Understanding Standardized Testing for Graduate Admissions in the United States

Last week, during our exploration of application components for the graduate application packet to U.S. universities, we discussed letters of recommendation. Today, we will delve into standardized tests, which are also essential elements of U.S. master's degree applications.Standardized tests are important for both the admissions decision and potential financial aid at U.S. universities. Test score requirements and preferences may vary by institutions and programs of study, however, more competitive schools often demand higher test scores.Several institutions have gone test optional over the years and therefore, students should check the policy that the institution follows. In addition, even at institutions that are test optional, some specific application situations may require students to submit test scores.

For example, institutions may be test optional for certain programs of study but not for others, also, some programs may not require tests scores but test scores may add weight to the application. Similarly, applications to programs with scholarships may also require the applicant to submit test scores.Standardized tests that are usually required/preferred for master's program applicants include the Graduate Record Examination (GRE), GRE Subject Tests, and the Graduate Management Admission Test (GMAT). Students should select the standardized test based on the requirements of the program or university to which they are applying.

The GRE is widely utilized as an admission requirement or preference for many master's programs. GMAT scores are typically used by MBA programs and other business-related graduate degrees, although some business programs may accept GRE scores as well. It is advisable for students to review the application prerequisites of their chosen program and institution to understand which standardized tests are required and prepare accordingly.The GRE General Test assesses skills across three sections: analytical writing (this section always comes first), verbal and quantitative reasoning. The highest possible total GRE score is 340, with a maximum of 170 for both the quantitative and verbal sections, and a score of 6 for analytical writing.GRE Subject Tests evaluate knowledge in specific fields and are available in areas mathematics, physics, and psychology, with scores ranging from 200 to 990.For more information on the GRE general and subject tests as well as scoring, students can visit https://www.ets.org/gre/revised_general/about/content/ and https://www.ets.org/content/dam/ets-org/pdfs/gre/gre-info-bulletin.pdfThe GMAT exam (focus edition) evaluates essential verbal, mathematical, and analytical writing skills and consists of three sections: quantitative reasoning, verbal reasoning and data in-

sights. GMAT scores range from 205 to 805. For further details regarding the GMAT's structure, students can refer to: https://www.mba.com/exams/gmat/about-the-gmat-exam/gmat-exam-structure.Both GRE and GMAT scores remain valid for five years; after this period, retaking the test is necessary. In India, all standardized tests are available in a computer-based format and can be taken throughout the year at designated testing centers.For details on registration, fees, testing locations, home-based testing, and related inquiries, students should check the respective official websites for these standardized tests: http://www.ets.org/gre and https://www.mba.com/exams/gmat.Please visit the U.S.-India Educational Foundation's website to learn more about studying in the United States: https://www.usief.org.in/Hyderabad.aspx

T-Square proposed at Raidurg junction to be open round-the-clock

Hyderabad: IT and Industries Minister D Sridhar Babu directed the officials to design the T-Square proposed at Raidurg junction, on the lines of New York's Times Square, which will remain open round-the-clock. The area will offer a mix of business, entertainment and tourism, creating a lively experience for visitors.The Minister reviewed the design concepts for the project, presented by multiple firms, following the tender notification issued earlier, at the State Secretariat on Thursday. He suggested that the area be illuminated with large electronic displays and vibrant digital advertisements.Sridhar Babu also wanted the officials to accommodate space for cultural performances and live musical events to enhance the atmosphere. He recommended setting up amphitheaters and open restaurants as well, to cater to tourists and locals alike, round-the-clock. He also suggested for establishment of themed shopping malls to add more

attraction.TGISC managing director Vishnuvardhan Reddy and chief engineer K Shyam Sundar, along with other officials, attended the meeting.
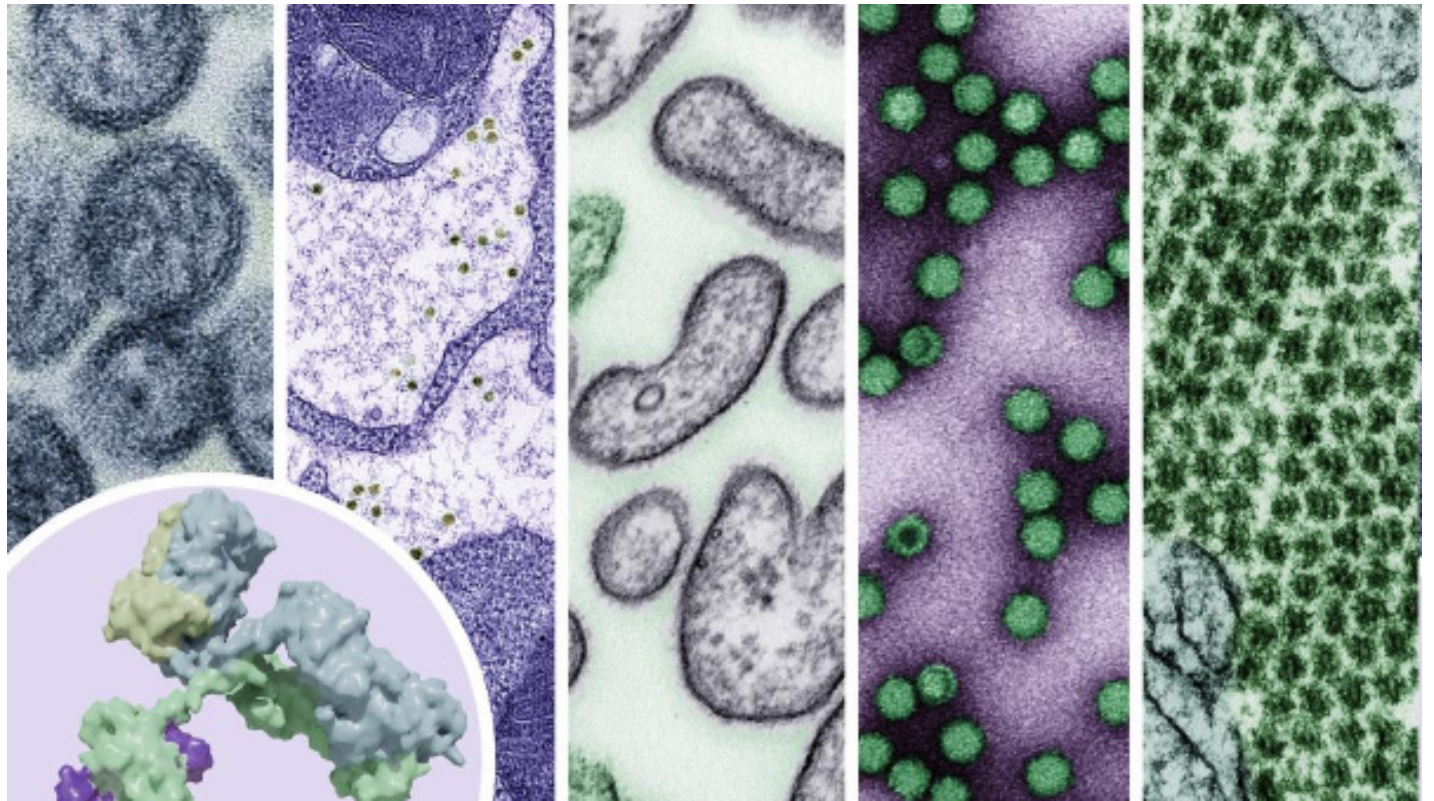
Researchers meld AI and genomics to find thousands of new viruses

A 3D rendering of an antibody (foreground left) and examples of high-priority "prototype" pathogens that have the potential to threaten human health are the focus of pandemic preparedness research efforts worldwide. From left to right: hantavirus, yellow fever virus, Nipah virus, picornavirus, and Chikungunya.A 3D rendering of an antibody (foreground left) and examples of high-priority "prototype" pathogens that have the potential to threaten human health are the focus of pandemic preparedness research efforts worldwide. From left to right: hantavirus, yellow fever virus, Nipah virus, picornavirus, and Chikungunya. | Photo Credit: NIAIDFor most of modern history, people have overlooked viruses even though they are the most abundant biological entity on the planet and carry immense ecological significance. Viruses are found in every nook and corner of the world — from soil and water to the atmosphere and even extreme environments like hot springs and hydrothermal vents.

Viruses are obligate parasites: they require a host to infect and replicate. This relationship goes both ways. Thanks to advances in research, scientists are increasingly recognising viruses as agents of disease but also as being integral components of ecosystems. Viruses drive genetic evolution through horizontal gene transfer, control microbial population balance, and even affect biogeochemical cycles.They essay critical roles in maintaining biodiversity and may even influence climate regulation. Understanding their influence is thus key to unravelling the complexities of life on the earth. Yet only a small fraction of the roughly 100 million to a trillion viral species has been identified to date.The unknown-unknown threatBeyond their environmental roles, understanding viruses is crucial for us to anticipate emerging infectious diseases. Some studies have estimated there are around 300,000 mammalian viruses yet to be discovered, many of which pose zoonotic threats. Unlike microbes, which scientists have studied using culture-based methods, viruses have remained understudied because of challenges to culturing them.The rapidly improving scale and declining costs of nucleotide sequencing has resulted in the widespread use of genome-sequencing approaches to understand microbes in the environment, particularly in metagenomics studies. These approaches have transformed our ability to explore the vast diversity of microbes and viruses in the last decade. In a metagenomic study, researchers analyse genetic material directly from environmental samples, allowing them to identify and study an organism without the need for culturing organic material like tissues in an intermediate step.Buggier but faster

In recent years, metagenomics has helped scientists identify a staggering number of previously unknown microbes in diverse environments. These discoveries have significantly expanded our understanding of microbial ecosystems. As sequencing technologies continue to improve — becoming more accurate, faster, and more affordable — alongside better global data-sharing practices, scientists are beginning to unlock the secrets of the microbial world at an unprecedented pace.In this regard, RNA viruses are of especial significance primarily because they mutate rapidly and adapt quickly to new conditions. More specifically, DNA viruses have more stable genomes and their genome-replicating mechanism makes fewer 'mistakes' when they proliferate — whereas RNA viruses replicate faster with higher error rates. This characteristic is also particularly relevant in the context of emerging infectious diseases: COVID-19, Ebola, and influenza are all caused by RNA viruses.Serratus ups the anteOne way to identify an RNA virus is to track down and isolate fragments of a specific gene that is essential for the virus to replicate: RNA-dependent RNA polymerase, or RdRP. RdRP is one of the most ancient of genes, so much so that many researchers believe it was among the world's first genes. RdRP proteins have regions that are well-conserved (i.e. which the organism preserves as it evolves) and motifs in the protein that are essential for its function, which is to replicate RNA using a template.In 2022, Canadian researchers led by Artem Babaian built an open source tool called Serratus. When scientists sequenced a gene, Serratus could match the sequence data with sequences known to be related to viral RdRP proteins. The researchers collected more than 10 petabytes of sequencing data encompassing 5.7?million sequencing libraries from diverse ecologies. When they fed this dataset to Serratus, it uncovered the presence of more than 100,000 viruses, considerably expanding the diversity of viruses known to humankind. Their findings were published in Nature in January 2022.In another study published in Science in the same year, U.S. researchers led by Ahmad Zayed at the University of Ohio used computational tools to sift through the terabytes RNA sequence data to identify thousands of new RNA virus species. In particular, this team identified a new viral species to fill an important gap in our scientists' understanding of RNA virus evolution; a new species that dominated the oceans; and another species that could infect mitochondria (organelles in cellular organisms that serve as the energy source, believed to have originated from microbes).A transformative effectAn important shortcoming of the metagenomic approach is that computational algorithms typically look for proteins very similar to sequences already in databases. As a result they risk missing proteins that have evolved and changed form. This risk may not hold for long, however. In a recent study, researchers from multiple Chinese research organisations combined genomics with a transformer.In deep-learning, a transformer is a type of machine learning model known for its ability to train rapidly to identify specific patterns. In the study, researchers fed genome-sequencing data and data from ESMFold, another machine-learning model adept at predicting the structures of proteins, to their transformer and trained it to spot genetic patterns corresponding to RdRP.Then they used the transformer to analyse large tranches of metagenomic data, where it identified more than 160,000 new RNA viruses. More than half of these viruses were described for the first time and many came from unique and/or extreme environmental niches, including hot springs, salt lakes, and air. Their findings are to be published in a forthcoming issue of Cell.Because transformers look for patterns rather than amino-acid sequences, they can find proteins even when they have diverged significantly. They can also help computers design proteins based on these patterns, to perform functions that no natural proteins can. The discovery of new RNA viruses from new places in the environment is also important to our understanding of public health. Each new discovery betters our ability to identify and characterise similar viruses better, teaches us what to keep an eye out for and how/where to improve our methods, and helps us discover more species faster.Fighting pandemics ere they beginOn the ground, a key advantage of such discoveries is with regards to pandemic preparedness. As sequencing technology becomes more widespread and data-sharing increasingly the norm, we are equipped better than ever to identify pathogenic viruses with zoonotic potential — i.e. those that could spill over from animals to humans — long before they pose a significant threat. Early detection allows us the opportunity for timely intervention and even the chance to prevent large-scale outbreaks.Looking ahead, the deeper understanding of viruses and their evolution through genomics, with help from ecological surveillance and machine-learning, will enhance our preparedness against pandemics. By continuously mapping viral diversity in nature and improving our understanding of viral-host interactions, we can also develop machine-learning models that can anticipate and mitigate viral spillovers. This future holds the promise of not only managing emerging viruses but also tackling the risk of pandemics at the microscopic rather than at the planetary scale.The authors work at Karkinos Healthcare and are adjunct professors at IIT Kanpur and the Dr D.Y. Patil Medical College,

TEDxVJIT: A Landmark Event Celebrating the Power of Persistence at Vidya Jyothi Institute of Technology

Distinguished Speakers Share Unique Insights and Personal Journeys

Hyderabad, October 26, 2024: In a historic move, Vidya Jyothi Institute of Technology (VJIT) hosted its inaugural TEDx event themed "Power of Persistence" on 26th October, 2024. The event brought together an array of distinguished speakers who captivated the audience with their unique stories and expert insights, fostering an environment of inspiration and learning.Renowned figures who graced the TEDxVJIT stage included:Lakshminarayana VV, Former CBI Joint Director, who emphasized the importance of diligence in the pursuit of justice, stating, "Persistence is not just about enduring; it's about actively seeking solutions. Challenges will come, but our commitment to making a difference must remain unwavering."Dr. P. Palla Rajeshwara Reddy, VJIT Chairman, expressed his pride in hosting such an impactful gathering: "Today, we witnessed not just stories of individual triumphs but the collective belief in overcoming adversities. This event underlines the ethos of our institution — to empower students to dream big and pursue those dreams with relentless passion."Debabrata Sarkar, Vice President of APAC at AlgaEnergy, discussed innovative agricultural solutions that combine sustainability and persistence.Hasvi Muriki, mountaineer, inspired the audience by sharing her own exhilarating journey of overcoming peak challenges.Kraveenthar Kamal, Founder & Director of Maker Global, encouraged budding entrepreneurs with tales of tenacity, reminding everyone that success is often built on a foundation of failures.Nikhil Desai, Director of The Centre For Excellence, provided wisdom on achieving personal and professional excellence while emphasizing the role of consistent effort in success.Organized by Sai Keerthana Kurapati and co-organized by Akash Mallareddy, TEDxVJIT served as a platform for diverse ideas to flourish and showcased the spirit of perseverance among students, faculty, and distinguished guests alike.The event's enormous success was made possible through the invaluable contributions of the VJIT community, including Principal Dr. E. Saibaba Reddy, Dean Dr. A. Padmaja, Academic Coordinator Smt. Srilatha, Senior Administrative Officer Mr. Venkata Chalam, Event Coordinator Mr. Srinivas, and all Heads of Departments (HODs). Their collective dedication to fostering creativity and intellectual growth resulted in an unforgettable experience for all attendees.

Diwali - The Festival of Lights

Deepavali means a row of lamps or lamps arranged in a line or format. On this day, people light up many deepas or diyas and offer them to Lord Krishna and then place them in rows outside of the house or premises. Dipavali festival is also observed as the New Year Day of the Hindu Calendar.Why celebrate Deepavali :There are two major events happened on this day historically –

1. Lord Rama Chandra returns to the City of Ayodhya after killing Ravana and ascended to the Throne: Srimad Bhagavatam while describing the return of Lord Ramachandra, mentions "Thereafter, having been welcomed by His brother Bharata, Lord Ramacandra entered the city of Ayodhya in the midst of a festival."This festival is continuing to date as Deepavali! The citizens of Ayodhya were so enthralled by the arrival of Lord Ramachandra that it is as if they regained their consciousness after a deep slumber. They welcomed the Lord into the city by profuse decorations in all the lanes, Rangoli paintings in front of houses,keeping auspicious banana plantations in street corners, and other types of auspicious markings suitable for welcoming the Supreme Personality of Godhead Sri Ramachandra.

When Lord Ramachandra, the Supreme Personality of Godhead, was the King of this world, all bodily and mental suffering, disease, old age, bereavement, lamentation, distress, fear and fatigue were completely absent. There was even no death for those who did not want it. (SB 9.10.53). That is what is famously called Rama Rajya.Lord Ramachandra appeared in the age of Treta Yuga. That means Deepavali tradition has existed in this world for lakhs of years! Because of Guru-Shishya paramparas, the tradition is kept alive till to date.

2. Damodara Lila – Little Krishna was tied to a grinding mortar by His mother as Krishna became naughty:Damodara is one more name of Krishna. Little Krishna received the name Damodara by allowing His mother Yashoda to bind Him to a wooden mortar with a rope. Dama means rope and Udara means stomach. Damodars refers to Krishna with a rope around his little stomach.

Canon India's 'Green Environment Together' initiative achieves a significant milestone in its sustainability vision by planting 50,000 trees in 5 years

Reaffirming its commitment to environmental sustainability, Canon India today announced the successful plantation of 50,000 trees under its 'Green Environment Together' (GET) initiative. Launched in July 2019, the GET Initiative represents a significant step towards fostering a greener future. Through this program, Canon India plants a tree for every laser copier or multi-function device (MFD) sold to its direct customers.

Since its inception, Canon India committed to planting over 10,000 trees annually. Staying true to this commitment, the company has planted 50,000 saplings in five years. Each tree represents the trust that customers have in Canon's high-quality laser copier based Multifunctional Printers. Additionally, in 2020, the Environmental Committee of Canon Inc. (Japan) honored the GET Initiative for its contributions to environmental sustainability.

Commenting on this milestone, Mr. Toshiaki Nomura, President & CEO, Canon India, said, "At Canon India, the spirit of giving back to society is deeply embedded in our corporate values. Alongside delivering world-class products and services, we have remained committed to safeguarding the environment and fostering the holistic development of communities on the lines of our corporate philosophy of 'Kyosei'. Through our flagship 'Green Environment Together' initiative, we were successful in creating an ecosystem in association with our direct customers by planting a tree for every laser copier

based Multifunctional Printers sold to them. We are delighted to celebrate this significant milestone in our 'Green Environment Together' (GET) initiative, having planted 50,000 saplings in less than five years since its launch. This initiative empowers us to partner with our customers in building a greener and more sustainable future."

In a bid to enhance the tree plantation initiative, Canon India also introduced geotagging allowing customers to track and engage with their contributions more closely. The certificates issued to customers will continue to include a QR code, which, when scanned, directs them to a virtual forest page. By simply entering their company name, they can access all the geotagged details of the trees planted on their behalf, providing a more interactive and transparent experience.Speaking on the initiative, Mr. C Sukumaran, Senior Director, Product & Communication, Canon India said, "As a leader in the printing segment and as a socially responsible organization, we believe it is essential to balance our business impact on the environment, ensuring our contributions benefit both the industry and the planet. While we continue to impact our customers with innovative technologies and solutions, we have also made great strides in our "Green Environment Together' initiative, thereby highlighting our commitment to sustainable business. Every tree we plant on the sale of a laser copier based Multifunctional Printers through GET initiative is a testament to the trust our customers place in Canon. With-

out their unwavering support, these milestones and our continued leadership would not have been possible."In addition to GET initiative, Canon's range of eco-friendly business offerings help reduce the carbon footprint on the environment through low

electricity consumption. These products are a boon across industries ranging from SMEs to Large Corporates laser copier based Multifunctional Printers and can help bring the next wave of supremacy and conscious customer offerings.

Indiscipline in forces is serious, punishable by law: Telangana DGP

Hyderabad: Indiscipline in uniformed forces is a very serious matter that attracts provision of the Police Forces (Restrictions of Rights) Act and the Police (Incitement to Disaffection) Act and liable to be penalised as per law, Telangana DGP Dr.Jitender said on Saturday.In a statement issued here, the DGP said the system of duties in the Telangana State Police has been in place for several decades and during the time of United Andhra Pradesh and continues after bifurcation.

During recruitment, police constables are selected into three categories – Civil Police, Armed Police and Special Police. While the duties of Civil Police is to conduct investigation, prevent & detect crime and also handle law and order issues, the Telangana State Special Police (TGSP) addresses state-wide Law & Order con-

cerns as well as are deployed for various duties in other states as well. He pointed out that salaries and allowances to police personnel in the state are highest compared to other states and the department takes up various welfare measures including Bhadratha, Arogya Bhadratha, etc.

"In such circumstances, it is not appropriate for TGSP personnel to protest in the streets. TGSP is a uniformed and disciplines force, and the Police department's image must be protected," read the statement.The DGP In the statement said the Police department would consider the concerns of TGSP personnel on merits and with sympathy and urged TGSP personnel to carry out their duties as usual."If there are any concerns, they can be raised in the "Darbar" with the officers/Commandants/ADGP TGSP and other senior officers," he said.

Loss in Haryana could provide key lessons to Congress in Maharashtra and Jharkhand

Shocked by its defeat in the Haryana Assembly election, the Congress is "reconstructing" the polls not only to find out what went wrong but also for possible lessons to be learnt before the upcoming Maharashtra and Jharkhand Assembly elections.A key party strategist, who was involved in the Haryana election and is now handling the Maharashtra election for the party, told The Hindu that the focus was on 24 Assembly seats, where a defeat was "unimaginable" for the party. Following the October 8 counting, teams from the Congress party have carried out booth-level and block-level surveys again across Haryana."The reason we are doing this exercise is to build a solid case. After an unexpected result, fact finding committees are formed, doubts over electronic voting machines are raised, and then everything gets forgotten by the next election," the source said.At a recent Congress strategy meeting on Maharashtra, the Leader of the Opposition in the Lok Sabha Rahul Gandhi asked party strategists to "go deep" into the reasons that cost them the Haryana election.New SOPsGoing ahead, the party now plans to put into place some standard operating procedures (SOPs) for the upcoming Assembly elections. For example, one complaint that the Congress has filed with the Election Commission of India (ECI) concerns the counting of votes in Haryana election on October 8, when electronic voting machines (EVMs) in 20 constituencies displayed 99% battery capacity even though these EVMs were deployed for the voting on October 5."Our candidates will be told that they should look for battery capacity in EVMs, and if they have any doubt, they should write a note and get it signed by the polling officer at the counting centre," the source said. Only six of the party's candidates in Haryana followed this process, he said.

Polarisation narrativeAkin to the underlying narrative of polarisation between Jats and non-Jats in Haryana, with the Congress seen to be appealing only to Jats, there is now a sharp divide between Marathas and Other Backward Classes (OBCs) in Maharashtra because of the demand for reservation for the Maratha community.While the Maratha community is said to be dominant in over 150 of the 288 Assembly seats, OBCs play a decisive role in 70-80 seats, party strategists said."Maharashtra is likely to be a close contest and unlike previous elections, this election will see polarisation between OBCs and Marathas," the Congress source said.In Jharkhand, too, the party has to tread carefully over issues that can create a divide between tribals and non-tribals.

INDIA bloc's importanceAlthough Mr. Gandhi wanted an alliance with the Aam Admi Party (AAP) in Haryana, and sought to project the Indian National Developmental, Inclusive Alliance (INDIA) bloc, opposition from the State unit scuttled such plans. Now, the Congress and the Maha Vikas Aghadi (MVA) are keen to accommodate smaller players, including the Samajwadi Party (SP) and other regional

players. In Jharkhand, too, the Jharkhand Mukti Morcha and the Congress are trying hard to accommodate the concerns of the Rashtriya Janata Dal (RJD) and the Com-

munist Party of India-Marxist-Leninist (CPI-ML), among others."In politics, perception plays an important role, and if you can keep your allies together, it adds to your strength. Similar to the way the RJD has been ac-

commodated in Jharkhand, the RJD should have given the Congress one out of the four Assembly seats in Bihar where bypolls are taking place," Kishore Kumar Jha, a Congress veteran from Bihar, said.

Global Desi by the House of Anita Dongre presents: The Ultimate Festive Fashion Edit this Diwali!

Get ready to embrace the festive spirit in style with our Diwali Style Guide, designed to help you shine bright this season. Diwali is all about celebration, and your outfit should reflect that joyous vibe. Whether you're attending a family gathering or hosting a fun house party, looking effortlessly stylish is a must. This year, Global Desi launches its much-awaited Diwali edit, the Global Desi House Party Diwali 2024 Collection—a vibrant mix of prints, contemporary silhouettes, and festive flair. From chic kurta sets to trendy crop-top co-ord sets, starting from Rs. 5,490 this collection ensures you're all set for every festive occasion!

1. The Rani Jumpsuit

This Rani Jumpsuit is perfect for intimate Diwali gatherings. Style it with jhumkas and a potli bag for a festive yet understated vibe. The rich hue and delicate print can be balanced with nude block heels for comfort.

2. Jhilmil Blue Kurta Set: This stunning co-ord set features a vibrant print and is crafted from soft viscose fabric, with flared sleeves and intricate embroidery. Pair it with bold silver earrings and heeled sandals for a touch of royalty, and add a metallic mini-bag to complete the look. Perfect for casual gatherings, festive celebrations.

3. Nayala Kurta Set: Strike a pose in

this indigo blue 2-piece set adorned with an India-inspired print. The sleeveless top features a flattering fit-and-flare silhouette, an embroidered yoke, and playful coin details. Paired with matching flared pants, this set is perfect for festive events.

4. Sunehri Kaftan Maxi: Unveil your style with the Sunehri Kaftan Maxi, adorned with a stunning India-inspired print and graceful bell sleeves. The eye-catching placement print can be complemented by exquisite bead embroidery.

5. Jhilmil Green Skirt Set: Celebrate in style this festive season with our chic 3-piece outfit! This set includes a stunning printed skirt, a stylish blouse, and a coordinating dupatta. This can be styled with statement gold jewelry. Add embroidered flats and a clutch for a touch of elegance.

With the Global Desi House Party Collection, you have the perfect blend of comfort and festive glam to make Diwali celebration memorable. Whether you're opting for a breezy kurta set or a statement co-ord, each look offers endless styling possibilities to help you stand out while keeping it effortlessly chic. So, dive into this collection and create your own festive fashion story, mixing traditional charm with contemporary flair—because this Diwali, it's all about fun, style, and vibrant energy! Shop now from www.globaldesi.in

On Boeing 737's 'defective' rudder system

The story so far: Certain variants of the Boeing 737 (fitted with a 'rollout guidance actuator') are under the scanner over an issue that concerns the potential for the occurrence of a jammed or restricted rudder control system. The United States National Transportation Safety Board (NTSB) has put out safety alerts to the manufacturer, Boeing, and the Federal Aviation Administration (FAA). Flowing from this, India's Directorate General of Civil Aviation has issued directives to Boeing 737 operators in India. The issue has arisen after an NTSB investigation into an incident on February 6, 2024, involving a United Airlines Boeing 737-8 MAX flight, UA 1539, from Nassau in the Bahamas to Newark, U.S. In 2019, two similar events had occurred with foreign airlines.

What was the issue?

During the landing rollout phase of flight 1539, the rudder pedals were found to be "stuck" in the neutral position. Despite the use of pedal force of about 42 pounds by the crew there was no movement which resulted in the captain having had to use the nosewheel steering tiller to control the aircraft's direction. The crew then found the copilot to be experiencing the same problem. The crew applied more pedal force (flight data recorded it to be about 59 pounds) which resolved the issue. The problem was reported to the airline's maintenance department. There was no damage to the aircraft which was removed from service for checks.

What did the flight data show?

Examination of the Flight Data Recorder (FDR) data aligned with the pilot's statements of a malfunction. The data also showed increasing force inputs to the rudder pedals 'even as the rudder surface position remained near its neutral position'. But with significant pedal force by the crew for the second time after landing, the rudder pedals and rudder began to function normally. On February 9, 2024, United Airlines did a test flight with the incident aircraft wherein there was a recurrence of the malfunction. After landing, the NTSB was notified. An investigation began which included United, the FAA, Boeing and Collins Aerospace, the manufacturer of the rudder component in question, called the rollout guidance actuator. A preliminary report which detailed the circumstances of the event was published on March 12. The FDR data were analysed at the NTSB laboratory in Washington DC. In addition, there was an inspection of the rudder control system but no obvious malfunctions were detected. But still, certain parts of the rudder system components were removed for detailed inspections. After this, United conducted a second test flight where the rudder control system operated normally.

How does the rudder issue come into the picture?

As a part of the aircraft tail, the rudder plays a crucial role in aircraft control around the yaw axis (one of the axis of aircraft motion) and is vital in coordinated turning, ground directional control, crosswind landings and even in the event of engine failure. As a Boeing 737 pilot explains, the rudder pedals on the 737 which move the rudder in different ways are connected through cables to what is called a torque tube mechanism. This in turn is connected

to a Power Control Unit or PCU; there is a standby unit as well. All this is in what is called a closed loop mechanism, so the position of the pedals corresponds to the position of the rudder. While in flight, the PCU also helps the flight crew coordinate turns with the roll from the ailerons (on the aircraft wings) which help in banking to turn. Some 737s have a separate system to move the rudder and this is where the component made by Collins Aerospace comes into the picture. The United Airlines 737 was fitted with a Collins Aerospace SVO-730 rudder rollout guidance actuator. This is a component that is linked to another aspect of aircraft operations. In conjunction with the aircraft autopilot, the actuator plays a role in a certain type of instrument landing system (ILS) approach called CAT III, more specifically in CAT IIIB operations. In normal aircraft operations, ILS approaches are also linked to weather and visibility. In India, 'CAT III landing' is a term that comes into focus in airports and flight operations in northern India especially during the winter season when fog/bad weather affects visibility.

There is another aspect of aircraft operations in CAT III and when the aircraft's autoland function is used. Here the aircraft will basically land by itself using the autopilot systems. In CAT III, the crew inputs occur during the landing phase where, after the autopilot is disconnected, there is need for directional control. In CAT IIIB, the autopilot remains connected. And the rudder rollout guidance actuator, which is an additional rudder component feature, enables the autopilot to work directly with the rudder through the landing phase. Out of the thousands of 737s that have been manufactured, only a small number of 737s have been equipped to carry out CAT IIIB autolands. In the course of the investigation, the NTSB conducted 'cold chamber' tests on the actuator. The component was found to jam, with significant force (which were beyond the design limits) having to be applied to get parts moving. There was also evidence of moisture and corrosion.

In its technical review, Collins determined that a seal in the actuator, in a clutch bearing, had not been assembled correctly during the manufacturing process. In August 2024, Collins notified Boeing that 353 rudder rollout guidance actuators it had delivered to Boeing from February 2017 were affected. Reports are that this could impact about 40 airlines across the world.

What has Boeing said?

In an email to The Hindu, Boeing has said that it has reminded operators of the proper actions that flight crew should take were they to encounter rudder restriction. This includes following the checklist for jammed or restricted controls during flight and using various tools to maintain 'centerline' on the ground. It added that it has also shared technical guidance from the supplier. Boeing also said, "In March and August, we informed affected 737 operators of a potential condition with the rudder rollout guidance actuator, which is part of an optional autoland system. The optional system allows landing during limited visibility CAT IIIB autoland conditions. The actuator is the part of the system that assists pilots to maintain centerline steering. Redundancies within the 737 design al-

low continued safe operations while the potential condition is being addressed." About the defence variant of the Boeing 737 or the P-8 (which the Indian Navy operates), Boeing said, "We are working to determine the full scope of this issue as it relates to the P-8 Poseidon maritime surveillance aircraft based on the 737 NG and are in contact with our customers. Redundancies within the 737 design allow continued safe operations of the P-8 fleet."

What has the DGCA said?

The DGCA has asked Indian operators of the 737 to simulate scenarios that involve a jammed or restricted rudder control system during pilot recurrent training and instrument rating/pilot proficiency checks. It has also asked airlines to discontinue CAT IIIB operations that include practice or actual autoland until further notice. Of the three main 737 operators in India, Air India Express has said that five of its aircraft are under inspection while SpiceJet said none of its aircraft is affected. Akasa Air did not respond to queries, but an aviation source said that around 14 of its 737s might have to be checked.

Nikon India announces Wedding Film Awards with prizes over Rs 6 Lakh

Hyderabad: Nikon India Private Limited is set to present the fourth season of Wedding Film Awards. In addition to showcasing creativity of wedding videographers and cinematographers, the annual contest offers prizes worth over Rs.6 lakh, including Nikon Z6III camera. The theme 'Magical Memories' also encourages the seasoned professionals in the industry as well as the emerging talents to capture all their creativity through their lens, a press release said. An elite jury of Nikon Creators, including some of the leading wedding cinema-

tographers and videographers in the industry such as The Yellow Draft and Paws and Frames founder Raj Rj, wedding and fashion photographer Kirandeep, Spectrum Pixels founder Snehal Patel and The Royal Diaries founder Sazid Ansari will assess participants. The registrations are open until January 8, 2025. Participants can participate in the contest through the Nikon India website https://www.nikon.co.in/ and submit their entries featuring up to 60 seconds of video shot using Nikon cameras .

Trump gains among young men, Harris seeks votes from women, Republicans

With less than two weeks to go to November 5, Election Day in the U.S., Republican Candidate Donald Trump has been trying to capitalise on the support he has among men, focusing especially on bolstering his numbers among younger Black and Hispanic men.Mr. Trump has had a 21 point lead over Vice President and Democratic Candidate Kamala Harris among young men (58% v 37%), while Ms. Harris has had a 39 point lead over Trump among women (67% v 28%), over three New York Times/ Siena College polls, the New York Times reported.The leads are in a similar direction, albeit of a smaller magnitude, for all men and all women (irrespective of age). This pattern is consistent with 2016's outcomes. Democratic Candidate Hilary Clinton won the female vote by 15 points, while Mr. Trump won the male vote by 11 points, CPR's Amy Walters says, noting that the variation is in the percentage of men supporting the Democratic ticket (41% in 2016, 48% in 2020 and 43% this year).The candidates are therefore squeezing out what support they can from segments that could get them over the finish line: Mr. Trump with men, Ms. Harris with women while also trying to add independents and undecided voters.To this end, Mr. Trump and Fox News host Lawrence Jones visited a Barber shop in the Bronx last week, where the former president interacted with Black and Hispanic barbers and their clients, some getting their hair cut during the broadcast. The entire event had an undertone of 'shooting the breeze with the boys'. The questions played to Mr. Trump's strengths (as has been the case for Ms Harris in several of her events). The topics included inflation, energy costs, the economy and border security. Mr. Trump related policy issues to the shop's accounts.One client said that during Mr. Trump's administration he was able to "see money, save money, spend money" but faced financial challenges now. A former New York police officer asked a question about the border and illegal migration; Mr. Trump linked his answer to the police being over regulated in recent years.There was a discussion about the barber shop passing down from father to son, both of whom were in the store. The former President attempted to connect with his newer constituents, concluding the session by saying, "You guys are the same as me …we were born the same way. I grew up in Queens." (Mr. Trump was born into a wealthy family and his father was a real estate magnate).Meanwhile, Vice President Kamala Harris, has been spending the final stretch reaching out to women, Republicans and undecided voters.Women of all political persuasions are concerned about reproductive rights in a hypothetical Donald Trump presidency and how the reversal of Roe v Wade had left a spate of unintended consequences : including, in some States, no exceptions for rape and incest, curbs on fertility treatments and access to contraceptives.In Wisconsin's Waukesha County, Ms. Harris campaigned with former GOP Congresswoman, Liz Cheney, who is the daughter of former Vice President Dick Cheney. The county is home to many non-Trump, old-school Republicans.Ms. Cheney is also campaigning with Ms. Harris in Pennsylvania and Wisconsin. In an appeal to Arab American voters, Mr. Trump had criticized Ms. Harris for campaigning with the daughter of one of those principally responsible for the Iraq War.The term 'permission structure' has been widely used in the last few days, to describe what Ms Cheney was attempting to provide for Republican voters who were thinking about voting for Ms Harris. The phrase, used previously by the Harris campaign, was also used in 2013 by then President Obama, who had used it to prod Republicans in Congress needed to join forces with Democrats to vote on legislation."You know how hard it is to break away from tribal loyalty to do something you haven't done before," said Conservative commentator, Charlie Skyes, who moderated the Waukesha County discussion, before asking Ms Cheney to address the issue.The event included questions from Republicans concerned about the erosion of reproductive rights for women and Mr Trump being unfit for the presidency – another theme of the Harris campaign. There were references to former Trump and Biden administration Joint Chiefs of Staff Mark Milley saying Mr Trump was "the most dangerous person to this country" and a "fascist to the core". There were also discussions about America's relationship with its allies suffering under Mr Trump. By focusing on a national security theme , the Harris campaign is hoping to appeal to Republicans and undecided voters who may be more hawkish on the subject.In their messaging , Ms. Harris's supporters, including the group 'Republicans Against Trump,' have pointed to the fact that she has had the declared support of close to 750 national security officials (including from the Trump administration)., Ms Harris suggesting, again, that Mr. Trump was a "fascist," following his former Chief of Staff John Kelly's recent assertion that Mr Trump wanted generals like Adolf Hitler had.Over the coming days, both candidates are making repeat visits across battleground states, where a handful of voters could make all the difference.

Working 'around the clock' to prevent flight threats in India, Twitter says

A spokesperson for X, formerly Twitter, said on Thursday that the company was committed to crack down on terror threats being made on the platform against Indian flights. The statement comes a day after a reported meeting where an official from the Ministry of Electronics and Information Technology accused the social media platform of "abetting" those issuing such threats.

"We prohibit violent threats on X and take any such reports seriously," the spokesperson for the social media platform said in response to a query from The Hindu. "That includes and is not limited to threats to harm civilian infrastructure essential to daily, civic or business activities. Our teams, systems and reporting channels are at work around the clock to keep X safer for all our users in India."Sanket Bhondve, a joint secretary at the ministry in charge of, among other things, issuing takedown orders on behalf of the government to social media platforms, had reportedly issued a rebuke to social media platforms, particularly X, for not doing enough to crack down on these threatening messages.X did not address the official's remarks directly, and Mr. Bhondve did not respond to multiple calls and messages seeking comment on the meeting.

Tamil Nadu leads in both worker strikes and number of factories

When workers at Samsung India Electronics' factory in Sriperumbudur, near Chennai, went on strike for more than a month recently, many people argued once again that strikes are harmful to business. This view gathered steam when Samsung India Electronics claimed in the Madras High Court on Tuesday that it had suffered a loss of around $100 million due to the strike by the workers, who were demanding recognition of their recently formed trade union. On October 15, the Tamil Nadu government announced that the strike had finally been called off.The strike was widely seen as a disruption to the State's industrial climate and a potential threat to future industrial investments. However, data suggests that in most industrialised States, worker strikes are fairly common, with the number of factories continuing to remain high and even growing.

In the 2008-2018 period, Tamil Nadu was the State with the highest number of industrial strikes, but it was also where the maximum number of factories were set up and factory workers employed. This contradicts the argument that strikes are harmful to business.Reliable State-wise data for workplace disputes is available with the Union Labour Ministry between 2008 and 2018, so this is an analysis of that time period. In 2008-2018, Tamil Nadu recorded over 26% of all the strikes called, the highest among all States by a wide margin.Chart 1 | State-wise industrial strikes in the 2008-18 period and its impact on wages, mandays and production. Each circle corresponds to a State. The farther to the right, the higher the State's share in India's strikes, mandays lost due to strikes, wages and production lost due to strikesAt the same time, the State also hosted 16% of India's factories and a similar share of India's factory workers during the period, again leading other States by a wide margin.Chart 2 |

The chart ranks the States on key indicators of industrialisation in the 2008-18 period. Each circle corresponds to a State. The farther to the right, the higher the State's share in India's factories, factory workers, of all factories' GFCF and all factories' overall profits Chart 1 also shows that 17% of workers in India who were involved in a strike in that period were working in Maharashtra — the second-highest among States. In the share of man days lost — total working days lost due to strikes — Tamil Nadu's share was again the highest (15% of total mandays lost in India). In terms of value lost — production work hampered due to strikes — Gujarat was at the top of the list, forming 24% of such losses. Gujarat featured second-highest in the number of strikes called.Notably, while these three States are at the top of the list on various measures related to strikes, as shown in Chart 1, they also lead the nation in key indicators of industrialisation, as shown in Chart 2. Tamil Nadu, Maharashtra, and Gujarat are the top three States, in that order, in measures such as the number of factories set up and workers hired.They also lead in the Gross Fixed Capital Forma-

tion (GFCF) of factories — which measures the net investment in fixed assets such as machinery — which acts a proxy for a firm's health and productivity. Their share in India's industries' overall profits also outsizes other States.In fact, in the 2008-2018 period, the share of worker strikes grew in Tamil Nadu and so did the State's share of the nation's factories. In 2008, 28% of India's worker strikes occurred in Tamil

Nadu, and in 2018 the figure was 30%, with the State first on the list in both years in this measure. In the same period, the share of India's factories in Tamil Nadu also grew from 14% to 16%. The State occupied the first place in this measure in both the years.In fact with a trade union density rate — union members/total workers — of about 20%, India is not even among the top 50 economies in this mea-

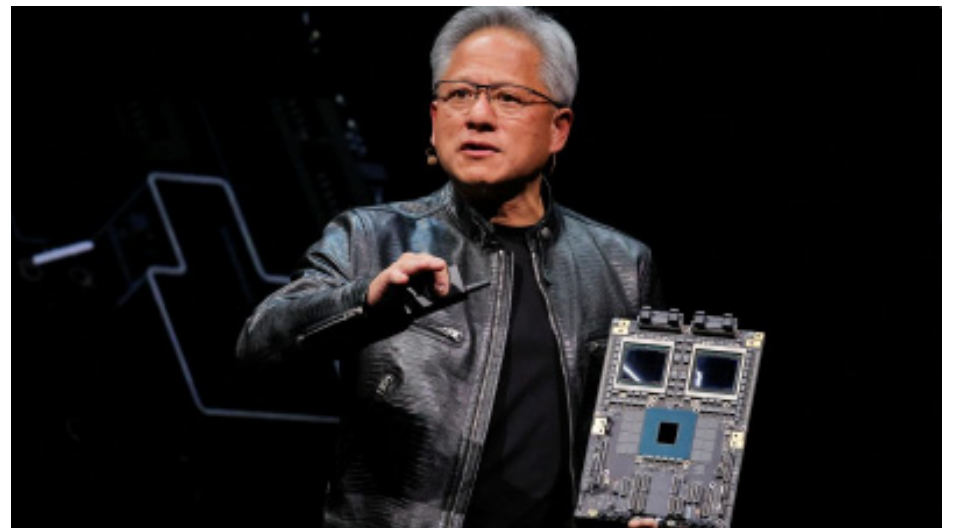sure. India's figure is less than half of China's 44.2%, a highly industrialised nation.Chart 3 | Trade union density rates (in %) across BRICS countries (latest years for which data available)Iceland, followed by advanced Scandinavian economies, lead the world in this measure with over half of their workers unionised.Chart 4 | Top ten countries in terms of trade union density rates (in %)

Nvidia, Reliance to build AI computing infrastructure in India

Nvidia Corp has struck a deal with billionaire Mukesh Ambani's conglomerate Reliance Industries to build out an artificial intelligence (AI) computing infrastructure as well an innovation centre in India, the AI chip giant's CEO Jensen Huang said on Thursday.A new major data centre by Reliance Industries will use the latest Nvidia's Blackwell AI chips.

Nvidia already has presence in six locations across India. The US firm works with enterprises, cloud providers and startups to build AI infrastructure powered by Nvidia's accelerated computing stack comprising tens of thousands of its most advanced GPUs, high-performance networking, and AI software platforms and tools.At the Nvidia AI Summit 2024 here, Ambani and Huang had a fireside chat to discuss India's transformative potential in AI and its emerging role as a global leader in this field.

The partnership between Reliance and Nvidia aims to build a robust AI infrastructure in the country, which Ambani believes will not only enhance local capabili-

ties but also position India as a significant player in the global intelligence market."India will start with the absolutely best that Nvidia has," Ambani said.Huang, during a press conference, told reporters here that the partnership also includes creating applications that Reliance could of-

fer to consumers in India."We will also have an innovation centre as part of the tie-up," he said.He did not quantify the size of the infrastructure to be built.

"India is already world class in designing chips, Nvidia's are designed here in Bengaluru, Hyderabad, Pune. A third of Nvidia is Indian, may be more,"