



THE TIMES OF INDIA

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STUDENT EDITION

FRIDAY, JANUARY 8, 2021



WEB EDITION

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Capitol attack 'shakes the world'

As an angry mob stormed the heart of the world's most-powerful democracy to overturn the electoral verdict, the rest of the world watched the once-unimaginable scenes unfolding in Washington with dismay and disbelief — and concern about what the turmoil could mean, as authoritarian forces gain strength around the globe. It has also prompted calls by a few lawmakers to remove Donald Trump from office before the President-elect Joe Biden is sworn in on Jan. 20.

The attack on the Capitol, coming less than a day after the Hong Kong police arrested more than 50 democracy activists, is being seen as a blow to America's global credibility on advocating liberal values, which would make it harder for the US to hold to account the authoritarian leaders around the world



At this hour, our democracy is under an unprecedented assault. To storm the Capitol, to smash windows, to occupy offices, the floor of the US Senate... threatening the safety of the duly-elected officials...it's not a protest, it's insurrection
JOE BIDEN, President-elect, US

THE WORLD REACTS

Peaceful transfer of power must continue. The democratic process cannot be allowed to be subverted through unlawful protests
NARENDRA MODI, PM, India

The US stands for democracy around the world, and it is vital that there should be a peaceful and orderly transfer of power
BORIS JOHNSON, PM, UK

We will not give in to the violence of a few, who want to question democracy
EMMANUEL MACRON, President, France

X-PLAINED

CAN TRUMP BE REMOVED BEFORE HIS TERM ENDS?

There are two ways to remove the president from office: the 25th Amendment of the US Constitution and impeachment, followed by a Senate conviction. In either scenario, vice president Mike Pence would take over until Biden's inauguration.

nation in 1963, deals with presidential succession and disability. Section 4 addresses situations where a president is unable to do the job but does not step down voluntarily.

WHAT'S THE PURPOSE OF THE 25TH AMENDMENT? The 25th Amendment, ratified in 1967 and adopted in the wake of President John F. Kennedy's assassina-

HOW CAN TRUMP BE REMOVED? For the 25th Amendment to be invoked, Pence and the majority of Trump's Cabinet would need to declare that Trump is unable to perform the duties of the presidency and remove him.

Spotlight

JEE-ADVANCED EXAM FOR ADMISSION TO IITs WILL BE CONDUCTED ON JULY 3

Union education minister Ramesh Pokhriyal has said that the JEE Advanced 2021 exam will be held on July 3. It will be conducted by IIT, Kharagpur, he added. Addressing a live tweet on Thursday, the minister also announced that the relaxation in the eligibility criterion pertaining to class XII marks will be offered this year too. PTI

For admissions to the IITs, apart from qualifying the Joint Entrance Examination (JEE)-Advanced, the candidates are required to secure either minimum 75 per cent marks in class XII board exams or rank among the top 20 percentile in their qualifying examinations. While the JEE-Mains is conducted for admission to the engineering colleges across the country, it is considered as a qualifying test for JEE-Advanced

2021 GRAMMY AWARDS RESCHEDULED TO MARCH DUE TO PANDEMIC CONDITIONS

The 2021 Grammy Awards will no longer take place this month in Los Angeles and will broadcast in March due to a recent surge in coronavirus cases and deaths. According to reports, the annual show has been postponed from its original Jan 31 broadcast to a later date in March.



MUSIC

- Comedian Trevor Noah is set to host the 2021 Grammys. Pop singer Beyonce is a leading contender with nine nominations
- Beyonce's 'Black Is King,' which aired on Disney+, is nominated for the best music film, while 'Brown Skin Girl,' a song dedicated to dark- and brown-skinned women, is nominated for the best music video
- Her daughter Blue Ivy Carter, who sings on 'Brown Skin Girl,' has also earned a Grammy nomination



INDIA'S ECONOMY SHRANK 9.6% IN 2020-21, CAN RISE WITH VACCINE TO 5.4% NEXT FISCAL:WORLD BANK

India's economy battered by the Covid-19 pandemic is forecast to crater by 9.6 per cent during the current financial year but can recover by 5.4 per cent next financial year, if there is wide vaccination against the disease and it is contained, the World Bank reported on Tuesday.

MODI 'EARNED AND ACHIEVED' HIS PRIME MINISTERSHIP: PRANAB

The decisive mandate the BJP got in two consecutive general elections in 2014 and 2019 indicated the voters' preference for political stability, according to former president Pranab Mukherjee, who said, Narendra Modi "earned and achieved" the prime ministership. In his memoir, The Presidential Years, 2012-2017, Mukherjee has also written that Narendra Modi became PM "through popular choice unlike Manmohan Singh, who was offered the post by Sonia Gandhi". Every general election has its "importance because the issues that are debated during the polls reflect the various views and perceptions of the electorate", he wrote.

BOOK

- The 5.4% growth rate forecast for 2021-22 — a "rebound from a low base" — would be "offset by a muted private investment growth given the financial sector weaknesses", the report said, noting that "in the financial sector, non-performing loans were already high before the pandemic"
- In the South Asia region, the Bank said that the economy overall fell by 6.7% in 2020 "reflecting the effects of the pandemic and nationwide lockdowns, particularly in Bangladesh and India"
- The global economy, which contracted by 4.3% in 2020 is forecast to grow by 4% next year if "an initial Covid-19 vaccine rollout becomes widespread throughout the year", the report said

ICC TEST RANKINGS: NEW ZEALAND BECAME NO 1 FOR THE FIRST TIME



SPORTS

New Zealand grabbed the number one position in the ICC Test rankings for the first time in history, after decimating Pakistan by an innings and 176 runs in the second Test in Christchurch recently. The comfortable series-clinching victory, shaped by captain Kane Williamson's double century, pushed the Kiwis to the top of the heap as they became the sixth country in the past 10 years to be ranked number one in Test cricket.

- Overall, they are the seventh side in the world to hold the number one spot. New Zealand came close to reaching the summit in the last couple of years but stayed second on the table
- They now have 118 points, two more than Australia and four clear of third-placed India
- England (106) and South Africa (96) complete the top-five

2023 ASIAN CUP TO RUN FROM JUNE 16-JULY 16

The 18th edition of the Asian Cup, the region's flagship national team competition, will take place in China on June 16-July 16, 2023, the Asian Football Confederation (AFC) said on Thursday. Ten cities across China will host the 24-team tournament, which will be held for over 31 days, three days more than the 28-day showpiece in the United Arab Emirates (UAE) in 2019.



The 2019 edition of the quadrennial event was the first to be expanded from 16 to 24 teams. Qatar are the defending champions after winning their maiden title in the UAE

FACTOID

₹ 20,500 CRORE

That's the cost the country had to bear, courtesy the internet shutdown in various regions of the nation in 2020. According to a report by Top 10 VPN, India had massively-restricted the internet access for the users, compared to the other nations in the year 2020 — a whopping 8,927 hours. The cost of the internet blackouts was calculated through the indicators from the World Bank, International Telecommunication Union and the Software Freedom Law Centre

A TOTAL OF 27,165 HOURS OF THE MAJOR INTERNET DISRUPTIONS WERE EXPERIENCED BY THE WORLD IN 2020, 49 PER CENT HIGHER THAN IN 2019. THIS RESULTED IN A TOTAL LOSS OF \$4.01 BILLION, AND NEARLY THREE-FOURTH OF THESE LOSSES CAME FROM INDIA

Lose WhatsApp account if you don't accept new changes by Feb 8



TECH BUZZ

Millions of Indian users received an in-app notification from the WhatsApp as part of an upcoming global roll-out for over 2 billion users, asking them to either accept the changes in its terms of service and privacy policy by February 8 or their accounts will be deleted.

- The in-app notification did not elicit much details but clicking on the links clearly mentioned the key changes in how the WhatsApp will collect and process the users' information while going forward with its partnership with the Facebook, its parent company, as part of a larger unification drive between the family of apps
- The WhatsApp's new terms of service and privacy policy will come into effect from February 8
- The mobile-messaging platform said that it is working with the third-party service providers and "other Facebook Companies" to help it operate, provide, improve, understand, customise, support, and market its services
- In a bid to allow cross-messaging among its family of apps, FB has reportedly started merging the Instagram and Messenger chats.

'CoWIN' apps fake, warns health ministry

The Union health ministry has asked people not to download or register on several fraudulent applications named 'CoWIN', which are available on app-stores. "Some apps named 'CoWIN' apparently created by unscrupulous elements to sound similar to the upcoming official platform of the government are on the app-stores," the health ministry alerted. "Do not download or share personal information on these. The MoHFW official platform will be adequately publicised on its launch," the ministry added.



- Short for 'Covid Vaccine Intelligence Network' application, the CoWIN app will be used to manage and scale up the massive vaccination drive, which is soon to be rolled out in the country
- The application will not only help the government coordinate the massive inoculation process, but also come to the aid of the health authorities monitor coronavirus vaccines in real-time
- It is slated to be launched for the public soon. The beneficiaries would be able to register themselves after uploading the identification documents, such as the Aadhaar card, driving license, PAN and bank passbook, among others

GET POSITIVELY CHARGED TO TACKLE CHEMISTRY



EXAMS Rfun

CLASS: IX - 2020-21

SUBJECT:
CHEMISTRY (ICSE)
Time Allowed: 2 Hours
Maximum Marks: 80

GENERAL INSTRUCTIONS

- Section I is compulsory.
- Attempt any four questions from section II

SECTION-I QUESTION-1

a) Choose the correct answer from the options given below: [5]

- The type of bond formed between atoms of element, X (11) and Y (17)
 - Electrovalent
 - Covalent
 - Metallic
 - Dative

- A metal exhibiting valency +2 and +3
 - Copper
 - Iron
 - Calcium
 - Nitrogen

- An element which will not lose, gain or share electrons and has two electrons in its valence shell.
 - Neon
 - Calcium
 - Helium
 - Magnesium

- The law which states that the product of the volume and pressure of a given mass of a dry gas is constant provided temperature remains constant.
 - Charles's law
 - Avogadro's law
 - Dalton's law
 - Boyle's law

- A salt that undergoes photochemical reaction
 - Silver (I) chloride
 - Ferric chloride
 - Carbon dioxide
 - Zinc carbonate

- b) Fill in the blanks with choices given in the brackets: [5]
- A molecule of _____ contains a triple bond (ammonia, nitrogen)

- If an element has one electron in its outermost energy level then it is likely to be _____ (metallic, nonmetallic)

- Direct combination reaction of sulphur dioxide with water gives _____. (sulphuric acid, sulphurous acid)

- Formation of hydrogen chloride from hydrogen and chlorine in presence of diffused sunlight is an example of _____. (photochemical reaction, electrochemical reaction)

- Variable valency is exhibited, since electrons are lost from an element from the _____ shell. (valence, penultimate)

c) Write a balanced chemical equation for each of the following reactions. [5]

- Steam is passed over heated coke.
- Magnesium reacts with dil. HCl.
- Zinc reacts with conc. NaOH.
- Potassium reacts with cold water.
- Magnesium reacts with boiling water.

- d) Solve: [2+3]
- Calculate the relative molecular mass of copper sulphate penta hydrate (Cu = 63, S = 32, O = 16, and H = 1)

- Calculate the percentage composition of KCl (K = 39 and Cl = 35.5)

e) State one observation for each of the following. [5]

- Sulphur dioxide is passed through lime water.
- Hydrogen sulphide gas is passed through acidified potassium permanganate solution.
- Copper carbonate is heated.
- Conc. HCl is brought near ammonia gas.
- Sodium metal is dropped in cold water.

f) Name or state the following. [5]

- The salt formed when zinc reacts with caustic potash.
- The gas released when ammonium dichromate undergoes thermal decomposition.
- The valency of calcium in calcium chloride.
- The period which contains 8 elements including the nonmetal sulphur.
- A heptahydrate salt containing iron.

g) Give the appropriate term defined by the statements given below [5]

- The number of hydrogen atoms which can combine with or displace one atom of the element or radical so as to form a compound.
- The number of times one atom of an element is heavier than 1/12 the mass of an atom of carbon.
- A chemical reaction in which two or more elements or compounds react to form one new compound.

Paper set by: Sunitha Pai, teacher, St Joseph's Boys' High School, Bengaluru



- A chemical reaction which proceeds with absorption of electrical energy.
- Water soluble salts which on exposure to the atmosphere absorb moisture from the atmosphere and dissolve in the absorbed moisture.

h) Give the molecular formula for the following. [5]

- Nitric acid
- Ammonia
- Methane
- Ammonium sulphate
- Iron (II) chloride
- Magnesium nitride.

SECTION-II

QUESTION-2

Draw atomic orbit diagram for the following [10]

- Nitrogen molecule
- Ammonia
- Methane
- Calcium oxide
- Magnesium chloride.

(N=7, H=1, C=6, Ca=20, Mg=12, O=8, Cl=17)

QUESTION-3 [5+5]

- a) Solve:
- A gas 'X' at a pressure of 750 mm. of Hg and temperature of 38°C has a volume of 2.57litres. Find the volume of the

- A positively charged radical with no metal in it.
- A colourless gas with rotten egg smell.
- The colour imparted by calcium ions during flame test.
- The gas evolved when sodium carbonate reacts with dil. Sulphuric acid.
- A gas which turns alkaline solution of pyrogallol brown.

b) Name the following:

- A positively charged radical with no metal in it.
- A colourless gas with rotten egg smell.
- The colour imparted by calcium ions during flame test.
- The gas evolved when sodium carbonate reacts with dil. Sulphuric acid.
- A gas which turns alkaline solution of pyrogallol brown.

QUESTION-4 [5+5]

a) In the laboratory preparation of hydrogen from zinc and dilute acid, give reasons for the following:

- The complete apparatus is air tight.
- Dilute nitric acid is not preferred as the reactant acid.
- The lower end of thistle funnel should dip below the level of the acid in the flask.
- Granulated zinc is preferred in the preparation of hydrogen.
- What is the purpose of silver nitrate solution in washer bottle-1?

b) State or name the following:

- The group to which the element with electronic configuration 2,8,2 belongs.
- The group which contains highly reactive electro negative nonmetals including chlorine.
- An alkaline earth metal in period 3.
- A covalent compound formed between an element of period 1 and a halogen.
- A metal in period 3 having valency 3

QUESTION-5 [3+3+4]

a) Write balanced equations for the following word equations

- Calcium+water → calcium hydroxide+hydrogen.
- Lead dioxide+lead monoxide+oxygen.
- Potassium bicarbonate + potassium carbonate+water+carbon dioxide.

b) XCl₂ is the chloride of a metal. State the formula of the sulphate, hydroxide and nitride of the metal X.

c) Differentiate between

- Decomposition reaction and double decomposition reaction.
- Synthesis and substitution reaction.

QUESTION-6 [5+5]

a) Name or state the following

- Two elements having same number of protons and electrons but different number of neutrons.
- Maximum capacity of the M shell.
- An efflorescent decahydrate salt.
- A deliquescent salt of a trivalent metal.
- A salt whose solubility decreases with rise in temperature of the solvent water.

b) Identify the following:

- Gas which turns moist blue litmus red and then bleaches it.
- Gas that burns with a pale blue flame producing a 'pop' sound.
- Gas which gives a curdy white precipitate when passed through silver nitrate solution.
- The gas which turns moist lead acetate paper silvery black.
- The yellow coloured residue obtained when lead nitrate is heated.

Physics: May the force be with you!

GENERAL INSTRUCTIONS

- The time given at the head of this paper is the time allowed for writing the answers.
- The intended marks for questions or parts of questions are given in brackets [].

SECTION-A

(Attempt all questions-40marks)

QUESTION-1 [2 x 5 = 10]

- Name the force required for uniform circular motion?
- A body is thrown vertically upwards. Its velocity keeps on decreasing. What happens to its kinetic energy as its velocity becomes zero.
- The refractive index of glass with respect to air is 3/2. What is the refractive index of air with respect to glass.
- State the C.G.S. unit of work. How is it related to its S.I. unit?
- What is the energy conversion when an electric current passes through a metallic wire?

QUESTION-2 [2 x 5=10]

- How does the angle of deviation produced by a prism depends on the angle of incidence of light at the prism surface? Draw a graph to illustrate your answer.
- Give two reasons, why the efficiency of a single movable pulley system is not 100%.
- Can the C.G. be situated outside the material of the body. Give an example.
- The velocity of light in diamond is 121000kms⁻¹. What is the refractive index.
- What is the path of the ray after refraction that passes through the first focus of the lens.

QUESTION-3 [2 x 5=10]

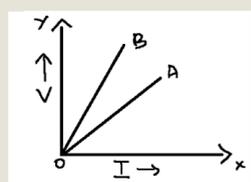
- Draw a displacement time graph to illustrate damped vibrations.

b) State the necessary conditions for an object to be in

- Static equilibrium
 - dynamic equilibrium
- A cell of e.m.f. 1.5V and internal resistance 5 ohm is connected to a resistor of 50 ohm. What is the current flowing in the circuit?
 - A certain nucleus has a mass number 20 and atomic number 9. Find the current flowing in the circuit?
 - An observer stands at a distance of 850m from a cliff and fires a gun. After what time gap will he hear the echo, if the sound travels at a speed of 350m/s in air.

QUESTION-4 [2 x 5=10]

- What changes in energy occur in an
 - electric bulb
 - electric heater
- Which contains more heat: 1g water at 0°C or 1g ice at 0°C? Give reason.
- The V-I graph for a series combination and of a parallel combination of two resistors is shown in given below. Which of the two, A or B, represents the parallel combination? Give a reason for your answer.



- Draw a diagram representing a wave of amplitude 4cm and wavelength 2m. If the frequency of wave is 150Hz. Calculate its velocity.
- State the principle of calorimetry.

SECTION-B

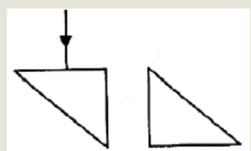
(Attempt any four questions from this section) (40marks)

QUESTION-5

- A bullet of mass 0.05kg strikes a wooden target 0.2m thick, with a velocity of 300 ms⁻¹, and emerges out with a velocity of 100ms⁻¹. Calculate the
 - loss in kinetic energy. [1]
 - State the S.I. unit of the power. [2]

- The main gate of a building is 2.6m broad. It can be opened by applying a force of 80N at the middle of the gate.
 - Calculate the least force which can open the gate. [2]
 - Name the physical quantity obtained by the formula $2K/v^2$ where K = kinetic energy v = velocity [1]

- What is meant by critical angle? [1]
 - Two isosceles right angled glass prisms are placed as shown in the diagram. Complete the path of the light ray entering Ist isosceles prism till it emerges from the second identical prism. [3]



QUESTION-6

- A uniform metre rule is balanced horizontally at 60cm mark when a weight of 10gf is suspended from one end.
 - At which end must this weight be suspended. [1]
 - What is the weight of the rule. [2]

- Derive a relationship between S.I. unit and C.G.S. unit of work. [2]
 - How is horse power related to the S.I. unit of power. [1]

- A block and tackle system of pulleys has a velocity ratio 4.
 - Draw a labelled diagram of the system indicating directions of the load, effort and tension in the string. [3]
 - What is the mechanical advantage of the given pulley system if it is an ideal pulley system. [1]

QUESTION-7

- Name the radiations used for detection of fracture in bones [1]
 - A coin placed at the bottom of a beaker appears to be raised by 4.0cm. If the refractive index of water is 4/3. Find the depth of the water in the beaker. [2]
 - What is meant by earthing of an electrical appliance? Why is it essential? [3]
 - An erect, magnified and virtual image is formed, when an object is placed between the optical centre and principal focus of the lens.
 - Name the lens [1]
 - Draw a diagram to show the formation of the image with the above stated characteristics. [3]

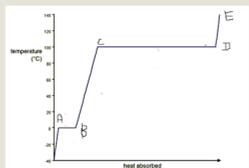
QUESTION-8

- A man standing between two cliffs produces a sound and hears two successive echoes at intervals of 3seconds and 4seconds respectively. Calculate the distance between the two cliffs. The speed of the sound in air is 330ms⁻¹ [3]
 - Name the unit used for measuring the sound level [1]
 - What is SONAR? What is the principle of sonar? [2]
 - Two waves of the same pitch have amplitudes in the ratio 2:3.

- What will be the ratio of their loudness? [1]
 - What will be the ratio of their frequencies? [1]
 - A metallic blade is made to vibrate at its one end by keeping its other end clamped. The vibrations of the blade die away after some time.
 - Give reason. [1]
 - How you lower the frequency of the vibration of the blade? [1]

QUESTION-9

- The diagram below shows the change of phases of a substance on a temperature vs time graph on heating the substance at a constant rate.



- Label the two phase changes in your graph. [2]
 - What conclusion can you draw regarding the nature of ice from the above graph? [1]
 - Label the graph BC and DE. [1]
 - Rishi is surprised when he sees water boiling at 115°C in a container. Give reason as to why water can boil at the above temperature. [1]
 - 50g of metal piece at 27°C requires 2400J of heat energy so as to attain a temperature of 327°C. Calculate the specific heat capacity of the metal. [2]

c) Give one use of the electromagnetic radiations given below:

- Microwaves
- Ultraviolet radiations
- Infrared radiation [3]

QUESTION-10

- One of the radioactive radiations is similar to X-ray in nature. Name it and give its properties. [3]
 - Compare the penetrating powers of α , β and γ radiations. [1]
- An element ${}_{82}^{214}\text{Pb}$ loses one α (Alpha) particle and one β and then one β particle to get the final nucleus ${}_{82}^{\text{Q}}$.
 - Write down the values of 'a' and 'b'. [3]
- What are the harmful effects of the radioactive radiations. [2]
 - From α , β , γ rays, name the one which travels with the speed of light. [1]