



THE TIMES OF INDIA

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STUDENT EDITION

WEDNESDAY, MAY 19, 2021



WEB EDITION

CLICK HERE: PAGE 1 AND 2

TIMES NIE Answers Your Query

Abhiram S Nithin,
class VI, Loyola School,
Thiruvananthapuram



A SHOT OF HOPE

To ask queries regarding Covid-19 and vaccination from our experts,

CLICK HERE OR VISIT
<https://bit.ly/331RxDn>

Q How could we distinguish between a common cold and a corona virus infection? When should we be alarmed?

It is difficult to differentiate Covid-19 infection in children from other viral infections such as common cold. One can suspect Covid 19 when there is a history of contact.

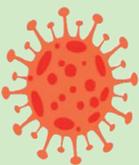
One should be alarmed if the child has any of these symptoms - Irritability; feeding difficulty; breathing difficulty, fast breathing, tiredness, fever and reduced urine output.



Urmila Jithesh,
class XI, Bhavan's
Vidya Mandir
Elamakkara,
Ernakulam

Q Does the effect of Covid-19 vary according to the different blood groups? Is there a chance of one blood group having a greater rate of Covid vulnerability?

There is no correlation among blood groups and severity of Covid-19. Infection is more severe in senior citizens and those with comorbidities.



EXPERT ADVICE GIVEN BY

Dr M Narayanan
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GREENHOUSE GAS emissions are causing EARTH'S stratosphere to SHRINK!



In yet another ominous sign, scientists have revealed that the Earth's stratosphere is shrinking due to greenhouse gas emissions, and it could have a devastating effect on satellite operations and GPS, they warned. According to scientists, stratosphere, the region of the atmosphere from 12 to 40 miles above the Earth, has been shrinking by 328ft per decade. Over the next 60 years, under the current climate change predictions, the upper part of the stratosphere could shrink by four per cent. This would take another 3,200ft from the top of the stratosphere - enough to put some satellites at risk due to less air friction for them to operate in, they added.

THE IMPACT

1 According to scientists, if the disruption continues then it could impact satellite trajectories and their measurements

2 There is a potential impact on the accuracy of global positioning systems such as GP and Galileo, as well as the transmission of radio signals across the planet, they warned

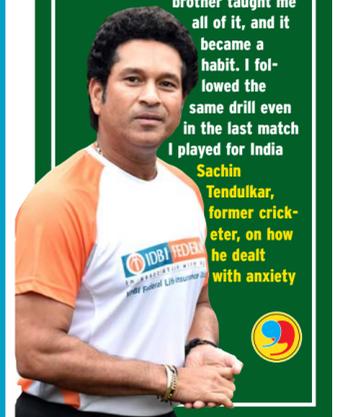
Rising emissions of greenhouse gases from human activity have already led to the warming of the troposphere - where humans live and weather happens

It has also led to the cooling of the stratosphere, which may be linked to the discovery that it has been shrinking for decades

Experts say as a thermodynamic consequence, the troposphere has expanded and



the rise of the tropopause - the boundary between the troposphere and stratosphere, has been suggested as one of the most-robust fingerprints of anthropogenic climate change (DAILY MAIL)



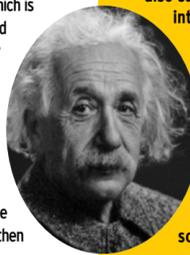
Quote unquote

Over a period of time, I realised that besides preparing physically for a game, you have to prepare yourself mentally also. In my mind, the match started long before I entered the ground. The anxiety levels were very high. I felt anxiety for 10-12 years, and had many sleepless nights before a game. Later on, I started accepting that it was part of my preparation. Then I made peace with the times I was not able to sleep at night. I would start doing something to keep my mind comfortable. That "something" included shadow batting, watching TV and playing video games in the wee hours of the day. Making tea, ironing my clothes also helped me prepare for the game. I would pack my bag the day before the game, my brother taught me all of it, and it became a habit. I followed the same drill even in the last match I played for India

Sachin Tendulkar,
former cricketer, on how he dealt with anxiety

£282,000

That's the price of a letter penned by Albert Einstein, containing his famous 'E = mc²' mass-energy equivalence formula that was sold at an auction recently. The German-born theoretical physicist corresponded with a fellow researcher in October 1946, telling him a question could be answered from the E = mc² formula. The one-page letter, which is signed off 'A. Einstein', is being auctioned off by Boston-based RR Auction in a timed sale, which will end next week, on May 20. Composed on Princeton University letterhead, the letter was written to the Polish-American physicist Ludwik Silberstein, who had previously contested part of Einstein's theory of general relativity. Translated into English, Einstein's response read: 'Your question can be answered from the E = mc² formula, without any erudition.' 'If E is the energy of your system consisting of the two masses, E0 is the energy of the masses when they approach infinite distance, then the system's mass defect is E0 - E / c²,' he continued.



FACTOID

Einstein demonstrated mass-energy equivalence in 1905 - his so-called 'miracle year', which also saw him publish ground-breaking papers introducing the theory of special relativity, explaining Brownian motion and outlining the photoelectric effect

Special relativity, which involves the relationship between space and time, determined that the laws of physics are the same for all non-accelerating observers and that light's speed in a vacuum is fixed, regardless of observer or source motion

73-million-year-old 'communicative' dinosaur species found in Mexico



A new species of dinosaur identified by Mexican paleontologists is believed to have been "very communicative", and used low-frequency sounds like elephants to talk to one another, a researcher has revealed. The specimen, which has been named *Tlatolophus galorum*, is thought to have died around 72 million years ago in what is now Mexico's northern state of Coahuila. After initially discovering the tail, paleontologists said, they later found most of its skull, a 4.3-foot bony hollow crest through which it communicated, as well as bones such as its femur and shoulder. "We are calculating the size, which could be between eight metres and 12 metres-long because just the tail is around six metres," said paleobiologist Angel Alejandro Ramirez.

These "peaceful, but talkative" dinosaurs could also have had the ability to emit loud sounds to scare off predators, the National Institute of Anthropology and History (INAH) said

The name *Tlatolophus* is derived from *tlahtolli*, which means word in the indigenous Nahuatl language, and *lophus*, meaning crest in Greek, the researchers said

ELON MUSK MAY CREATE HIS OWN CRYPTOCURRENCY SOON

After applying brakes on Bitcoin as a payment mode to buy Tesla vehicles, Elon Musk has now revealed that he might create his own cryptocurrency in the near future.

1 Musk has announced not to use the popular cryptocurrency Bitcoin as a payment mode to buy his electric vehicles, citing environmental harm

2 Musk said that the electric car maker will not sell any bitcoin, and intends to use bitcoin for transactions as soon as mining moves to more sustainable energy

3 "We are also looking at other cryptocurrencies that use <1 per cent of bitcoin's energy/transaction," Musk said in a tweet

Bitcoin nosedived more than 11 per cent after the tweet and was trading at nearly \$50,000.

The company had only just started accepting Bitcoin in late March.



GOOGLE PHONE APP CAN NOW ANNOUNCE WHO'S CALLING

If you have an Android device with Google Phone app on, you will now be able to hear who is calling when the phone rings. According to 9to5Google, the company is rolling out a new feature for its Phone app that will announce the name and the number of any incoming calls - a move to help the users screen unwanted calls.



You can set whether you want the app to announce caller ID every time the phone rings, or when an earphone is on

To enable the new feature, open Google Phone, go to settings and then tap on Caller ID announcement

NEWS IN CLUES

FINLAND'S ARMI KUUSELLA WAS THE FIRST-EVER WINNER OF WHICH FAMOUS COMPETITION?

CLUE 1: Founded by Pacific Knitting Mills, a California, USA-based clothing company, the first edition was held in 1952

CLUE 2: While USA boasts the maximum winners, Eight, over the years, there have been two Indian victors as well

CLUE 3: The winner is awarded the Mouawad Power of Unity Crown

ANSWER: Miss Universe. Miss Mexico, 26-year-old Andrea Meza, was crowned the 69th Miss Universe on Sunday night in Florida, USA, marking the pageant's return, after it was cancelled in 2020 for the first time due to the pandemic. India's Adline Castellino (22) came fourth

A Cash Flow Statement shows the inflows and outflows of Cash and Cash Equivalents. It is one of the tools for Financial Statement Analysis and is prepared as per the revised AS 3. It forms an integral part of Financial Reporting requirements as per IND AS1. There are two methods to preparing a cash flow statement. We will be discussing the indirect method...

CASH FLOW STATEMENT (CFS)

FINANCING ACTIVITIES

- Bank Overdraft and Cash Credit are short term borrowings of the company and will therefore come under Financing Activities.
 - How is Proposed Dividend treated in CFS?
- As dividend is an appropriation of profits, it is deducted from the Surplus i.e. Balance in statement of P&L, in the year in which it is paid. As a result, this amount is added to the Net Profit before Tax under Operating Activities. Dividend paid is shown as a cash outflow under financing activities. If the Balance Sheet has dividend payable/unpaid dividend account we will need to open that account to get the amount of dividend PAID.

Example:

Particulars	31.3.2020 (₹)	31.3.2019 (₹)
Dividend Payable	5,000	NIL

Additional information: Proposed dividend for the year 2019 was ₹40,000 and 2020 was ₹30,000 respectively.

Solution:

Dividend Payable a/c			
To Bank (bal fig)	35,000	By balance b/d	NIL
To balance c/d	5,000	By Surplus i.e. bal in statement of P&L	40,000
	40,000		40,000

Note: The current year's proposed dividend will not be part of CFS since it will be declared and paid in the next year.



INVESTING ACTIVITIES

- How are 'Investments' dealt with in Cash Flow Statements?



OPERATING ACTIVITIES

- Why do we 'ADD' certain items and 'REDUCE' certain others to find Cash Flow from Operating Activities?

Transactions of an enterprise are not relating only to its regular business operations. There are certain non-operating Incomes and Profits/Expenses and Losses that are recorded in the Statement of Profit and Loss. Since we need to find the 'OPERATING' flow of cash, we need to adjust these non-operating items from Net profit.

Example: Interest on Debentures is to be considered in Financing Activities and not in Operating Activities. So we add them to the Net profit.

Similarly, those items that are non-cash cannot be considered since we are calculating Cash generated from operations.

Examples of non-cash items: Depreciation on fixed assets, provision for doubtful debts, etc.

It is only after we make these adjustments to the Net Profit that we get our Cash from Operating Activities.

- Why do we take the difference in opening and closing balances for certain items from the Balance Sheet but are required to prepare accounts and find balancing figures for others?

Keep it simple. When there is additional information given for an item head, we have to open the ledger account for further analysis. Otherwise, we work with the difference in the opening and closing figures only.

Example:

Particulars	31.3.2020(₹)	31.3.2019(₹)
Fixed Assets	7,00,000	5,50,000
Accumulated Depreciation Account	1,30,000	1,00,000

Here since there is no additional information on fixed assets or depreciation charged during the year, we take the difference in Accumulated Depreciation A/c of ₹ 30000 (1,30,000- 1,00,000) as the depreciation for the year and increase in Fixed Assets of ₹1,50,000 (7,00,000 - 5,50,000) as purchase of new F/A.

However, for the same item heads when additional information is provided, we realise that multiple transactions have affected this account and the account has to be opened for further analysis.

Example:

(Continued from the above-mentioned sum)

Additional information:

One of the fixed assets (Cost of ₹ 50,000 having accumulated depreciation of ₹ 15,000) was sold for ₹ 17,000.

We will now open both the accounts for further analysis.

Fixed Asset a/c			
To Balance b/d	5,50,000	By Accumulated Depreciation	15,000
To Bank (bal fig)	2,00,000	By Bank (Sale)	17,000
		By Statement of P&L(Loss)	18,000
		By Balance c/d	7,00,000
	7,50,000		7,50,000

Accumulated Depreciation a/c			
To Fixed Asset	15,000	By balance b/d	1,00,000
To balance c/d	1,30,000	By Depreciation (bal. fig.)	45,000
	1,45,000		1,45,000

Therefore, the calculated value of loss (₹18,000) and depreciation (₹45,000) will be added back to the Net Profit before tax since they are non-operating expenses/losses.

- How are share issue expenses/under-writing commission/preliminary expenses/discount or loss on issue of debentures treated in Cash Flow?

These are capital losses and will be written off in the year they are incurred, either from available capital profits (if any) or else from revenue profits.

Example:

Particulars	31.3.2020 (₹)	31.3.2019(₹)
Share Capital	6,00,000	5,00,000
Securities Premium Reserve	15,000	NIL

Additional Information:

- Share issue expenses incurred were ₹5,000.
- New shares have been issued at a premium of 20%.

Solution:

Securities Premium Reserve a/c			
To share issue expenses	5,000	By balance b/d	NIL
To balance c/d	15,000	By Share Application	20,000
	20,000		20,000

Therefore, we know that the company has collected premium on fresh issue and the capital loss (share issue expense) has been written off against this available Securities Premium Reserve (capital profits).



IMPORTANT POINTERS:

- Dividend and Interest received on Investments are Cash inflows from Investing activities. Dividend and Interest paid are Cash outflows from Financing activities.
- Transactions that are movements between the items of Cash and Cash Equivalents are not considered to be Cash Flow. Example - Cash deposited into the Bank, Sale of short-term investments for cash etc.
- Issue of Shares/Debentures for consideration other than cash will not appear in Cash Flow Statements.

The revised dates for Board Examinations have not yet been announced. However, continue staying focused, strategise well and keep practicing all the topics regularly.

Wishing all the Class XII students appearing for their boards ALL THE VERY BEST!!
STAY POSITIVE,
and most importantly,
STAY SAFE!

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North Point School (ICSE)
and Visiting faculty at SK
Somaia College, Mumbai



QUICK REVISION

KEEP THOSE GREY CELLS TICKING

1 State Gauss' Law. Use Gauss's theorem to find the electric field due to a uniformly charged infinitely large plane thin sheet with surface charge density σ .

2 Derive the expression for the electric potential at any point P, at distance r from the centre of an electric dipole, making angle θ , with its axis. (b) Two point charges $4 \mu\text{C}$ and $+1 \mu\text{C}$ are separated by a distance of 2 m in air. Find the point on the line-joining charges at which the net electric field of the system is zero.

3 Derive an expression for the resistivity of a good conductor, in terms of the relaxation time of electrons.

4 A steady current (I_1) flows through a long straight wire. Another wire carrying steady current (I_2) in the same direction is kept close and parallel to the first wire. Show with the help of a diagram how the magnetic field due to the current I_1 exerts a magnetic force on the second wire. Write the expression for this force. Hence define one Ampere

5 a) Write the principle of working of a potentiometer.
b) Write two ways to increase the sensitivity of the potentiometer.
c) Why is potentiometer considered to be superior to volt meter to determine the cell's emf?
d) A potentiometer wire of length 1m has a resistance of 10Ω . It is then connected in series with a resistance of 5Ω and an accumulator of emf 6 V having negligible resistance. Determine the emf of the cell which gives a balance point at 40 cm.

SUBJECT: PHYSICS
CLASS XII-CBSE

6 (a) State Biot-Savart's law
(b) Derive an expression for the magnetic field at a point on the axis of a current carrying circular loop.

7 Draw V - I characteristics of a p-n junction diode.

(i) Why is the current under reverse bias almost independent of the applied potential up to a critical voltage?
(ii) Why does the reverse current show a sudden increase at the critical voltage?

8 Derive an expression for the impedance of a series LCR circuit connected to an AC supply of variable frequency.
(b) Plot a graph showing variation of current with the frequency of the applied voltage.

9 (a) Draw the labelled ray diagram for the formation of image by a compound microscope. Derive an expression for its magnification when the final image is formed at the near point.

(c) Explain resonance in series LCR-series circuit and deduce the formula for resonance frequency.



Photo: GETTY IMAGES

applied voltage.

(c) Explain resonance in series LCR-series circuit and deduce the formula for resonance frequency.

9 (a) Draw the labelled ray diagram for the formation of image by a compound microscope. Derive an expression for its magnification when the final image is formed at the near point.

(b) A compound microscope has an objective of focal length 1.25cm and eye-piece of focal length 5cm. A small object is kept at 2.5cm from the object.

If the final image formed is at infinity. Find the distance between the objective and eye-piece.

10 a) Explain using a labelled diagram, the principle and working of a moving coil galvanometer.

b) How is radial magnetic field produced in a moving coil galvanometer?

11 Derive the Bohr's quantisation condition for angular momentum of the orbiting of electron in hydrogen atom, using de Broglie's hypothesis

12 Name the e.m. waves in the wavelength range 10 nm to 10 - 3nm. How are these waves generated? Write their two uses.

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