



THE TIMES OF INDIA

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TODAY'S EDITION

Want to get a firm hold on the formulae and equations? Our experts tell us how to memorise them
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STUDENT EDITION

TUESDAY, APRIL 20, 2021



WEB EDITION

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ANTARCTICA'S DOOMSDAY GLACIER



X-PLAINED

Pics: Istock

WHAT: Researchers have warned that the supply of warm water to Antarctica's Thwaites Glacier, also known as the 'doomsday glacier', is larger than previously thought. It may lead to faster melting, and accelerate ice flow, a risk for global sea levels, they add

According to experts, warm water is approaching the pinning points of the glacier from all sides, impacting the locations, where the ice is connected to the seabed, and where the ice sheet finds stability. This, they warn, has the potential to make things worse for Thwaites, whose ice shelf is already retreating

WHY IS IT A MATTER OF CONCERN:

- With a width of 120 km and a size of 1.9 lakh sq km, the fast-moving and melting Thwaites Glacier is often described as the 'doomsday glacier', because of the risk it faces and poses. It has enough water locked up in it to raise the sea level of the world
- Studies have found that the amount of ice flowing out of it has nearly doubled over the past 30 years.
- Today, Thwaites' melting already contributes 4 per cent to the global sea level rise each year
- It is estimated that it would collapse into the sea in 200-900 years

HOW IS THWAITES MELTING:

- Experts claim that the location of the grounding line (the region where ice, transitions from grounded ice sheet, to freely floating ice shelf) is a pointer to the retreat of a glacier
- According to them, when glaciers melt and lose weight, they float off the land, where they used to be situated, leading to the grounding line to retreat, exposing more of glacier's underside to seawater
- This leads to the speeding up of the glacier, which in turn stretches and thins, causing the grounding line to retreat even further

THE IMPORTANCE OF THWAITES

Currently, Thwaites acts as a crucial buffer between the warm sea and other glacial shelves. Its collapse could expose the neighbouring ice masses in West Antarctica to warm the ocean currents

Cumulatively, this process could end up raising sea levels by as much

as 10 feet, enough to permanently submerge several coastal areas,

Pics: Istock



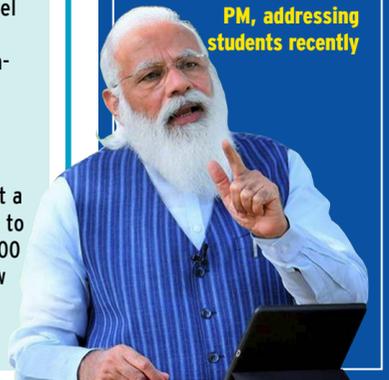
including New York City, Miami and the Netherlands

The increase in sea level is also likely to result in greater frequency of high-intensity storms. For instance, an increase in sea level of 50cm would mean that a storm that used to arrive every 1,000 years would now be witnessed every 100 years

Quote unquote

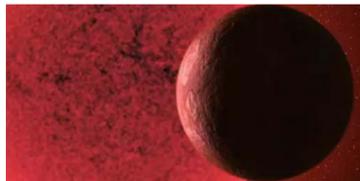
Every student has his own ability and potential. On the basis of these abilities, there arise three questions before students and teachers. First, what can they do? Second, what can they do, if they are skilled? And third, what do they want to do? If we can combine the inner strength of the youth with institutional strength, then they can achieve whatever they want

Narendra Modi, PM, addressing students recently



DISCOVERED: A 'super' Earth that takes only 2.4 days to complete a year

BREAKTHROUGH



Establishing human life on another planet may seem like a dream that's far away, but astronomers are already on the hunt for the next new candidate. And they seem to have found one, 36 light years away. A student at the Instituto de Astrofísica de Canarias, a research institute in the Canary Islands, has uncovered a new super Earth orbiting the star GJ 740, a red dwarf. Interestingly, it only takes 2.4 days to complete one orbit around its star. According to researchers, it has the second-shortest orbital period detected around a red dwarf so far. This super Earth around GJ 740 has three times the mass of the Earth – a little smaller than Neptune, the fourth-largest planet in our solar system after Jupiter, Saturn and Uranus.

WHAT IS A 'SUPER' EARTH?

Super Earths are at least twice the size of our planet, and up to 10 times its mass. They're also lighter than the solar system's ice giants, Neptune and Uranus. But they don't necessarily have to be made up of rocks. They can also be made up of gas or a combination of both. They are called 'super' Earth because of its massive size

ARE SUPER EARTHS, NEXT TO RED DWARFS, HABITABLE?

- Astronomers come across red dwarfs a lot, as there are dozen of them within the Milky Way. Some studies estimate that red dwarfs make up three-quarters of the stars in the galaxy
- In 2013, simulations showed that the atmosphere around red dwarfs may be conducive to life under the right conditions. The sun would appear a lot bigger, and there may be black plants instead of green

Source: Business Insider

While the Earth takes 365.25 days to complete a year, this new super Earth does in less than a week, in two days, nine hours and thirty minutes to be precise

Teens design a rover to exhibit at NASA

Ten school students from Cuttack, Odisha, have designed a rover to be exhibited at the NASA Human Rover Exploration Challenge 2021. The students, belonging to the Navonmesh Prasar Student Astronomy Team said, "the rover has been designed for

the Artemis Mission 2024, which will send the first woman and the next man to the Moon." The rover is capable of travelling on different kinds of martian terrains, they added.



The competition requires participants to design, build and test a human-powered rover, which is capable of traversing exoplanetary-like landscapes

Pics: ANI

Child safety groups urge FB to reconsider Instagram for kids launch

TECHAWAY

Opposing Facebook's plans to launch an Instagram for children, child safety advocates from around the globe have urged the social media giant to cancel its plans to launch a version of Instagram for kids. In a letter to Mark Zuckerberg, the CEO of Facebook, they called Instagram as "image-obsessed", and stated that the social media platform is dangerous for children's mental health and privacy. "Instagram, in particular, exploits young people's fear of missing out and desire for peer approval, and encourage children and teens to constantly check their devices and share photos of their followers," the letter stated.



Facebook has received the letter at a time, when it has been criticised for adding to misinformation globally across its platforms. The letter also spoke about younger children not being equipped to handle the pressures that arise as a result of being active on social media platforms.

As per the current Instagram policies, children under the age of 13 cannot create an account for themselves. In contrast, Instagram for kids would only allow children under the age of 13 to use Instagram

Share your views at toinlet75@gmail.com

105 METRE FACTOID

That's the length of a six smashed by Mumbai

Indian batsman Kieron Pollard, the longest in the IPL history. In the 17th over bowled by debutant Mujeeb Ur Rahman from SRK,

Pollard hit the first six of his knock, which landed on the roof of Chepauk. The West Indies dasher hit three maximums during his innings against Sunrisers Hyderabad (SRK) to become the third overseas player after Chris Gayle and AB de Villiers to hit 200 sixes in the IPL.

Equal pay has been my biggest struggle: Gal Gadot

Even 'Wonder Woman' has to fight for equal pay, Hollywood star Gal Gadot says, her biggest struggle as a woman has been against pay disparity between her and her male co-stars.

Celeb talk

It may be noted that after the film's box office success, there were stories that the actor was paid less than what her male counterparts earned in similar roles. It reignited the debate around the gender pay gap, something that several female Hollywood actors, from Jennifer Lawrence, Salma Hayek to Emma Watson, have spoken about

My biggest struggle as a woman has been to get equal pay as my male co-stars, (all of) whom I love so much. As a human being, I have struggled with many other problems. But the thing that I fought for the most, was equal pay with my male stars



Pollard overtook RCB star Glenn Maxwell, who had hit a 100-metre-long six earlier this season

- Pollard (105m),
- Maxwell (100m),
- Surya Kumar Yadav (99m),
- Manish Pandey (96m),
- Abdul Samad (93m)

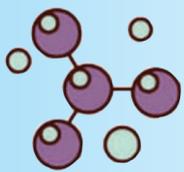
have hit the biggest sixes in IPL 2021, so far

CHEMISTRY IS ALL ABOUT FORMULAS, EQUATIONS, REACTIONS AND MORE. HERE ARE SOME WAYS TO REMEMBER THEM TO GET A FIRM HOLD ON THE SUBJECT.

Balance the equations of life in Chemistry

CHEMICAL EQUATION

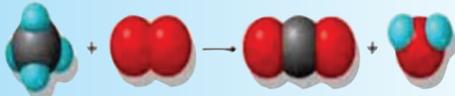
A chemical equation is a symbolic representation of a chemical reaction in which the reactants and products are denoted by their respective chemical formulae. Let's look at the easiest way to remember chemical equations:



HOW TO BALANCE EQUATIONS

STEP 1:

Write the equation and count the number of each atom in both reactant and product.



Reactants	=	Products
1 C atom	=	1 C atom
4 H atoms	≠	2 H atoms
2 O atoms	≠	3 O atoms

STEP 2:

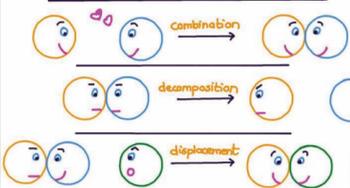
Place a coefficient in front of the molecule to balance the equation.



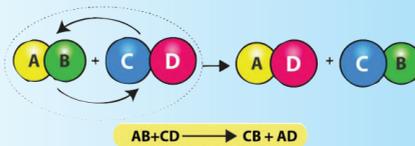
C-1	=	C-1
H-4	=	H-4
O-4	=	O-4

AN EASY WAY TO REMEMBER THE TYPES OF REACTIONS ARE

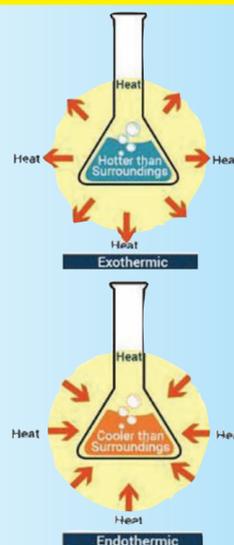
TYPES OF CHEMICAL REACTIONS



DOUBLE DISPLACEMENT REACTION



EXOTHERMIC & ENDOTHERMIC REACTION



OXIDATION REACTION

ADDITION OF OXYGEN

OXIDATION

REMOVAL OF HYDROGEN

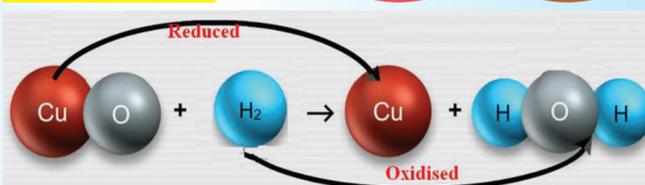
REDUCTION REACTION

REMOVAL OF OXYGEN

REDUCTION

ADDITION OF HYDROGEN

REDOX REACTION



D Mary Sorna Rani, Chemistry teacher, Bhavan's Adarsha Vidyalaya, Kakknad, Ernakulam

UPSIDE OF DOWNTIMES

Exams postponed?

Make the best use of the extra time

Have you imagined how sportspersons might have felt when Tokyo 2020 Olympics got rescheduled because of the pandemic? It came as a seismic shift to sports fraternity worldwide, all of whom had been working hard and waiting for four years for the Olympics. Sometimes we can't control the situation but we can adapt and adjust ourselves.



As examinations are postponed, the situation has received mixed reactions from students and parents. Students who were fully prepared and ready to compete, now feel dejected while some welcomed the decision as this gives them better chance to revise and cover more topics.

So, here are few points to keep you driving towards your goal, with extra time in your hand:

SET YOUR OWN PACE

Don't sit with books and study the whole day. Instead, decide study time and topics.



GO DEEP

Instead of last-minute cramming, take up more in-depth study of topics.

INCLUDE COMPETITIVE EXAM PREP

Utilise this time to take up more practice questions, previous year question papers for accuracy and time management.

DON'T PROCRASTINATE

Make flexible yet realistic routine to blend in studies, physical activities, relaxation time in balanced way.

DON'T TAKE VERY LONG BREAKS

This could spoil your momentum and study mode. Rather, set daily goals.

AVOID BINGE

Don't Netflix & chill. Avoid binge watching shows & movies.

DON'T OVERDO

Don't stress yourself. Proceed calmly.

Don't let the uncertain and tough times make you weak, but take this as opportunity because no effort ever goes waste! Remember curricula is designed in a flow chart manner, whatever you study now will help you in future courses.

Ginni Nanda,
Teacher, Podar
International
School, Sangli



Everything felt so unfamiliar when the pandemic began last year. There was fear and there was stress. The uncertainties continue to loom and life is yet to come back to normal. The exams are now cancelled, but the tension about the future lingers. There are a few ways to keep oneself grounded. If you feel like you are losing your way, a good trick is to press your palms together with your eyes closed. This helps you find your place and jumpstart your sense of balance, rooting you to something concrete. Another trick to slow things down is to press your palms against a wall with your feet firmly on the floor. Apart from giving you an outlet for your energy this pose allows you to collect your thoughts and take things more slowly.

Yashica Prasad, class X A, Vista School, Hyderabad

BREATHE EASY



SELF MOTIVATION HELPS NAVIGATE UNCERTAINTIES

With exams being postponed, there is ample time now to revise every subject. There are no excuses now! I have made a habit of setting three main objectives to be accomplished on a daily basis. I write them on a sticky note and paste it at a place where I can see it frequently. By limiting the number of daily goals, I have clearly defined what I need to work on. I am able to work with greater intention on these self-assigned tasks.

It has curbed procrastination. This habit has in fact made me a motivational speaker on social media platforms. Self-motivation and setting realistic goals have helped me concentrate more on my academics and score good grades.

Rishi Bhardwaj, class - XII 'B', Army Public School, Bolarum, Secunderabad



MY SCHOOL PROJECT

TRANSMITTING MUSIC THROUGH LEDs

You know that radio waves can transmit audio, video and similar signals, but did you know that visible light can do the same thing? Using a very simple circuit design and some commonly available parts, we can easily construct a device which allows us to transmit music wirelessly through LED lights!

MATERIALS USED IN THIS PROJECT

- An LED bulb
- A resistor
- A solar panel
- A 9-volt battery
- A 9-volt battery holder
- Aux cables (the cable which allows us to connect to a media player)
- Connecting wires circuit diagram for the project

For a typical setup, the LEDs are powered solely off the battery. Since the current provided by the battery is DC (direct current), there is absolutely no variance in the light of the LEDs. But if we connect the audio jack which is connected to a music player in between the lights and the battery, a tiny electrical current passes through it.

Normally, this current is used to power your headphones or speakers, since they contain advanced electromagnets which take very little electricity to run. But in this project, we are forcing the tiny signal from the music player to instead 'interrupt' the flow of electricity to the LEDs.

The interruption in the electricity causes those LEDs to



flash. Moreover, that flashing occurs in exactly the same pattern as the interruption. And since the so-called interruption is, in fact, a signal carrying music, that means that the lights are now transmitting the information which the music player is playing.

In a fashion similar to how a

radio antenna receives broadcasts, we then use a solar panel to convert the pulsating light frequency back into electricity, which the headphones can convert to sound energy. In this way sound can be transferred through light.

Ishanth Rajesh, class VII, DPS Whitefield, Bengaluru

