli was incorporated as the seventh Union Territory of India

12th Amendment Act, 1962

Goa, Daman and Diu incorporated in the Indian Union as a Union Territory

14th Amendment Act, 1962

Pondichery (Puducherry) incorporated into the Indian Union

61st Amendment Act, 1989

The voting age was decreased from 21 years to 18 years for both Lok Sabha and State Legislative Assemblies elections

73rd Amendment Act, 1992

Panchayati Raj institutions were given constitutional status. A new Part-IX and 11th Schedule were added

74th Amendment Act, 1992

Urban local bodies were granted constitutional status. A new Part IX-A and 12th Schedule were added to the Indian Constitution

Goods and Service Tax (GST) was introduced.

101st Amendment Act, 2016

103rd Amendment Act, 2019

A maximum of 10% Reservation for Economically Weaker Sections

सत्यमेव जयते

Active and Passive Voice

Verbs are said to be either ACTIVE or PASSIVE in VOICE. In ACTIVE VOICE sentences, the subject performs the action stated by the verb.

In PASSIVE VOICE sentences, the subject is acted upon by the verb.

Example:

Active	The crew paved the entire stretch of highway.

Passive	The entire stretch of highway was paved by the crew.

General Rules to TRANSFORM VOICE

Rule 1. The object of the sentence in Active voice becomes the subject of the sentence in Passive voice.

Rule 2. The subject of the sentence in Active voice becomes the object of the sentence in Passive voice.

Rule 3. The Passive voice contains the third form of the main verb.

Rule 4. The form of the verb is chosen according to the tense of the sentence.

Rule 5. Only transitive sentences can be changed into Passive voice.

Rule 6. In passive voice, helping verb is placed before the main verb.

Rule 7. In passive voice, preposition is placed before the object of the sentence, which was earlier the subject in active voice.

Example:

I	eat	an apple.
(Subject)	(Verb in Active Voice)	(Object)

An apple	is eaten	by me.
(Subject)	(Verb in Passive Voice)	(By + Object)

In passive sentences the preposition is placed before the object of the sentence, which was earlier the subject in active voice.

She looked for the dog.

The dog was looked for (by her).

Tense Change

Tense	Form	Example
Simple Present	is/am/are + past participle	The windows are cleaned by them.
Simple Past	was/were/ + past participle	The car was stolen by a thief.
Present Continuous	is/am/are + being + past participle	The house is being cleaned by her.
Past continuous	was/were + being + participle	The painting was being made by him.
Simple Future	shall/will + be + past participle	The match will be played by them.
Present Perfect	has/have + been + past participle	The park has been renovated by the MCD.
Past Perfect	had + been + past participle	The lock had been broken by Riya.
Future Perfect	will have + been + past participle	The piano will have been played by her.

A. Change the voice in the following sentences:

1. Buddha brought enlightenment.

2. The soldiers have repaired the broken bridge.

3. Who did that mistake?

4. Nobody can mend his chair.

5. We hope that Ms. Murmu will win.

6. They have closed the factory.

B. Choose the correct passive form from the given options.

1. The waiter filled the glasses with water.

   (a) The glasses filled with water by the waiter.

   (b) The water was filled in the glasses by waiter.

   (c) The waiter was filling the glasses with water.

   (d) The glasses were filled with water by the waiter.

2. Everyone will laugh at you.

   (a) You would be laughed at by everyone.

   (b) You will be laughed at by everyone.

   (c) You are laughed at by everyone.

   (d) You will have been laughed at by everyone.

3. The sight of the miserable beggar moved Rosemary to tears.

   (a) Rosemary was moved to tears at the sight of the miserable beggar.

   (b) Rosemary had moved to tears at the sight of the miserable beggar.

   (c) Rosemary has moved to tears at the sight of the miserable beggar.

   (d) Rosemary had been moved to tears at the sight of the miserable beggar.

4. It is impossible to do this.
   (a) This can't be done.
   (b) That is impossible to be done.
   (c) Doing this is impossible.
   (d) This is impossible to be done.

Answers

A. 1. Enlightment was brought by Buddha.
   2. The broken bridge has been repaired by the soldiers.
   3. (i) Whom was that mistake done by?

   OR

   (ii) By whom was that mistake done?
   4. His chair cannot be mended.
   5. It is hoped that Ms. Murmu will win.
   6. The factory has been closed (by them).

B. 1. (d)
   2. (b)
   3. (a)
   4. (d)

Question-1

S K 6 E Q 2 R ∗ C F 8 E $ G 2 # 4 9 L N 3

Which of the following is fifth to the right of the eighteenth from the right in the above arrangement?

(a) ∗   (b) C

(c) F   (d) 8

Question-2

THE MOD CPU RAM SHE

If the second letter in each of the word is changed to the previous letter in English alphabetical order then, how many words thus formed have more than one vowel?

(a) 1   (b) 3

(c) 2   (d) 4

Question-3

1 4 K B 5 9 # D R 2 @ 7 M G % H V T 3 8 * 1 J A

How many such symbols are there in the above arrangement each of which is immediately preceded and immediately followed by a digit ?

(a) 1   (b) 3

(c) 2   (d) 4

Question-4

% 4 K B 5 9 # D R 2 @ 7 M G % H V T 3 8 * 1 J A

How many digits are not immediately preceded by a letter ?

(a) 5   (b) 4

(c) 6   (d) 3

Question-5

G 4 S % N E # L 2 M 5 A © Z 3 Y @ D & H 1 U V 9 * Q I T 7 8 Q R 6

How many symbols are there which are immediately preceded by a vowel and immediately followed by an alphabet ?

(a) 2   (b) 1

(c) 4   (d) 3

Question-6

G 4 S % N E # L 2 M 5 A © Z 3 Y @ D & H 1 U V 9 * Q I T 7 8 Q R 6

Which of the following term would be 8th to the left of the 9th term from the right end ?

(a) 3   (b) D

(c) @   (d) Y

Directions (Q.7 – Q.9)

In each of the following alphanumeric series, find the missing term.

Question-7

A – 9,   B – 16,   C – 25,   ?,   E – 49

(a) D – 36   (b) F – 36

(c) D – 30   (d) F – 25

Question-8

Z – 12,   ?,   V – 4,   T – 0,   R – 8

(a) X – 10   (b) X – 25

(c) X – 16   (d) X – 8

Question-9

G – 4,   H – 6,   ?,   J – 10

(a) I – 8   (b) K – 12

(c) I – 9   (d) K – 11

Question-10

234   657   383   674   993

If all the digits in each of the given numbers are arranged in ascending order within the number, which will be highest number thus formed ?

(a) 993   (b) 657

(c) 674   (d) 234

Solution-1

Answer : (b)

Solution-2

Answer : (a)

THE   MOD   CPU   RAM   SHE

Now words are

TGE   MND   COU   RZM   SGE

So only COU is desired word.

Solution-3

Answer : (c)

Solution-4

Answer : (a)

Solution-5

Answer : (a)

Solution-6

Answer : (c)

Solution-7

Answer : (a)

A = 1	$\Rightarrow$	$(1 + 2)^2 = 9$
B = 2	$\Rightarrow$	$(2 + 2)^2 = 16$
C = 3	$\Rightarrow$	$(3 + 2)^2 = 25$
D = 4	$\Rightarrow$	$(4 + 2)^2 = 36$

Solution-8

Answer : (d)

Z = 26	$\Rightarrow$	$6 \times 2 = 12$
X = 24	$\Rightarrow$	$4 \times 2 = 8$
V = 22	$\Rightarrow$	$2 \times 2 = 4$
T = 20	$\Rightarrow$	$0 \times 2 = 0$

Solution-9

Answer : (a)

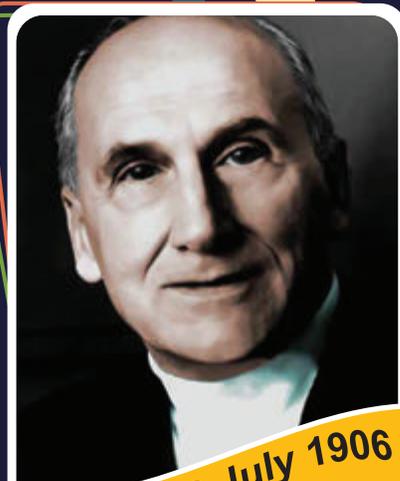|		
G = 7	$\Rightarrow$	$7 - 3 = 4$
H = 8	$\Rightarrow$	$8 - 2 = 6$
I = 9	$\Rightarrow$	$9 - 1 = 8$
J = 10	$\Rightarrow$	$10 - 0 = 10$

Solution-10

Answer : (b)

Happy Birthday

Vladimir Prelog

Born - 23 July 1906
Died - 07 Jan 1998

Yugoslavian-Swiss chemist who shared the 1975 Nobel Prize for chemistry with john W. Comforth for his work on the stereochemisty of organic molecules and reactions. Stereochemistry is the study of the three-dimensional arrangements of atoms within molecules. He authored systematic naming rules for molecules and their mirror-image version, that is, which configuration will be referred to as "dextro" and which will be the "levo" (right or left). Also, by X-ray diffraction, he elucidated the structure of several antibiotics.

NSEs
National Standard Examinations
2023-24 Result

Aakash

1430 Students Scored Above MAS

344 Students Qualified for *INO-2024

(Group A & B)
34+30
NSEA*

156
NSEB*

72
NSEC*

23
NSEP*

29
NSEJS*

Our Toppers from Classroom Programs

Diptanshu Sharma
NSEB | NSEC | NSEP

Priyanshu Sarkar
NSEB | NSEC | NSEP

Mridul Garg
NSEB | NSEC | NSEP

Zaman Husain
NSEA | NSEC | NSEP

Shubhradeep Paul
NSEA | NSEC | NSEP

Samvit Shandilya
NSEA | NSEC | NSEP

Ujjwal Singh
NSEA | NSEC | NSEP

Krishna S S Vuppala
NSEA | NSEC | NSEP

Utkarsh Awadhiya
NSEA | NSEB

V Koushik Raghavan
NSEA | NSEB

Om Amrit Mohanty
NSEB | NSEC

Aditya Dagwar
NSEB | NSEC

Aadesh Nichat
NSEB | NSEC

Harsh Raj
NSEB | NSEC

Rishi S Shukla
NSEC | NSEP

Keshaw Ranjan
NSEA | NSEC

Piyush Dhakar
NSEJS

Sushant Agarwal
NSEJS

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 | **NESJS**– National Standard Examination in Junior Science | **INO**–Indian National Olympiad

Our Top Performers

39

INO* Qualified Students for OCSCs/IMOTC APMO-2023

Lakshya Sharma
Qualified INBO

V Koushik Raghavan
Qualified INJSO

Anoop Singh
Qualified INPhO

Amritanshu Singh
Qualified INAO

Souptik Das
Qualified INChO

Harsh Raj
Qualified INBO

Mohit Shekher Shukla
Qualified INJSO

Aakash Gupta
Qualified INChO

Mridul Manya Anand
Qualified INBO

and many more...

Our Top Performers

108

Classroom Students

Qualified in RMO* 2023

Sahil Rai
4 Year Classroom

Zaman Hussain
2 Year Classroom

Samvit Shandilya
2 Year Classroom

Arnav Jindal
4 Year Classroom

Adithyan K
2 Year Classroom

Rishi S Shukla
2 Year Classroom

Deekshant Sharma
2 Year Classroom

Rujul Garg
2 Year Classroom

Aayush Agarwal
3 Year Classroom

and many more...

Our Top Performers

698

Classroom Students

Qualified in IOQM* 2023

Madhav Manu
Class XII

Zaman Hussain
Class XII

Gautham P A
Class XII

Samvit Shandilya
Class XI

Sahil Rai
Class XI

Arnav Jindal
Class XI

Rujul Garg
Class XI

Mohit S Shukla
Class X

Atiksh Jain
Class X

and many more...

***RMO** -Regional Mathematical Olympiad **| IOQM -** Indian Olympiad Qualifier in Mathematics
INOs - Indian National Olympiads **| OCSCs** - Orientation cum Selection Camps
IMOTC - International Mathematical Olympiad Training Camp **| APMO -** Asian Pacific Mathematics Olympiad