



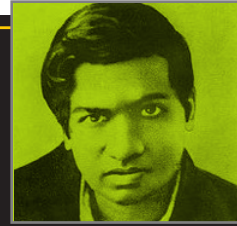
THE TIMES OF INDIA

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**TODAY'S
EDITION**

➤ What does it take to be a Board topper? Hear it out from the achievers, who share their success mantras
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➤ Know more about S Ramanujan, and why is he a role model for many youngsters
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➤ Catch all the action from Tokyo. Check out the overall medals' tally and how India is faring in Olympics 2020
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STUDENT EDITION
TUESDAY, AUGUST 3, 2021



Quote unquote

Mental health is very, very important. As a normal course of business we work with the men's and women's tours together to really make sure that we are there for the players and that they have the



Pic: Reuters

ability to talk to someone to get help when they need it in the proper way. I think for the athletes after 15-18 months of lockdown in sport, it's a difficult time. We need to be there for the athletes and certainly tennis takes it very seriously

DAVID HAGGERTY, chief, International Tennis Federation



This global body won an Oscar in 1948 and the Nobel Peace Prize in 2001

- CLUE 1:** Founded in 1945, it is headquartered in New York.
- CLUE 2:** Having begun with 51 member states, its current membership currently stands at 193.
- CLUE 3:** It has six main organs, including the Economic and Social Council and the Trusteeship Council.

ANSWER: UNITED NATIONS. India on Sunday assumed the rotating Presidency of the UN Security Council for the month of August, and is set to organise key events in three major areas of maritime security, peacekeeping and counter-terrorism. This is India's 10th tenure, the last being November 2012. Flagging off its tenure, India thanked France, its immediate predecessor.

Indian women make historic entry into hockey semis



**CHAK DE
MOMENT!**

Taking inspiration from the men's team that got into the medal rounds after a gap of four decades, Indian women scripted a historic moment of their own by making a maiden entry into the semifinals of the Olympics hockey tournament. Indians defeated world No 2 Australia 1-0 in the quarterfinals to storm into the last-four stage

TOKYO TALES



Dutee Chand fails to advance in 200m, finishes last in her heat

Kamalpreet Kaur finishes 6th in discus throw final



Bajrang, Vinesh carry medal hopes in wrestling

X-PLAINED e-RUPI

WHAT: Prime Minister Narendra Modi on Monday launched e-RUPI, a person and purpose specific digital payment solution. e-RUPI is the government's move towards introducing digital currency in the country.

WHY: Developed by the National Payments

Corporation of India (NPCI), the minds behind the Unified Payments Interface (UPI) currently gaining popularity across India, e-RUPI is like a prepaid voucher, except that the voucher is entirely digital, and the payments will be authorised by institutions like the government or banks.



HOW WILL PEOPLE USE IT?

- The government aims to deliver the currency through a QR code or an SMS string that beneficiaries of the currency will use to authenticate payments. The government agencies will provide details to partner banks who will generate the codes necessary
- The users of this seamless one-time payment mechanism will be able to redeem the voucher without a card, digital payments app or internet banking access, at the service provider.

WHERE WILL IT BE USED?

With e-RUPI designed to have zero interference from middlemen, the government plans to use it to deliver social security benefits. With the pandemic raging across the country, the need to have a no contact currency is all the more important, as is delivering welfare

IN OTHER NEWS

PM Modi asks people to share their inputs for his Independence Day speech

Prime Minister Narendra Modi has urged citizens to share their inputs for his Independence Day speech on August 15, saying their thoughts will reverberate from the ramparts of the Red Fort. In a tweet, he asked people to provide their inputs on MyGov, a citizen engagement platform.



vide their inputs on MyGov, a citizen engagement platform.

The portal noted that the prime minister in his Independence Day speech lays out the government's programmes and policies. Modi, over the last few years, has directly invited ideas and suggestions from citizens

Indian Army, Chinese PLA set up hotline

The Indian Army and the Chinese People's Liberation Army (PLA) have established a hotline in the North Sikkim region on Sunday to avoid any kind of skirmishes along the Line of Actual Control. The Indian Army in a statement said that a hotline was established between Indian Army in Kongra La, North Sikkim and PLA at Khamba Dzong in Tibetan Autonomous Region to further the spirit of trust and cordial relations along the borders.



Beyonce's 'Formation' named as best music video of all time

Formation, the song recorded by American popstar Beyonce for her sixth studio album Lemonade (2016), has become the best music video of all time on

a list of 100 music videos ranked by the Rolling stone magazine. It pushed other music videos like Michael Jackson's 'Billie Jean', Prince's 'Kiss', among others

FB developing AI, new ways to detect users under age 13

Admitting that it is not easy to detect and remove accounts belonging to people under the age of 13, Facebook has said that it is looking at ways to convince people under age 13 to not lie about their age, including using the artificial intelligence (AI) technology. Facebook and Instagram weren't designed for people under the age of 13, so the company is now creating new ways to stop those who are underage from signing up. Facebook is also working with operating system (OS) providers, internet browsers and other providers so that they can share information to help apps establish whether someone is of an appropriate age.

- Currently, when people open Facebook apps to sign up for an account, they are asked for their birthday. This is called an age screen
- But verifying someone's age is not as simple as it might sound. While age screens are common, young people

TECHAWAY



can and often do get around them by misrepresenting their age

FACTOID 22 GIGATONS

The amount of ice that vanished in a single day in Greenland recently. According to researchers, it was enough to cover Florida with 2 inches of water. The ice that melted recently was the third-largest single-day loss of ice in Greenland since 1950. The others happened in 2012 and 2019. The rapid melt followed warm air being trapped over the Arctic island by a change in the atmospheric circulation patterns, scientists said, noting that there could be more ice lost.

■ Such events can create feedback loops that drive further warming and melting in Greenland

■ As snow melts, it exposes darker ice or ground beneath, which absorbs more sunlight rather than reflecting it back out of the atmosphere

Scientists have estimated that melting from Greenland's ice sheet – the second-biggest on Earth after Antarctica's – has caused around 25% of global sea level rise seen over the last few decades

Third Covid wave likely to hit India this month: Report

CORONA UPDATE

The anticipated third wave of the Covid-19 pandemic is likely to hit India in August, which may reach its peak in October when the country is expected to report less than 1,00,000 infections daily in the best-case scenario or nearly 1,50,000 in the pessimistic scenario, according to a study.



■ The Centre recently said that 10 states are either reporting a rise in new daily Covid cases or an upsurge in the Test Positivity Rate (TPR). It suggested that strict restrictions in districts with a positivity rate of more than 10 per cent, to prevent crowds and intermingling of people

■ The 10 states are – Kerala, Maharashtra, Karnataka, Tamil Nadu, Odisha, Assam, Mizoram, Meghalaya, Andhra Pradesh and Manipur

SAGE PATANJALI, THE FATHER OF YOGA

Sage Patanjali, the great saint of India, was a great scientist, psychologist and a doctor of medicine. Patanjali created the 'Yoga Sutras' as a way of compiling the already existing teachings of yoga into a format easier to follow and understand, which made him to be popularly known as 'The Father of Yoga'

THE YOGA SUTRA

It is the essential text on yoga philosophy, compiled by sage Patanjali nearly 1800 years ago. It contains 196 Sutras, divided

between four chapters. These Sutras talk about the aims and practice of yoga, the development of yogic powers and finally - liberation. The wisdom in this text has proved timeless in this world filled with distractions and social pressures.

Practitioners use this text as a clear guide in the journey of mastering the mind, and a clarifier for understanding its true nature and purpose. According to Yoga Sutras - yoga is a process of controlling the mind in pursuit of liberation.

CLASS: X, ICSE
SUBJECT: Yoga

YOGA SUTRA - THE 4 PADAS

SAMADHI PADA	SADHANA PADA	VIBHUTI PADA	KAIVALYA PADA
Consciousness	Ways to attain Yoga	Power/Dharma single point,	Liberation, supernatural power
Super consciousness	Kriya yoga + Ashtanga Yoga	concentration & Awareness	achieved through ascetic discipline

In Yoga Sutra's Second Pada - the Sadhana Pada, the eightfold path is called 'ashtanga', which means 'eight limbs' (ashta=eight, anga=limb). These eight steps basically act as the guidelines on how to live a meaningful and purposeful life. They teach about self-discipline and attention toward one's health, and they help us to acknowledge the spiritual aspects of our nature.

THE ASHTANGA (EIGHT) LIMBS ARE AS FOLLOWS...

1 Yama

The first limb, YAMA deals with one's ethical standards and sense of integrity, focusing on our behaviour and how we conduct ourselves in life. The five yamas are:
Ahimsa: nonviolence; Satya: truthfulness; Asteya: non-stealing; Brahmacharya: continence; Aparigraha: non-covetousness

2 Niyama

This is about self-discipline and spiritual observances. The five niyamas are:
Saucha: cleanliness; Samtosa: contentment; Tapas: heat; spiritual austerities; Svadhyaya: study of the sacred scriptures and of one's self; Ishvara pranidhana: surrender to God

3 Asana

Asana, the postures practiced in yoga. Through the practice of asanas, we develop the habit of discipline and the ability to concentrate, both of which are necessary for meditation.

4 Pranayama

Pranayama is translated as "breath control," designed to gain mastery over the respiratory process while recognising the connection between the breath, the mind, and the emotions. It is "life force extension," yogis believe that it not only rejuvenates the body but actually extends life itself.

5 Pratyahara

This means withdrawal or sensory transcendence. It is during this stage that we make the conscious effort to draw our awareness away from the external world and outside stimuli.

6 Dharana

As each stage prepares us for the next, the practice of Pratyahara creates the setting for Dharana, or concentration. Having relieved ourselves of outside distractions, we can now deal with the distractions of the mind itself.

7 Dhyana

Meditation or contemplation, the seventh stage of ashtanga, is the uninterrupted flow of concentration.

8 Samadhi

Patanjali describes this eighth and final stage of ashtanga - Samadhi, as a state of ecstasy. At this stage, the meditator merges with his or her point of focus and transcends the Self altogether.

According to Pantanjali, the completion of the yogic path is what, deep down all human beings aspire to: Peace

SNEHAL GARG, Yoga facilitator, Hyderabad

Embracing Pressure

Everyone knows the formula for pressure is force/area, but very few truly understand pressure. One way to do that is to go scuba diving, and feel the crushing pressure of the ocean on your head. The alternative, however, is much easier and not as enjoyable. That's right, the pressure of academics. More specifically, the Board examinations, a rite of passage in every student's life.

Come Board year, all your time is either spent studying or stressing about the fact that you're not studying.

But is all this pressure really that bad? I might not remember every minute of slogging for the class X boards, but I vividly remember the day that the results were announced when I could proudly say I had passed the Board examinations, that too in first division.



The solution is not to eliminate the pressure, but to embrace it. That's the only way you'll get to see the stunning marine life, scuba diving!

And what's it like being a Board student these days? Well, I'm citing physics formulae as analogies. You tell me...

BHAVYA GOYAL, Class XII, Modern Academy, Lucknow

Confidence is the Key

Everybody is a genius. But if you judge a fish by its ability to climb a tree, it will spend its whole life believing that it is stupid." - Albert Einstein.

First of all, I want to thank the CBSE for dividing the course of exams into two terms due to the Covid-19 pandemic.

Exams are not for everyone. You could be the brightest bulb in the box and still not shine as brightly in exams. As the Board year progresses, we feel that we don't get enough time to learn all the subjects. Board exams are a stepping stone for our professional future and hence we must try to address our weak points. Here are some tips that help me tackle them.

- Plan your schedule and allocate more time for learning difficult portions.

- Believe in yourself and convince yourself that you can turn the difficult portion simpler in a few days and ways.

- Break them into easy components, work on them till everything is clear as crystal and move on.

- Seek guidance of teachers when you reach a bottleneck.

- Note-making is an effective method. Solve previous years' question papers: Understand the concepts while studying.

- Revise as many times as possible.

There is enough time to plan and organise your study schedule. Push yourself harder and make sure you are confident to face the Boards. All the best dear friends!

A GOPIKA KRISHNAN, class X, Carmel CBSE School, Peyad, Thiruvananthapuram



OF CHEMICAL PROPERTIES & REACTIONS...

CLASS: XII, SUBJECT: CHEMISTRY

1 Name the type of crystal defect which is produced when NaCl crystal is doped with MgCl.
ANS: Cation vacancy defect or non-stoichiometric defect or impurity defects.

2 What is the formula of a compound in which the element 'Y' forms hcp lattice and atoms of 'X' occupy 1/3 rth of octahedral voids.

ANS:

$$Y = 8 \times \frac{1}{8} = 1; X = \frac{1}{3} \times 1 = \frac{1}{3}$$

$$\therefore \text{Formula of the compound} = X_1 : Y_1$$

That is, XY₃ is the formula of compound.

3 State Henry's law. Why do gases always tend to be less soluble in liquids as the temperature is raised?

ANS: Henry's law states, 'The partial pressure of the gas dissolved in a liquid is directly proportional to its mole fraction. $p_{\text{gas}} = K_H X_{\text{gas}}$, where X_{gas} is the mole fraction of gas and p_{gas} is the partial pressure of the gas.

When temperature is increased, K_H (Henry's law constant) increases, therefore, the solubility of gases in liquid decreases.

4 Why does a solution containing non-volatile solute have higher boiling point than the pure solvent? Why is elevation of boiling point a colligative property?

ANS: When we add a non-volatile solute to a pure solvent, the vapour pressure of solution decreases, therefore, it is to be heated to higher temperature so that its vapour pressure becomes equal to the atmospheric pressure, i.e. its boiling point will be higher.

Elevation of boiling point is a colligative property because it depends upon the number of particles of solute and not on nature of solute.

5 Calculate the time to deposit 1.5 g of silver at cathode when a current of 1.5 A was passed through the solution of AgNO₃. (Molar mass of Ag = 108 g mol⁻¹, 1 F = 96500 C mol⁻¹).

ANS:

$$\text{Given: } m = 1.5 \text{ g, } I = 1.5 \text{ A, Molar mass} = 108 \text{ g mol}^{-1}, 1F = 96500 \text{ C mol}^{-1}$$

$$m = Z \times I \times t$$

$$\therefore 1.5 = \frac{108}{1 \times 96500} \times 1.5 \times t$$

$$\Rightarrow t = \frac{96500}{108} = 893 \text{ seconds}$$

6 Define rate constant

(k). Write the unit of rate constant for the following:

(i) First order reaction

(ii) Second order reaction

ANS:

Rate constant is equal to the rate of reaction when molar concentration of reactants is equal to unity.

(i) s⁻¹ is the unit of first order rate constant.

(ii) L mol⁻¹ s⁻¹ is the unit of second order rate constant.

7 The rate constant of a first order reaction increases from 2×10^{-2} to 8×10^{-2} when the temperature changes from 300 K to 320 K. Calculate the energy of activation (E_a). (log 2 = 0.301, log 3 = 0.4771, log 4 = 0.6021)

ANS:

$$\text{Given: } k_2 = 8 \times 10^{-2}, k_1 = 2 \times 10^{-2}, T_1 = 300 \text{ K, } T_2 = 320 \text{ K}$$

$$\log \frac{k_2}{k_1} = \frac{E_a}{2.303 R} \left(\frac{1}{T_1} - \frac{1}{T_2} \right)$$

$$\Rightarrow \log \frac{8 \times 10^{-2}}{2 \times 10^{-2}} = \frac{E_a}{2.303 \times 8.314} \left(\frac{1}{300} - \frac{1}{320} \right)$$

$$\Rightarrow \log 4 = \frac{E_a}{19.147 \times 300 \times 320} \times 20$$

$$\Rightarrow \log 4 = \frac{E_a}{19.147 \times 0.6021 \times 300 \times 320}$$

$$\Rightarrow \log 4 = \frac{E_a}{19.147 \times 0.6021 \times 1800 \text{ kJ mol}^{-1}}$$

$$\Rightarrow E_a = 55.3364 \text{ kJ mol}^{-1}$$

8 The rate constant of a first order reaction increases from 2×10^{-2} to 4×10^{-2} when the temperature change from 300 K to 310 K. Calculate the energy of activation (E_a). (log 2 = 0.301, log 3 = 0.4771, log 4 = 0.6021) log 3 = 0.4771, log 4 = 0.6021)

ANS:

$$\text{Given: } k_2 = 4 \times 10^{-2}, k_1 = 2 \times 10^{-2}, T_1 = 300 \text{ K, } T_2 = 310 \text{ K}$$

$$\log \frac{k_2}{k_1} = \frac{E_a}{2.303 R} \left(\frac{1}{T_1} - \frac{1}{T_2} \right)$$

$$\Rightarrow \log \frac{4 \times 10^{-2}}{2 \times 10^{-2}} = \frac{E_a}{2.303 \times 8.314} \left(\frac{1}{300} - \frac{1}{310} \right)$$

$$\Rightarrow \log 2 = \frac{E_a}{19.147 \times 93000}$$

$$\Rightarrow E_a = \frac{19.147 \times 0.3010 \times 93000}{1000} = 53.598 \text{ kJ mol}^{-1}$$

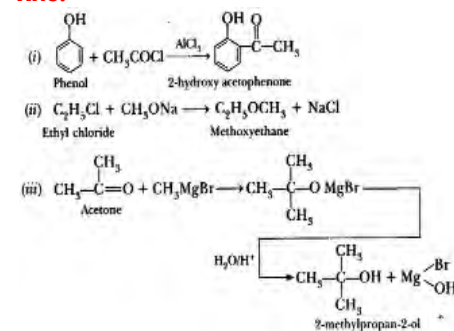
9 How do you convert the following:

(i) Phenol to 2-hydroxyacetophenone

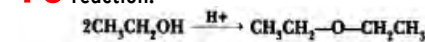
(ii) Ethyl chloride to methoxy ethane

(iii) Acetone to 2-methylpropan-2-ol

ANS:

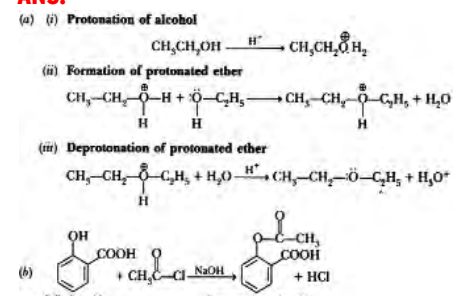


10 (a) Write the mechanism of the following reaction:

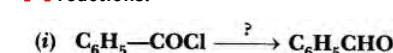


(b) Write the equation involved in the acetylation of Salicylic acid.

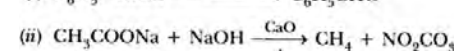
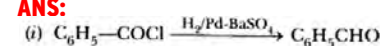
ANS:



11 Name the reagents used in the following reactions:



ANS:



12 Arrange the following compounds in increasing order of their property as indicated.

1. CH_3CHO , $\text{C}_6\text{H}_5\text{CHO}$, HCHO (reactivity towards nucleophilic addition reaction).

2. 2,4-dinitrobenzoic acid, 4-methoxybenzoic acid, 4-nitrobenzoic acid (acidic character).

ANS:

