

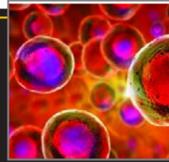


THE TIMES OF INDIA

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TODAY'S EDITION

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STUDENT EDITION
TUESDAY, JULY 6, 2021

Spotlight

My ultimate goal is to become world champion: Youngest Grandmaster Abhimanyu Mishra



Abhimanyu Mishra, who recently became the youngest chess Grandmaster in history, said that his ultimate goal is to be the World Champion. Abhimanyu, who started playing chess when he was two-and-a-half, idolises World Chess Champion Magnus Carlsen. Talking about his passion for chess, he

The 12-year-old player from New Jersey recently scored his third GM norm in Budapest, having already crossed the required 2,500 ELO rating barrier

said, "What I like about chess is that you can crush your opponent without doing any harm to them. My role model is Magnus Carlsen..... the way he has been dominating after becoming the World Champion is amazing," said Abhimanyu. Thanking his parents for supporting him, the young lad said, "My parents have been supporting me tremendously, without them I cannot imagine coming up this far". And how did he feel when five-time world champion Viswanathan Anand congratulated him? Abhimanyu said, "It is a different feeling when a person of his calibre congratulates you. I wish to meet him soon."

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Education

CISCE REVIEWS SYLLABUS TO REDUCE LOAD FOR '22 ICSE, ISC



The Council for the Indian School Certificate Examinations, which holds the ICSE and the ISC examinations nationwide, has started reviewing the syllabus to reduce the load in both ICSE and ISC examinations to be held in 2022. The first such re-structuring of the English language and literature syllabus and that of Indian languages has been announced on the Council's website. This has been done keeping the pandemic situation in mind, since physical teaching-learning is suspended, and the online mode is on.

- The circular says that the revised syllabus of other subjects will also be announced shortly
- The reduction has been done in such a way that the quality of the academic intent will not be compromised while helping students to cope with the online mode
- The reduced English literature syllabus for the ICSE will now have just three Acts from 'Merchant of Venice', four poems, and four short stories
- Similarly, in ISC, there will be just three Acts from 'The Tempest', five poems, and five short stories



DID YOU KNOW?

EARTH'S CRYOSPHERE shrank by 87,000 sq kms per year in last 37 years!

WHERE DID IT OCCUR?

- 1** The shrinkage primarily occurred in the Northern Hemisphere, with a loss of about 102,000 square km each year. Those losses are offset slightly by growth in the Southern Hemisphere, where the cryosphere expanded by about 14,000 square kilometres annually. This growth mainly occurred in the sea ice in the Ross Sea around Antarctica, likely due to the patterns of wind and ocean currents and the addition of cold meltwater from the Antarctic ice sheets
- 2** The estimates showed that not only was the global cryosphere shrinking but that many regions remained frozen for less time. The average first day of freezing now occurs about 3.6 days later than in 1979, and the ice thaws about 5.7 days earlier

The global cryosphere—the areas with frozen water on the Earth—shrank by about 87,000 square kilometres per year on average between 1979 and 2016, as a result of the climate change, according to a new study. Researchers from the Lanzhou University in China calculated the daily extent of the cryosphere and averaged those values to come up with yearly estimates. While the extent of the cryosphere grows and shrinks with the seasons, they found that the average area covered by the Earth's cryosphere has contracted overall since 1979, correlating with the rising air temperatures.

A CAUSE OF CONCERN?

- Scientists said the cryosphere is one of the most-sensitive climate indicators, and the first one to demonstrate a changing world
- Its change in size represents a major global change, rather than a regional or local issue
- The overall shrinking of the cryosphere was a signal of climate change, they added

The cryosphere is intended to reflect sunlight from its surface to cool the Earth. Therefore, the study says that the shrinking of this area could lead to global changes in air temperatures, sea levels and ocean currents

NOW, A BATTERY-OPERATED REUSABLE MASK



Scientists at the NMIMS University, Mumbai, have developed a battery-operated reusable mask that offers protection from airborne human pathogens. The four-layered new mask is made of cotton with a metallic mesh, which acts as an electrical filter. During inhaling and exhaling, the pathogens coming in contact with the mask get neutralised instantly, ensuring complete protection to the user.

TECH BUZZ

- The mask is reusable, self-sterilising, and environment-friendly. The battery lasts for more than six months, if used with proper care, and is replaceable. This mask replaces more than 240 regular masks, reducing the environmental burden, and is thus eco-friendly
- The masks will be commercially rolled out and marketed by pharma company, Milton Group. It will be priced between ₹ 800 and ₹ 1,000

Third wave of Covid-19 may hit its peak between October-November: Govt panel scientist

The third wave of Covid-19 may hit its peak in October-November this year, if Covid-appropriate behaviour is not followed, Manindra Agarwal, a scientist of the government panel in charge of modelling Covid-19 cases, has warned. However, it is likely to see half the number of daily cases that were recorded during the second surge, he said, adding that if a new virulent variant of SARS-CoV-2 emerges, the infection will spread faster during the third wave.



WhatsApp will soon let users choose video quality before sharing

WhatsApp has started testing a new feature that lets users share videos in high quality. Named 'Video Upload Quality', it's currently under development and therefore, not available for the public.

- In a future update, users will be able to choose the video upload quality by picking one of the three options, namely, auto (recommended), best quality, and data saver
- In the case of auto, WhatsApp will detect the best compression algorithm for that specific video.
- The best quality lets WhatsApp always send the video using the best

quality available. The data saver option allows WhatsApp to compress videos before sending them. This new feature will come handy to the users, as WhatsApp users currently don't have the option to select the quality of videos before sharing them with their contacts

TECHAWAY

Dia Mirza shares five ways to keep OCEANS HEALTHY



Environment activist and actor Dia Mirza has reiterated her concern over marine ecosystems, habitats and resources being vitiated and destroyed by pollutants, plastic waste, overfishing and unsustainable business practices. She shares tips that will help you do your bit to keep the oceans clean and healthy...

STOP USING SINGLE USE PLASTIC THAT ENDS UP IN OCEANS AND LANDFILLS

1 Straws, coffee cups, takeaway containers and plastic bottles, etc, that we throw away after using, end up in oceans, which in turn are ingested by marine organisms. To avoid this, carry your own water bottle, a metal straw, cutlery and a coffee cup everywhere you go. Switch to biodegradable toothbrushes and sanitary products, and refuse plastic shopping bags, and carry your own.



VOLUNTEER FOR BEACH CLEAN UPS

2 If you live in a city like Mumbai, where beaches are an intrinsic part of life, you can volunteer for beach clean up drives. If you are a tourist, you can make sure you don't litter, clean up after yourself, and pick up trash if you come across any. Donating to organisations that are fighting to keep the oceans healthy, can be another good way to help.

MAKE SUSTAINABLE CHOICES IN EVERYDAY LIFE

3 Harsh detergents that we use for washing clothes can harm marine life by entering oceans through our sewer systems. We can prevent that by finding organic alternatives. Our

food choices also affect marine health directly as unsustainable fishing practices are depleting fish population. While consuming products and delicacies, we can be a little mindful and ensure that we are not enjoying the exploitation of endangered species. Remember also to not flush sanitary napkins and pet litter down the toilet.

REDUCE YOUR CARBON FOOTPRINT

4 Greenhouse gases like carbon dioxide trap heat in the atmosphere and warm our planet. Carbon dioxide is also known to make our oceans more acidic and cause damage to corals globally. We can help change that by reducing our carbon footprint and energy consumption. Turning off the lights when they are not needed is just one way to start making a difference but the more you study how vital and vibrant our oceans are, the more ways you will find to cut down on energy consumption at home and while travelling.



ASK FOR GREENER POLICIES THAT SUPPORT OUR ENVIRONMENT

5 Use your voice and your vote to choose public officials, who will work for and not against our oceans, forests and ecosystems. Research if your representatives are doing enough to protect marine life and demand better practices from businesses as well.

Celeb talk

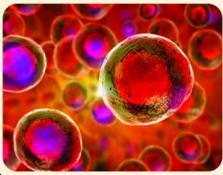
LIVING ORGANISM

ENERGY PRODUCTION

Just as living things consume food to replenish their energy supplies, cells must constantly produce energy to replenish that used by the chemical reactions taking place.

All living organisms require energy to perform their life processes. Energy is the ability to do work or to create some kind of change. There are many processes that require energy:

- Movement
- Reproduction
- Maintaining homeostasis of many different conditions
- Acquiring and digesting food
- Producing proteins



All chemical reactions that take place inside cells, including those that consume or generate energy, are referred to as the cell's **metabolism**.

Living cells accomplish energy using ATP (adenosine triphosphate), which can be used to fill any energy need of the cell. How? It functions like a rechargeable battery. When ATP is broken down, energy is released. This energy is used by the cell to do work. For example, in the mechanical work of muscle contraction, ATP supplies energy to move the contractile muscle proteins.

CELLULAR RESPIRATION

The living cells of every organism constantly use energy to survive and grow. Cells break down complex carbohydrates into simple sugars that the cell can use for energy. Just as energy is required to both build and demolish a building, energy is required for both the synthesis and breakdown of molecules.

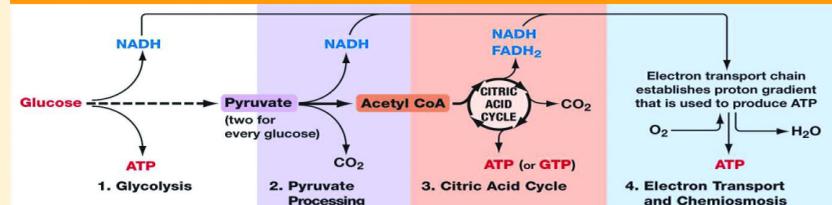
The processes to harvest energy from biomolecules are called cellular respiration.



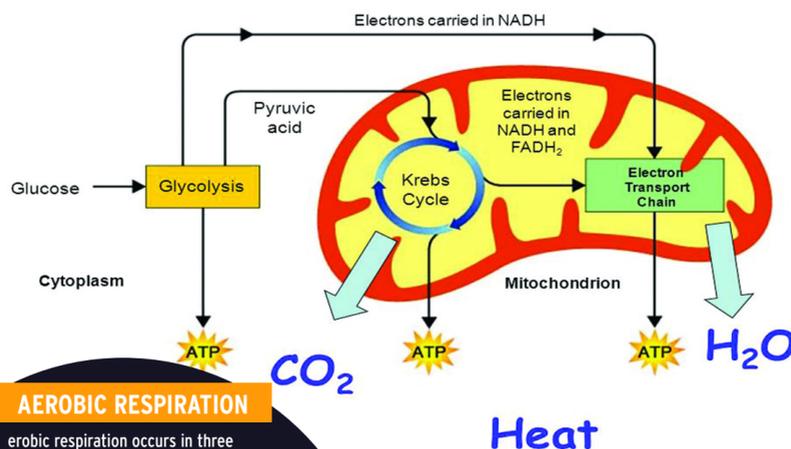
Cellular respiration occurs in both autotrophic and heterotrophic organisms, where energy becomes available to the organism most commonly through the conversion of adenosine diphosphate (ADP) to adenosine triphosphate (ATP).

There are two main types of cellular respiration: aerobic respiration and anaerobic respiration. Aerobic respiration is a specific type of cellular respiration, in which oxygen (O_2) is required to create ATP. In this case, glucose ($C_6H_{12}O_6$) can be oxidized completely in a series of enzymatic reactions to produce carbon dioxide (CO_2) and water (H_2O).

PROCESS: OVERVIEW OF CELLULAR RESPIRATION



WHAT'S THE BIG PICTURE?



AEROBIC RESPIRATION

Aerobic respiration occurs in three stages. A process called glycolysis splits glucose into two three-carbon molecules called pyruvate. This process releases energy, some of which is transferred to ATP. Next, pyruvate molecules enter the mitochondria to take part in a series of reactions called the Krebs cycle, also known as the citric acid cycle. This completes the breakdown of glucose, harvesting some of the energy into ATP and transferring electrons onto carrier molecules. In the last stage, known as oxidative phosphorylation, electrons pass through an electron transport system in the mitochondrial inner membrane, which maintains a gradient of hydrogen ions. Cells harness the energy of this proton gradient to generate the majority of the ATP during aerobic respiration.



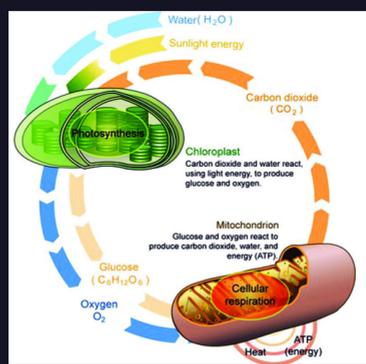
ANAEROBIC RESPIRATION

Aerobic respiration requires oxygen, however, there are many organisms that live in places where oxygen is not readily available or where other chemicals overwhelm the environment. Extremophiles are bacteria that can live in places such as deep ocean hydrothermal vents or underwater caves. Rather than using oxygen to undergo cellular respiration, these organisms use inorganic acceptors such as nitrate or sulphur, which are more easily obtainable in these harsh environments. This process is called anaerobic respiration.

A special anaerobic respiration called fermentation occurs. Fermentation starts with glycolysis to capture some of the energy stored in glucose into ATP. However, since oxidative phosphorylation does not occur, fermentation produces fewer ATP molecules than aerobic respiration. In humans, fermentation occurs in red blood cells that lack mitochondria, as well in muscles during strenuous activity generating lactic acid as a by-product, therefore it is named lactic acid fermentation. Some bacteria carry out lactic acid fermentation and are used to make products such as yogurt. In yeast, a process known as alcoholic fermentation generates ethanol and carbon dioxide as by-products, and has been used by humans to ferment beverages or leaven dough.

INTERESTING FACT

Interestingly, the processes of cellular respiration and photosynthesis are directly opposite of one another, where the products of one reaction are the reactants of the other. Photosynthesis produces the glucose that is used in cellular respiration to make ATP. This glucose is then converted back into CO_2 during respiration, which is a reactant used in photosynthesis. More specifically, photosynthesis constructs one glucose molecule from six CO_2 and six H_2O molecules by capturing energy from sunlight and releases six O_2 molecules as a by-product. Cellular respiration uses six O_2 molecules to convert one glucose molecule into six CO_2 and six H_2O molecules while harnessing energy as ATP and heat.



RECAP QUESTIONS

- The organelle where cellular respiration takes place-
 - nucleus
 - mitochondria
 - ribosome
 - endoplasmic reticulum
- In addition to glucose, cells need _____ to carry out cellular respiration
 - oxygen
 - carbon dioxide
 - hydrogen
 - water
- Another process of making ATP without oxygen is called-
 - breathing
 - fermentation
 - eating
 - glycolysis

Sunanda K Nair, Science teacher, St Therese Convent, Dombivli



Practice to put your ideas into words

Here are some key points I try to keep in mind while answering an English paper...

1 Sequencing the answers according to the question: Flow of events must be established.

2 Using a wide range of vocabulary, expand your vocabulary pertaining to emotions as well, for instance, words such as euphoric, melancholic, sceptical, infuriated.

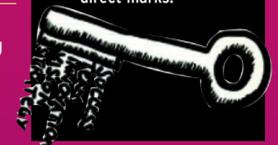


3 Grammatical accuracy, relevancy, and subjectivity towards the question are absolutely indispensable.

4 Never keep an answer open-ended (don't keep it for the teacher to decipher).

5 As a CBSE student, one golden rule is to use key words. Underlining main points and along with key words will fetch you direct marks.

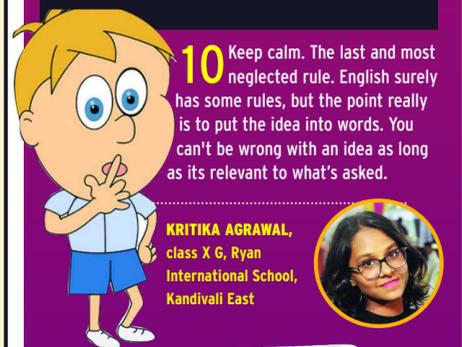
6 Reading and understanding the question (its tone and requirement) is very important.



7 Word limit must be maintained. This particularly is quite hard to follow through. To know the cut off point in an answer is extremely crucial and is what determines you as a writer. Knowing and practicing this is incredibly important.

8 Ncert book is the only rule you have to follow as a student from CBSE. Re-read it, stick to it and know the content well. Don't forget to title the writing skills and practice the format well in advance.

9 Do not take English to be an additional subject. It is an incredibly scoring subject which will give your entire percentage a huge lift if practiced well. Solve question papers. Read answers from reference books or the Internet.



10 Keep calm. The last and most neglected rule. English surely has some rules, but the point really is to put the idea into words. You can't be wrong with an idea as long as it's relevant to what's asked.

KRITIKA AGRAWAL, class X G, Ryan International School, Kandivali East



Master Maths with time & patience

Mathematics is considered a tough subject by many students. Some love Mathematics, but many others hate it. Mathematics has a wide application in our day-to-day life and we need to learn it. Here are some easy techniques for studying Maths that you can follow and practice daily.

PRACTICE, PRACTICE AND MORE PRACTICE

Reading and listening are not enough to study Maths, you have to practice regularly by solving as many problems as possible. The more you practice the better. Each problem has its own characteristics and it's important to have solved it in numerous ways.

MASTER THE KEY CONCEPTS

Do not try to memorise the processes. Remember Maths is a sequential subject so it's important to have a firm understanding of the key concepts that underpin a mathematical topic before moving on to more complex solutions which are based on understanding the basics.

UNDERSTAND YOUR DOUBTS

Sometimes you can get stuck trying to solve a part of a problem and find it difficult to move on to the next step. It's common for many to skip that question and move on to the next. You should avoid doing this and instead spend time trying to understand the process of solving it.

Once you have grasped an understanding of the initial problem, you can use this as a stepping stone to progress to the remainder of the question. Maths requires time and patience to master.

REVIEW ERRORS

When you're practising with the problems, it's important to work through the process for each solution. If you have made any mistakes, you should review them and understand where your problem-solving skills let you down.

APPLY TO REAL WORLD PROBLEMS

Try to apply real-world problems when approaching maths. Maths can be very

abstract at times so looking for a practical application can help change your perspective and assimilate ideas differently.

CREATE A DISTRACTION-FREE STUDY SPACE

Mathematics is a subject that requires more concentration than any other. A proper study environment and a distraction-free area could be the determining factor when solving complex equations or problems.

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